Brunswick Mill, Bradford Road, Ancoats, Manchester

Historic Building Investigation: Level 3

April 2026

PREPARED FOR

Arrowsmith Management Ltd



Historic Building Investigation

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Summary

Arrowsmith Investments Ltd have been granted planning consent for the refurbishment, removal/demolition, repair and reconfiguration of Brunswick Mill to create work spaces, retail and community uses (Use Class E and Use Class F2) (2034sqm) at ground floor and creation of 153 residential apartments (Use Class C3a) with the upper floors following demolition works together with the erection of a part 6, part 8 storey building to form 100 residential apartments (Use Class C3a) and a 5 storey buildings to form 24 residential apartments (Use Class C3a) (277 apartments in total across the 3 buildings) with associated car parking, roof top amenity space, access and servicing, landscaping, pedestrian access to the Ashton Canal and other associated works (Planning Ref 130394/FO/2021, Listed Building Consent Ref 130395/LO/2021).

In order to support the planning application for the scheme, Salford Archaeology were commissioned to carry out an archaeological desk-based assessment (Salford Archaeology 2021) and Steven Levrant Heritage Architecture Ltd produced a heritage statement (SLHA 2021) for the proposed development site. Thes documents supported an earlier desk-based assessment produced by Oxford Archaeology North in 2009. These documents briefly outlined the historical development of the site and highlighted that the wider redevelopment of the site holds potential for below-ground remains associated with early development of the site.

During consultation with the Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as Archaeological Advisors to Manchester City Council, it was recommended that a Level 3 historical building investigation be undertaken of the former Brunswick Mil along with associated documentary research. In 2023 Arrowsmith Investments Ltd commissioned Salford Archaeology to produce a Written Scheme of Investigation for a Historic England Level 3-type survey, evaluation and mitigation. The survey was undertaken from 2023 until 2026. Salford Archaeology initially undertook this work, however due to the closer of Salford Archaeology in 2024, Civic were commissioned to complete the outstanding fieldwork and the production of the report. This report details the results of the historical building investigation of Brunswick Mill. The evaluation and mitigation results will be detailed in a seperate report as part of the wider redevelopment Phase 2.

The historic building investigation concluded that Brunswick Mill was originally constructed in 1839 by Alexander Kelly and James Gilmour, cotton spinners who were early business partners of Charles Pooley, owner of Pooley's Mill located to the south-west of the site. The original mill comprised a seven-storey spinning block fronting the Ashton Canal, with a three-storey warehouse extending northwards towards Bradford Road (Plate 6).

Although the contemporary drawing does not indicate the position of the engine house, it is considered highly likely that, even at this early stage, it was located against the western gable of the spinning block. The mill was constructed using a fireproof Hodgkinson-type construction, characterised by transverse brick-vaulted ceilings supported on cast-iron beams and columns.

In 1840–41, it was decided to extend the wing bordering Bradford Road. However, prior to completion, this wing collapsed, resulting in the deaths of four individuals. Following the collapse, the decision was taken to rebuild the wing to the full height of the spinning block. This phase of expansion also included the construction of a further seven-storey wing to the north-east, together with an entrance block positioned between the two wings, creating a trapezoidal-shaped mill complex.

The mill continued to expand throughout the 19th and 20th centuries and came under the ownership of Bannerman and Sons in 1856. In 1906, the mill was electrified, making Brunswick Mill the first mill in Manchester to be powered by electricity. Cotton production ceased during the mid-1960s, and in January 1968 the complex was sold by the Lancashire Cotton Corporation Ltd to the Trownbay Property Company Ltd.

Since then, the mill has been occupied by a range of small businesses. At least one of these was associated with ancillary textile processes and, until recently, represented a rare survival of textile-related industry operating in Ancoats during the 21st century. Much of the mill is now vacant, although prior to redevelopment, a music-related business occupied part of the complex. The electric motor towers, coal yard/platform, and original chimney were demolished during the 1970s.

In 1994, Brunswick Mill was granted Grade II Listed status in recognition of its special architectural and historic interest, particularly as a largely intact 19th-century cotton spinning mill.

The historic building investigation provided a valuable opportunity to compile a detailed record of the former Brunswick Mill complex. This work helps to mitigate the loss of historic fabric resulting from redevelopment and has enabled documentary sources to be combined with physical evidence embedded within the historic fabric. The resulting narrative offers a comprehensive understanding of the mill's development and contributes meaningfully to research themes identified within the North West Regional Research Framework.

1. Introduction

1.1. Background

1.1.1. Circumstances of the Project

Arrowsmith Investments Ltd have been granted planning consent for the refurbishment, removal/demolition, repair and reconfiguration of Brunswick Mill to create work spaces, retail and community uses (Use Class E and Use Class F2) (2034sqm) at ground floor and creation of 153 residential apartments (Use Class C3a) with the upper floors following demolition works together with the erection of a part 6, part 8 storey building to form 100 residential apartments (Use Class C3a) and a 5 storey buildings to form 24 residential apartments (Use Class C3a) (277 apartments in total across the 3 buildings) with associated car parking, roof top amenity space, access and servicing, landscaping, pedestrian access to the Ashton Canal and other associated works (Planning Ref 130394/FO/2021, Listed Building Consent Ref 130395/LO/2021).

The site is situated within the Ancoats area of Manchester, and is bounded by Bradford Road to the north-west, commercial units to the north-east, Ashton Canal to the south-east and an empty plot of land to the south-west (Fig 1; NGR SJ 8908 9023). This empty plot also forms the south-western part of the wider redevelopment site.

In order to support the planning application for the scheme, Salford Archaeology were commissioned to carry out an archaeological desk-based assessment (SA 2021) and Steven Levrant Heritage Architecture Ltd produced a heritage statement (SLHA 2021) for the proposed development site. These documents briefly outlined the historical development of the site and highlighted that the site holds potential for below-ground remains associated with early development of the site.

During consultation with the Greater Manchester Archaeological Advisory Service (GMAAS), in their capacity as Archaeological Advisors to Manchester City Council, it was recommended that a Level 3-type historical building investigation be undertaken of the former Brunswick Mil, with associated documentary research.

A pre-commencement condition was attached to the planning consent (Planning Ref 130394/FO/2021 Condition 7) which stated that:

'No development or development shall take place until the applicant or their agents or successors in title has secured the implementation of a programme of archaeological works. The works are to be undertaken in accordance with a Written Scheme of Investigation (WSI) submitted to and approved in writing by the City Council, as Local Planning Authority. The WSI shall cover the following:

1. *Informed by the updated North West Regional Research Framework, a phased programme and methodology of investigation and recording to include:*
    - *A historic building survey (Level 2/3) of any historical buildings or structures that are to be removed;*
    - *An archaeological evaluation trenching;*
    - *Pending the results of the above, targeted open area excavation.*
2. *A programme for post-investigation assessment to include:*
    - *Production of a final report on the results of the investigation and their significance.*
3. *Deposition of the final report with the Greater Manchester Historic Environment Record.*
4. *Dissemination of the results of the archaeological investigations commensurate with their significance, including provision for a permanent information panel.*
5. *Provision for archive deposition of the report, finds and records of the site investigation.*
6. *Nomination of a competent person or persons/organisation to undertake the works set out within the approved WSI.*

Reason: To record and advance understanding of heritage assets impacted on by the development and to make information about the heritage interest publicly accessible pursuant to policies EN3 of the Manchester Core Strategy (2012) and saved policy DC20 of the Unitary Development Plan for the City of Manchester (1995).

A further pre-commencement condition was attached to the Listed Building Consent (LBC Ref 130395/LO/2021 Condition 4), which stated that:

'No groundworks shall take place until the applicant or their agents or successors in title has secured the implementation of a programme of archaeological works. The works are to be undertaken in accordance with a Written Scheme of Investigation (WSI) submitted to and approved in writing by the City Council, as Local Planning Authority. The WSI shall cover the following:

1. *Informed by the updated North West Regional Research Framework, a phased programme and methodology of investigation and recording to include:*
    - *A historic building survey (Level 2/3) of any historical buildings or structures that are to be removed;*
    - *An archaeological evaluation trenching;*
    - *Pending the results of the above, targeted open area excavation.*
2. *A programme for post-investigation assessment to include:*
    - *Production of a final report on the results of the investigation and their significance.*
3. *Deposition of the final report with the Greater Manchester Historic Environment Record.*
4. *Dissemination of the results of the archaeological investigations commensurate with their significance, including provision for a permanent information panel.*
5. *Provision for archive deposition of the report, finds and records of the site investigation.*
6. *Nomination of a competent person or persons/organisation to undertake the works set out within the approved WSI.*

Reason: To record and advance understanding of heritage assets impacted on by the development and to make information about the heritage interest publicly accessible pursuant to policies EN3 of the Manchester Core Strategy (2012) and saved policy DC20 of the Unitary Development Plan for the City of Manchester (1995).

Arrowsmith Investments Ltd commissioned Salford Archaeology to prepare a Written Scheme of Investigation (WSI) that outlined the programme of the historic building survey (Salford Archaeology 2023) The results of the survey and documentary research will inform the scope and programme of an archaeological evaluation, which will be set out in an updated Project Design. This report details the results of the historic building survey and watching brief during any demolition, stripping out, opening up of historic fabric and groundworks.

1.1.2. Research Aims and Objectives

The main aim of the historic building investigation was to provide a written, drawn and photographic record of Brunswick Mill, coupled with documentary research. This approach offset the impact of development on the archaeological resource of the development area and was in accordance with the national guidelines set out in the National Planning Policy Framework: Section 16- Conserving and enhancing the historic environment.

The objectives of the archaeological investigations were:

- to carry out an archaeological survey commensurate with an Historic England Level 2/3-type historic building investigation of the early 19th-century mill. This comprised the production of measured survey drawings, coupled with a comprehensive photographic record and a written description;
- to carry out an archaeological survey of the riverbank and tunnels within the mill complex. This comprised the production of measured survey drawing using a laser scanner where this is safe to do so;
- pending the results drawn from the historic building survey investigation, to carry out a watching brief to monitor and record any hidden fabric during aspects of the stripping out and demolition of the buildings;
- to carry out documentary research to elucidate the development of Brunswick Mill;
- to present the results of the historic building investigation in a fully illustrated report that provides an account of the mills' origins, development and use;
- to inform the design of an archaeological evaluation by trial trenching and allow a WSI to be produced and costs

calculated;

- to produce an archive for the project, and;
- to make the results of the work publicly available via the deposition of the final digital report with the Greater Manchester Historic Environment Record and OASIS, and securing an appropriate level of publication.

In addition, the historic building investigation may inform some of the research questions presented in the current North West England Regional Framework of the Historic Environment (The North West England Regional Research Framework 2025). It is envisaged that the investigation may potentially improve our understanding of the following research questions:

- *Ind04: How well do we understand the survival and significance of historic water management features for industrial purposes including power and textile processing?*
- *Ind58: How have industrial buildings adapted to new technology and processes?*
- *Ind61: What are the gaps in our understanding of power production sites in the North-West?*
- *Ind100: How do we capture the process of industrialisation?*

1.1.3. Historic Building Investigation Methodology

The historic building investigation was conducted following the CIfA Standards and guidance for archaeological building surveys (updated 2020) and was commensurate with a Historic England Level 2/3-type survey (Historic England 2016).

Photographic Archive: a comprehensive photographic archive for the building was produced utilising a high-resolution digital camera with a sensor size of at least 15 megapixels. All frames, excluding general contextual views, incorporated a graduated metric scale.

A plan showing the viewpoint directions of each photograph was produced, together with a full photographic index. The archive comprises the following:

- the external appearance and setting of the building, including a mixture of general shots and detailed views taken from perpendicular and oblique angles;
- general shots of the surrounding landscape;
- the general appearance of principal rooms and circulation areas;
- any external or internal detail, structural or architectural, which does not show adequately on general photographs;
- any internal detailed views of features of special architectural interest, fixtures and fittings, or fabric detail relevant to phasing the building.

Site Drawings: measured survey plans and elevations and key cross-sections of the buildings were produced utilising a combination of laser scanning, rectified photography, reflectorless electronic distance meter (REDM) and manual survey techniques. The resultant data was then used as the basis of CAD drawings, which are included within the final report as figures.

Written Description: a description of the historic structures was maintained to Historic England Level 2/3 standard. The records are an analytical record and provide a systematic account of the origin, development and use of the buildings, which include a description of the plan, form, fabric, function, age and development sequence. The written description includes a summary of the building's past and present use, an account of any key architectural features, fixtures and fittings, and a discussion of the relative significance of each individual component structure within the wider complex.

1.2. Setting

1.2.1. Location

The site (centred on NGR SJ 85830 98705) is bounded by Bradford Road, Beswick Street, and the Ashton-under-Lyne Canal in the Ancoats area of Manchester city centre and occupies a trapezoidal plot of land (Fig 1; Plate 1). The site lies at an approximate height of 26m aOD.



Plate 1: Recent satellite image of the site prior to the redevelopment, looking east

1.2.2. Geology and Topography

The solid geology of the area comprises Carboniferous sedimentary material and a series of Permo-Triassic rocks, consisting mainly of New Red Sandstone. The overlying drift incorporates Pleistocene boulder clays, and sands, gravels, and clays of fluviatile/lacustrine origin (BGS, 2025).

Topographically, the Manchester Conurbation as a region is within an undulating lowland basin, which is bounded by the Pennine uplands to the east and to the north. The region as a whole comprises the Mersey river valley, whilst the rivers Irwell, Medlock, and Irk represent the principal watercourses in Manchester (Countryside Commission 1998, 125). The Site lies on the south bank of the River Irwell, and occupies a fairly level terrace at a height of *c.* 26m above Ordnance Datum.

1.2.3. Designations

The Site does not lie in a conservation area, but does contains Brunswick, a Grade II listed building. The listed building description (HE list entry: 1197807) for this designated heritage asset reads:

“MANCHESTER SJ8598 BRADFORD ROAD, Beswick And Clayton 698-1/17/529 (South East side) Brunswick Mill GV II Cotton spinning mill, now various workshops and warehouses. *c.*1840, with some later C19 alterations. Constructed by the firm of David Bellhouse, but with possible involvement by William Fairbairn (the mill is planned according to principals which have been particularly associated with him). Brick with slate roofs, fireproof internal construction, with cast iron columns and beams, and transverse brick arches. Trussed wrought iron tie rods added to strengthen structure

when the mill was converted to use the heavier ring spinning machinery c1920. Built largely in a single phase to a courtyard plan, with main spinning mill alongside canal, 2 wings for spinning and ancillary processes including blowing and winding and a front block housing main entrance, and use for warehousing and offices. Main spinning mill is 7 storeys, and 28 bays with 2 rows of cast iron columns internally. Small rectangular windows with flat arched heads in each bay. External engine house (built to house 2 beam engines) at W of site. Advanced wings are also 7 storeyed, each of 6 bays. Semi-circular stair-cases in each wing, adjoining spinning mill. 4-storey, 20-window range *upper storey a later addition) to street links the 2 wings and encloses the yard; central entrance in wide segmental archway. 2-storey loading bays built in internal angles in yard. The mill is thought to be the first Greater Manchester mill to be converted to use mains electricity as its principal power source, and later additions include an electricity transformer house added in angle of W wing and spinning mill (electric motor towers built on inner face of main spinning block have been removed). A dust flue was also added as a tower to the We of the W wing. This was a large scale operation, a distinctive example of site planning and built as a single phase around a courtyard. Structurally and technologically conventional, but of interest as an example of adaptation to suit changing technologies, both in relation to power supply (the first mill in the region to be converted to use mains electricity), and spinning technology (the structure adapted to take ring spinning machinery)".

1.3. Historical Background

1.3.1. Introduction

1.3.2. Contextual Background to Manchester

Prehistoric Period

The current understanding of any human activity in Manchester during the prehistoric period is very poor, although it is reasonable to suggest that the Castlefield area, *c* 400m to the north-east of the study area, may have been conducive for late prehistoric settlement on account of the natural topography and its riverside location. However, physical indications for any such settlement are, at best, fragmentary and arguably the most convincing evidence was yielded from an archaeological excavation that was targeted on a plot of land adjacent to Liverpool Road in Castlefield (c 645m to the north-east). During the course of this work, two Mesolithic flints, one Neolithic/Bronze Age waste flake, and a single fragment of late Bronze Age/Iron Age pottery were recovered, although none was found in securely stratified deposits (UMAU 2002). However, there is no known evidence for prehistoric activity within the boundary of the study area.

Roman Period

The first military occupation of Manchester was established during the governorship of Agricola (AD 77-84), and commenced with a five-acre wooden fort, known as Mamucium (Bruton 1909). The site of this encampment is marked today by Camp Street in Castlefield, situated *c* 621m to the north-east of the present study area. During the 2nd century, the fort was developed in association with a substantial extramural settlement, or vicus, which expanded in both a northerly direction, and along the line of Chester Road to the south (Grealey 1974, 11), around *c* 890m to the south-west of the study area. Roads from the fort linked Manchester with Ribchester to the north, Castleshaw, Slack and York to the north-east, Wigan to the north-west, Northwich and Chester to the south, and Buxton to the south-east. The site occupies a position along the projected line of the Roman Road to Buxton.

Based on recent archaeological excavation and the distribution of chance Roman finds, the limits of this settlement appear to have extended northwards from the fort approximately Quay Street, westwards along Liverpool Road for c 100m from the north-west corner of the fort, eastwards across Deansgate to the area now occupied by the Beetham Tower, and south-west along Chester Road, terminating somewhere in the vicinity of Great Jackson Street, some *c* 424m to the north-east of the study area.

There have been a number of Roman finds on the south side of the River Medlock, in the vicinity of the study area. These include fragments of pottery recorded by Whitaker in the 1770s, and a tomb comprising a wooden coffin in a grave lined with tiles, found in 1832 at a location described by Charles Roeder as ‘evidently near Great Jackson Street’. In 1821, three sculptured stone were found by workmen, one identified as Cautopates, a figure associated with the worship of the Mithras, which may infer that a Mithraeum, or building used for the worship of the god, stood within the area. An altar to the goddess Fortuna Conservatris was also found in 1612, in the vicinity of Knott Mill, c 375m to the east of the study area, on the opposite side of Chester Road.

Medieval Period

There is very little archaeological evidence in the region as a whole that represents the period between the end of the Roman occupation and the Norman Conquest. The area around Manchester came under the control of several kingdoms during this period. In AD 620, Edwin conquered and occupied Manchester, and it may have been at this time that settlement in the town was established around the cathedral (Farrer and Brownbill 1908).

In AD 919, the Anglo-Saxon king Edward the Elder established a fortified base, or burh, at Manchester, which was then part of Viking Northumbria. It has been suggested that the burh lay within the area around the cathedral, but recent research favours it being at the Roman fort in Castlefield. However, the area of the cathedral had become a new focus for settlement by the late 11th century, and the site occupied presently by Chetham’s School is thought to have been the site of a castle founded by Manchester’s Norman barons.

Following the Norman Conquest of 1066, William I assigned most of the land between the Ribble and Mersey rivers to Roger of Poitou, who retained the manor of Salford demesne (Tupling 1962, 116), but divided the remaining land into several fiefdoms (Kidd 1996, 13). The largest of these was the landholding centred on Manchester, created by the grant of extensive lands in the hundreds of Salford, Leyland and West Derby to Albert Grelley (Tupling 1962, 116).

By the 13th century, the Grelley family had established a manor house at the confluence of the rivers Irwell and Irk, located over 1km to the north of the study area, and the medieval town grew up around it (Hartwell et al 2004, 256). It was from this hall that they governed both the manor and the extensive barony.

Post-medieval and Industrial Periods

By 1539, John Leland was able to describe Manchester as the 'finest and busiest town in the whole of Lancashire, with the best buildings and the greatest population' (Chandler 1993, 263), at a time when the textile industries in south Lancashire were beginning to flourish. From the early 17th century, Manchester emerged as a centre for the textile finishing processes, as woollen cloth was brought in from outlying areas for bleaching and dyeing. Most importantly, however, Manchester expanded its role as a market centre for textiles produced in the region and, by the 1790s, Manchester's thriving export market was beginning to displace London as a centre of overseas trade in cotton cloth (Edwards 1967, 176).

During the 18th century, south-east Lancashire as a whole was predominantly an agricultural area of isolated settlements and market towns, with the growing town of Manchester at its centre (Williams with Farnie 1992, 3). By the 1780s, the national demand for textiles, particularly cotton, began to rise, resulting in a dramatic increase in mill building that transformed Manchester into a centre of the factory-based cotton manufacturing industry of international repute (Baines 1835). This process of industrial development was facilitated greatly by the introduction of canals, which provided the first efficient means of transporting bulk loads of goods.

The first true industrial canal in Britain was that built by the Duke of Bridgewater, which was completed from his mines at Worsley to Manchester in 1764, the terminus of which was at Castlefield (Hadfield and Biddle 1970). This economic climate was linked to a rapid growth in the town's population; in 1773, an estimated 22,481 people lived in Manchester, but this figure had more than tripled to 75,281 by 1801 (Lloyd-Jones and Lewis 1993). By the beginning of the 19th century, the industrial sectors of Manchester were developing rapidly, and a commercial boom between 1800 and 1802 saw the number of cotton-spinning firms in the township of Manchester double from 51 in 1799 to 111 in 1802 (Williams with Farnie 1992, 19).

1.3.3. Overview of the Development of the Cotton Industry

The technical revolution in the cotton-spinning industry during the second half of the 18th century transformed the economic and social structure of the region. At the beginning of this period, the manufacturing processes of spinning and weaving were still based upon the country cottage. By the end of the century, the industry had expanded to an incredible extent; between 1780 and 1800, imports of raw cotton into Lancashire increased from 5-6 million lb to 50 million lb *per annum* (Deane and Cole 1962, 52), and the number of spindles in operation increased from an estimated 1.7 million in the early 1780s to 4-5 million by 1812 (Baines 1835, 226).

By 1815, 90% of Britain's cotton industry was located in Lancashire (Holland 1976, 43). There were numerous reasons for this phenomena: local workers were experienced in textile manufacture, there were few restrictive guild regulations as cotton was a relatively new industry, the favourable climate, the availability of pure water for bleaching and calico printing, abundant coal for steam power, plenty of female and child labour, existing trading links and a good and easily accessible port in Liverpool. The growth of the export trade, especially to Europe, continued to grow during the second decade of the 19th century. The export of twist and yarn, for instance, rose from £794,465 in 1812 to £1,119,850 in 1814, and then to £2,022,153 by 1820 (Lee 1972, 57).

The onset of the American Civil War caused severe problems for the English cotton industry as the blockade of America's southern ports by the Federal navy cut off the supply of raw cotton on which Lancashire's mills depended. This resulted in the Lancashire Cotton Famine of 1862-64. During this period, raw cotton increased in price from 9d per lb in 1861 to over 2s in 1863 (Holland 1976, 142). From the peak of the famine in 1862/3, unemployment fell, but not until the end of the war, in April 1865, was normal working resumed.

Lancashire dominated the English cotton industry into the 20th century; during the early years of the 20th century, it has been estimated that some 76 per cent of the cotton operatives of the United Kingdom were within Lancashire (Chapman 1905, 37). The cotton industry reached its peak in 1914, with India, the largest single customer, buying 3,000 million yards of cotton cloth (Holland 1976, 142). However, Manchester's share of the industry declined; a total of 2,666,000 spindles were operative in Manchester and Salford at the beginning of the 20th century, compared to 11,603,000 in Oldham and 5,035,000 in Bolton (Chapman 1905, 41). Nevertheless, Manchester remained pre-eminent as a centre for the production of fine yarn, whilst Oldham was associated with coarse and Bolton with medium yarn (Walmsley 1893, 79).

Despite cotton remaining to be Britain's leading export until 1938, the industry declined rapidly between the wars, largely through a fall in exports. Countries that had formerly provided lucrative markets, and particularly India, developed their own mills. Japan captured many former British markets in China and the Far East, and the imposition of tariffs by America and Brazil caused further damage to the export of British cotton goods. A short boom period began in 1945 as a result of shortages caused by the war, but after 1952 British cotton textiles faced intense competition from manufacturers in the Far East. More seriously, however, was the widespread manufacture of man-made fibres; by 1962, 40% of British cloth production was in man-made fibres (Holland 1976, 278). The textile industry declined rapidly thereafter, and many of the textile mills fell into dilapidation or dereliction.

1.3.4. Development of the Site

The site of Brunswick Mill, before 1826, appears on available 19th-century maps as open agricultural land and is shown on Pigot's Plan of Manchester and Salford in 1813 (Plate 2) and Swire's map of 1824 (Plate 3). The site was bounded to the north by Bradford Road and to the south by the Ashton-under-Lyne Canal which was completed in 1796 (Plate 2).



Plate 2: Extract from Pigot's map of 1813, with an arrow marking the site



Plate 3: Extract of Swires Map of Manchester and its Environs, 1824, showing the site boundary

The initial development of the wider site incorporated an early mill named “Pooleys Cotton Mill” shown on Bancks & Co.’s map of 1832 to the south-west of the site (Plate 4). Constructed in 1826 by engineers Fairbairn and Lillie for Charles Pooley, the mill is thought to have been steam-powered. The firm of Fairbairn and Lillie, which originated in Manchester, was also responsible for the construction of iron steamboats. Later, due to their success, they relocated to London. In 1839, they pivoted the business to focus on the construction of railway locomotives.

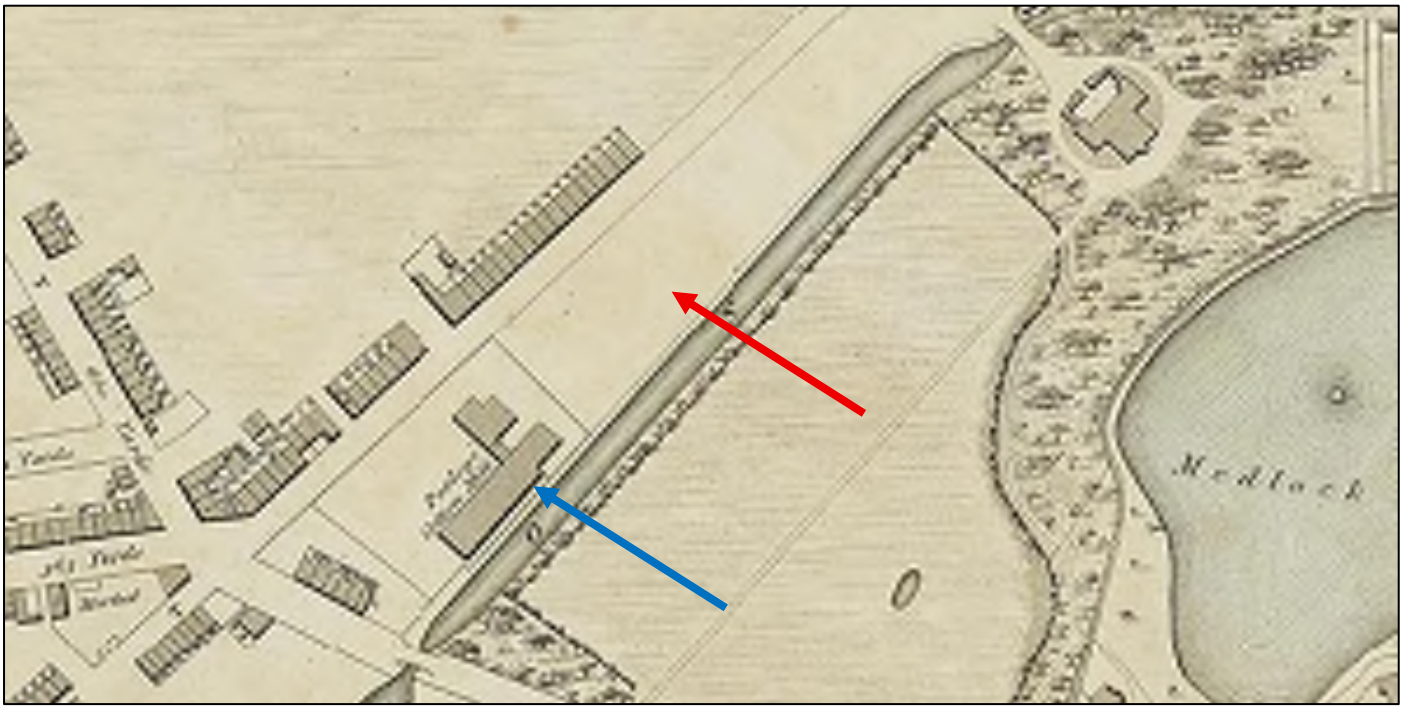


Plate 4: Extract of Bancks & Co.'s plan of Manchester and Salford,1832, showing the position of Brunswick Mill with a red arrow and Pooleys Mill with a blue arrow.

Bancks & Co's map also shows a development of terraced buildings at the south-east side of the site, which may have been workers' cottages, given the proximity to the mill buildings. The early function, layout and operation of Pooleys Mill remains obscure and is not indicated by the map; however, the proximity to the Ashton under Lyne Canal to the south-west would no doubt have influenced the location of the steam-power plant, which may have been located within one of the buildings at the north-east section of the site. At this time (1832), the land to the north-east of the site remained undeveloped.

The initial development of Brunswick Mill can be traced through historic documentation via a set of deeds covering the period between 1836 and 1844, which record an initial release of the site north-east of Pooley's Mill (Plate 4) from Sir Oswald Mosely to David Worthington in 1836 for 5084 sq. yards and a rent of £105.18.4 (Plate 5) then to Charles Pooley, Alexander Kelly and J. Gilmour in 1837 (Deeds of 1839).

Kelly and Gilmour are recorded in extant trade directories as cotton spinners and as early partners with Charles Pooley; however, this partnership was dissolved in 1837, after which Kelly and Gilmour formed a separate partnership in 1839 (Williams and Farnie 1988).

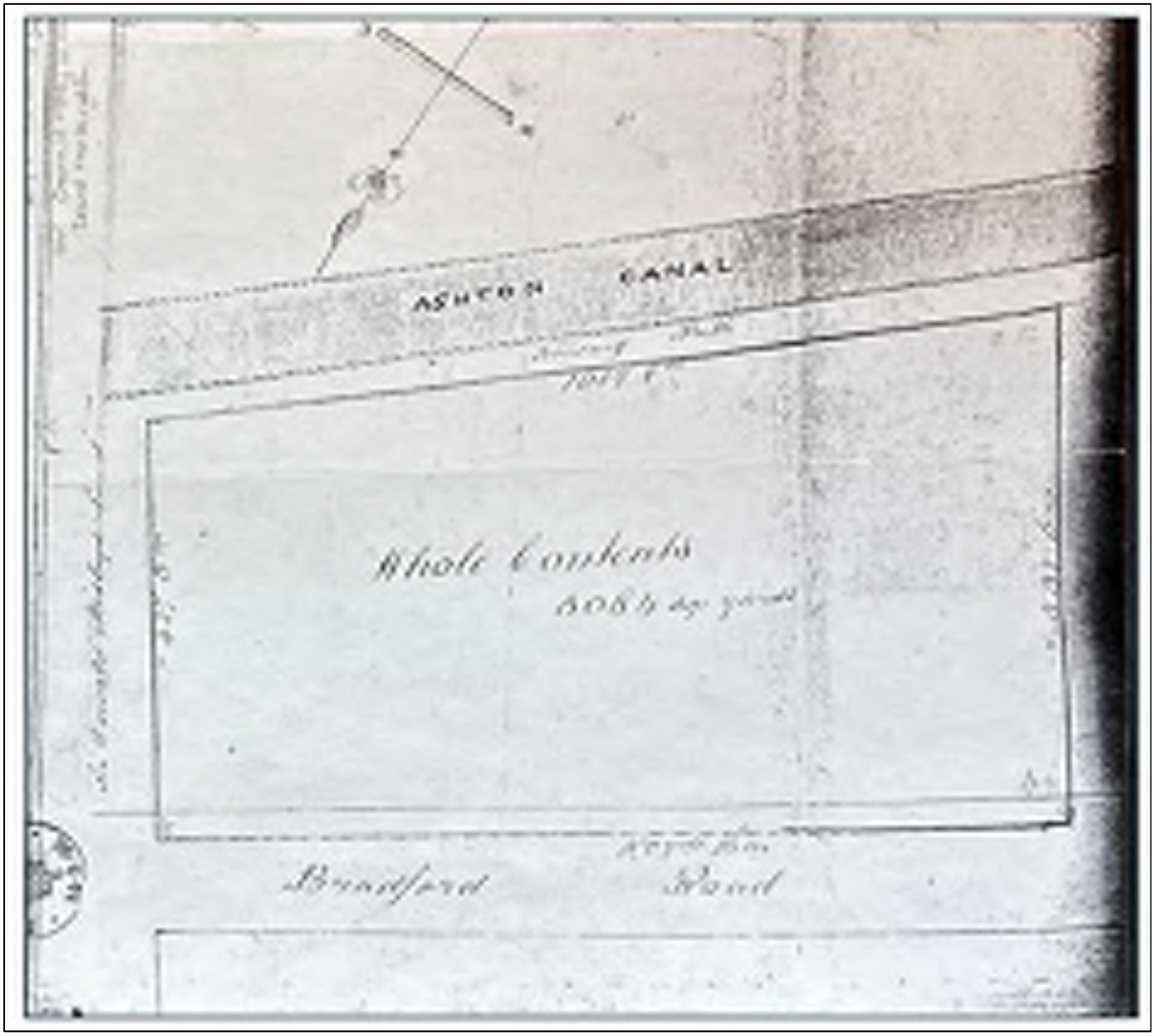


Plate 5: Document 2. Release of Plot of Land at Ancoats Town. Sir Oswald Mosley to Mr David Worthington, 19 March 1836. *Williams, Michael: Brunswick Mill, Manchester. © G.M.A.U. The Greater Manchester Textile Mills Survey, 1988, GB 133 CMS 2/4/3/4/2 Folder 5 of 7, NMR 53304/SMR 12051, University of Manchester Special Collections (ELGAR), University of Manchester*

The plot was split between Pooley and Kelly/Gilmour; however, in 1838, the land was again merged into a single plot, which was released to Kelly and Gilmour as the location for Brunswick Mill. It is thought that the construction of the new mill was between 1839 and 1844.

The surviving deeds also included a specification for works to be completed as part of the construction of a seven-storey fireproof mill, naming David Bellhouse Jr. (1792-1866) as the probable building contractor. The specification is reasonably detailed and includes building instructions for bricklaying such as the use of Flemish bond, stonework, carpentry and joiners works, smith and foundry work, plumbing and glazing work, plasterer and painter work and a general section detailing instructions on the expected build and materials quality, the sourcing of scaffolding and a note about how any alterations to the schedule should be managed (1856 Schedule).

Before arriving in Manchester in 1786, the origins of the Bellhouse family are obscure. David Bellhouse Sr. (1764-1840) is reported to have initially worked as a joiner, according to a family biography (Bellhouse Jr., 1992); however, he appears to have taken advantage of the building boom that emerged as part of the Industrial Revolution in Manchester.

A period of speculative land acquisition and building construction, including at least 45 houses in the Castlefield area of Manchester. A significant development for the Bellhouse's was the development of the Rochdale Canal, which, when terminated at Piccadilly Wharf in 1801, enabled David Bellhouse Sr. to establish a successful timber business.

This is an early innovative example of a vertically integrated business, one where the business not only supplies the labour for constructing buildings but also the raw construction materials too. Bellhouse Snr. next acquired a brickyard on Oxford Road in 1810, an iron foundry around 1815, and a steam-powered sawmill on land near the canal in the following year. The last vertical integration move came with the acquisition of a steam tug and several barges, allowing Bellhouse Snr the means to transport timber from Liverpool by canal, thus giving him significant control over the entirety of the supply chain except for timber felling. This period also saw the gradual introduction of five of his sons into the family businesses, including David Bellhouse Jr. This general early 19th-century trend of vertically integrated business operations may have helped accelerate the emergence of the 'Master Builder', a contracting development where a single contract was issued for building construction rather than previous arrangements, which typically issued contracts for each construction phase.

David Bellhouse Snr further expanded the range of buildings his firm constructed to include factories, warehouses, and large public buildings. Among these were several mills, which he is thought to have speculated on, including the eventual ownership of a cotton mill in Chorlton-on-Medlock, built in 1803 (Clark 1978). By the end of the Napoleonic wars, David Jnr had joined the business, and both Bellhouse's Snr and Jnr were regarded as significant figures in the speculative construction of warehouses. Between 1816 and 1820, David Bellhouse Snr retired from the business, with David Jnr taking over the firm, which continued to expand.

David Bellhouse Jr. continued the vertical integration of the business by taking on a directorship of Union Plate Glass in St. Helens in 1836. However, the construction and maintenance of houses remained the core business. The expansion of railways in the 19th century provided Bellhouse with the opportunity to expand its warehouse construction business. His career was not, however, without controversy; in 1824 Islington Mill in Salford, which was a six-storey mill built for Nathan Gough collapsed, with blame apportioned to a flaw in the cast-iron beams to the upper-floors (BB Heritage Studio 2018). Despite this, by 1850, Bellhouse is reported as one of the largest builders in the country with over 500 men under employment.

One interesting but less-reported aspect of Bellhouse Jnr's career was the role of 'consulting engineer,' which included work as a surveyor and valuer, often deployed as a court witness for property damage cases. It was perhaps through this adjacent occupation that he met or had the opportunity to work with William Fairburn, a Manchester engineer with whom he worked on the examination of the collapse of Oldham Mill and is reported to have consulted with on the construction of Brunswick Mill (Bellhouse Jr., 1992).

The specification of a fireproof mill is noteworthy, as is Fairburn's relationship with David Bellhouse Jr, and deeds to the Mill suggest that the approval of the cast-iron beams and columns used in the mill and referred to in the 1837 specification was contingent upon sign off noting *"the columns of the several thicknesses of metal and according to patterns which are to be submitted to Mr Fairburn for inspection and should Mr Fairburn agree hereafter to decrease or increase the weight of each or any individual Beam Skewback or Column then such increases or deduction to be allowed or changed as the case may be."*

An early hand-drawn plan of the first phase of the mill appears in the Manchester Guardian in July 1841, showing an 'L' shaped configuration comprising a seven-storey wing to the south of the site and a three-storey warehouse extending north towards Bradford Road (Plate 6). The drawing does not show the position of the engine house, however even at this early stage it is most likely situated against the western gable of the spinning block. The warehouse was also shorter, stopping approximately 28ft from the Bradford Road (Plate 6).

The wing was heightened to the five-storeys and extended to meet with Bradford Road in 1841. However, whilst nearing completion the wing collapsed and killed four people (SLHA 2021). An article in the Manchester Guardian dated 10th July 1841 reported that "*…the workmen resumed their labours as soon as the place was deemed safe*" and were helped by an estimated 200 men, including police who helped to clear bricks, ironwork and timber from the site that same day. The article also reports that the cause was due to wet weather stating that the "*mortar to the new brickwork failing or being complexly washed away*" (Manchester Guardian 1841).

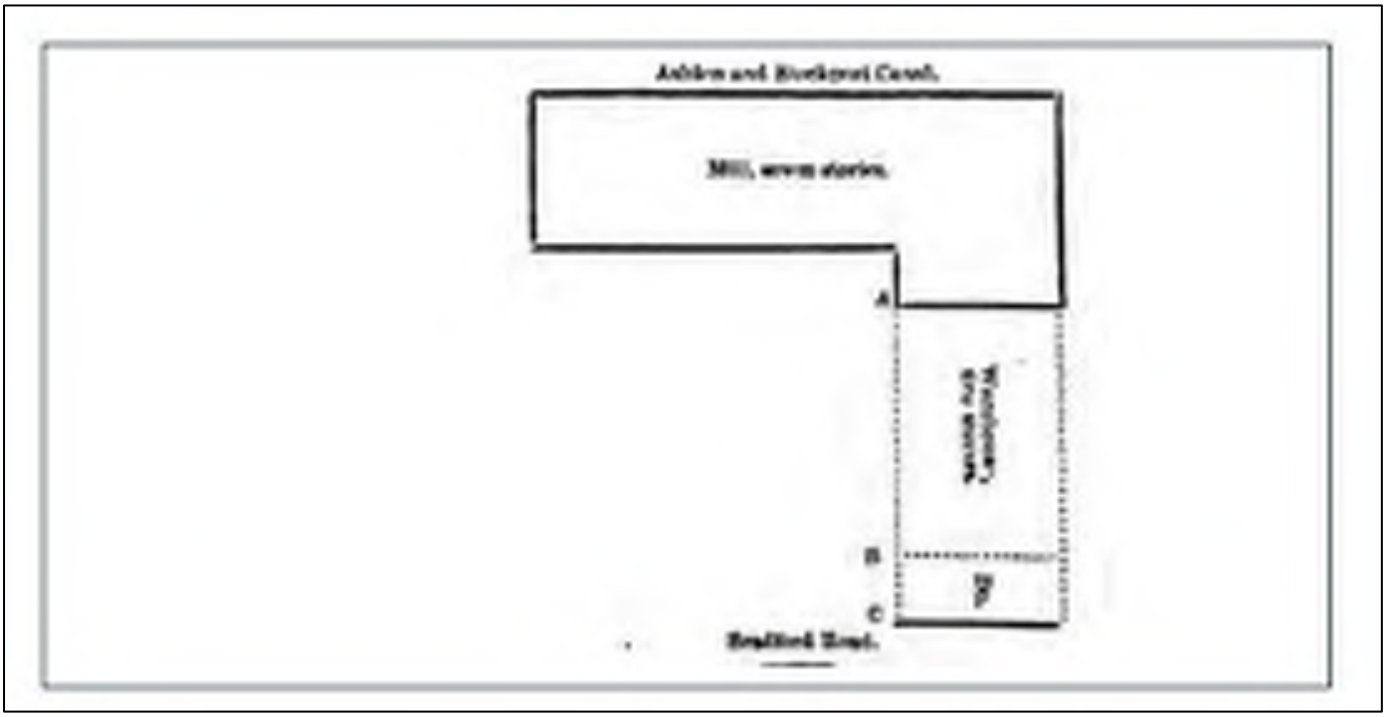


Plate 6: Hand-drawn plan of the initial Brunswick Mill development.

After the collapse it was decided to rebuild the mill and wing and by 1842 the rebuild included the extension of the plan form into a quadrangle, with an additional wing to the north and an office/warehouse building to the west. it was decided to build the wings to seven storeys, matching the height of the spinning block. An article in the Bath Chronicle and Weekly Gazette dated 11th August 1842 reported that "*…the New Brunswick Mill, Bradford Road, belonging to Messrs, Kelly and Gilmour*" (Bath Chronicle and Weekly Gazette 1842).

However, Pigot's and Slaters Map of 1843 indicates that the L-shaped building remained extant. The map depicts the spinning block fronting the Ashton Canal, with the western wing having been extended towards Bradford Road (Plate 7). It also identifies the location of the engine house projecting from the south-eastern elevation of the spinning block, as well as the position of the chimney at the north-western corner of the site (Plate 7). This plan form seemingly relates to the 1841 extension prior to the collapse of the western wing and subsequent rebuilding.



Plate 7: Extract of Pigot and Slater Plan of Manchester and Salford with Vicinities, 1843, showing the early development of Brunswick Mill with a red arrow

The Ordnance Survey map of 1845 is the first map to depict Brunswick Mill as a trapezoidal building plan located to the east of Pooley's Mill (Plate 8). The constrained shape of the plan is due to the site being bounded on the south by the Ashton-under-Lyne canal and to the north by Bradford Road. This may be due to the original boundary restrictions attached to the land lease, which were historically complex to alter, so builders typically built within the available land and plot configuration. The map also depicts a further building to the eastern elevation of the spinning block. This was the Waste House that was constructed in 1844.

This new layout continued throughout the mid-19th century as depicted on the Ordnance Survey Map of 1845 and Adshead's map of 1851 (Plates 8 and 9). Adshead also notes the mill as 'Kelly and Gilmour Brunswick Mill' (Plate 9). The trade directory references to Kelly & Gilmour Mill appear in Pigot & Son's General Classified & Street Directory of Manchester and Salford, 1841, Slater's General & Classified Directory & Street Register of Manchester & Salford, 1845, Manchester Mercantile & Manufacturing Directory, 1855 and Slater's directories of 1861 and 1869.



Plate 8: Extract from the Ordnance Survey Map 1845, with a red arrow showing Brunswick Mill

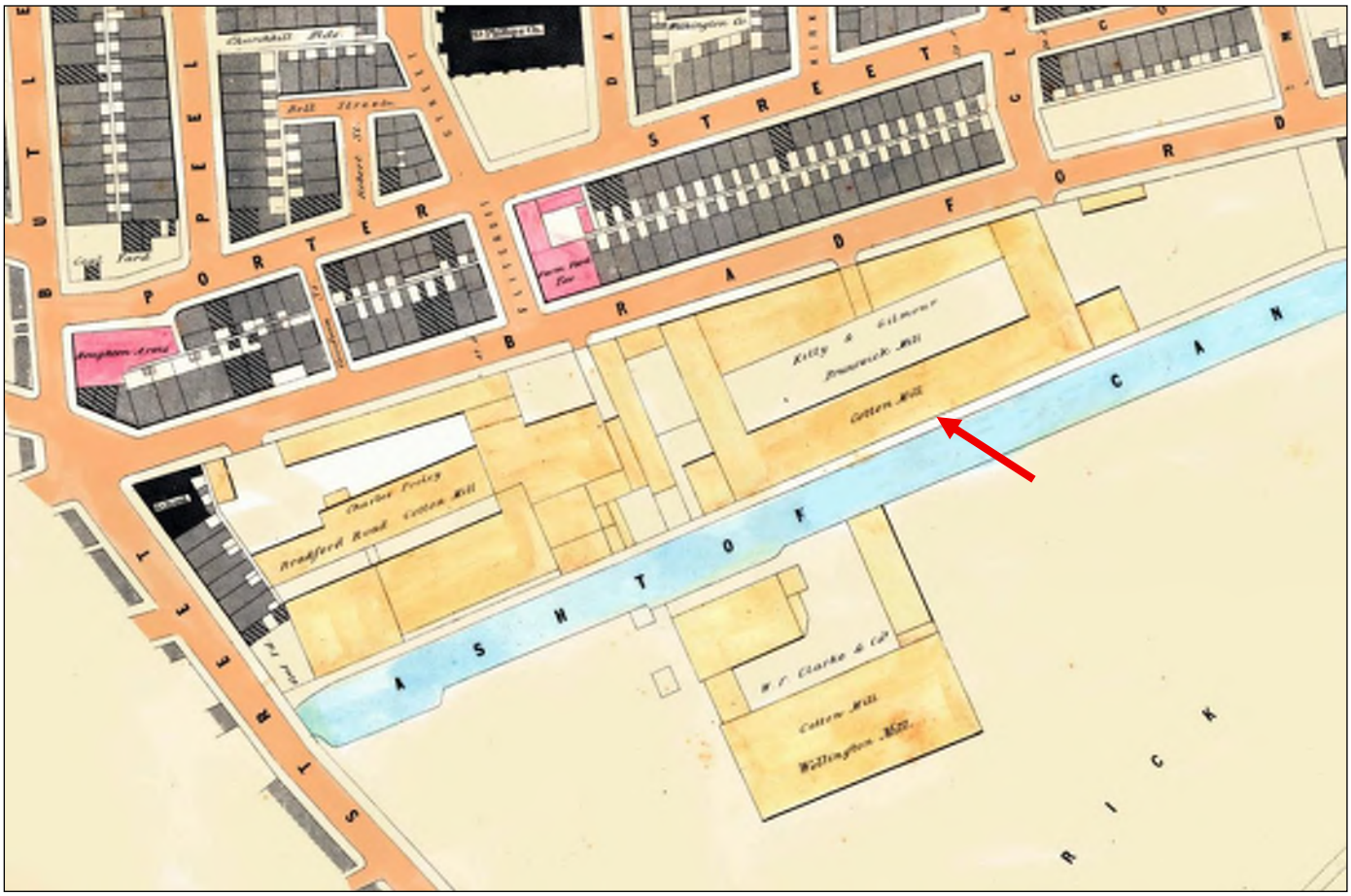


Plate 1: Adshead map of 1850, with a red arrow showing Brunswick Mill

Following Kelly's death in 1856, his share of the business was bequeathed to Gilmour. The accompanying schedule details both the equipment and its assessed financial value, which provides significant insight in to the early operational dynamics of the mill and the allocation of space within the complex. At an estimated value of £29,779, the equipment can be broadly categorised as follows:

"76,992 self-acting mule spindles, which enabled the mass production of high-quality and strong yarns and textiles by semi-automating the spinning and winding process onto a spindle through a complex roller beam mechanism. Two hundred seventy-six carding engines, designed to disentangle raw fibres through rotating cylinders and align the fibres into parallel strands before spinning them into yarns. Eighty-one roving frames, used to process thick fibres into thinner, twisted, and stronger roving strands before winding them onto bobbins. Twenty drawing frames, designed to combine multiple strands of fibres into a single uniform strand via a series of moving rollers. Fifty slubbing frames, intended to straighten fibres before spinning, and after being processed through the drawing frame, and one hundred twenty-nine cop reels, designed as winding machines for winding yarn onto bobbins" (Schedule of 1856).

The power system used within the mill in 1856, housed in the external engine house, is described as a double-beam engine (Williams, 15). Outlined in the 1856 schedule, the summary lists forty-seven-inch low-pressure cylinders and twenty-six-inch high-pressure cylinders connected via spur wheels. The boilers powering the engine were within an internal boiler house attached to an external coal shed and platform, which are annotated in the Ordnance Survey Map of 1851 (Plate 10).



Plate 10: Extract for the Ordnance Survey Map of 1851

In 1856, the mill was mortgaged from J Gilmour to William Young and James Bannerman. Gilmour is still listed as the occupier of the Brunswick Mill in 1861 (Slater, 1861). However, due to a failure to repay the mortgage on the site by 1865, the mill was conveyed in its entirety to the Bannerman Mills Company, a manufacturing subsidiary of Henry Bannerman & Sons.

Henry Bannerman was a former farmer from Scotland who, sensing opportunities in the developing textile industry in Manchester in the nineteenth century, diversified to form Henry Bannerman & Sons. Early interests were as textile merchants with a diversification into cotton spinning in 1864. Brunswick Mill was one of four complementary textile operations to be acquired, covering both spinning and weaving; however, these operations were likely managed as a single concern by 1880.

The Cotton Spinners & Manufacturers' Directory of 1884 lists BANNERMAN, H. AND SONS, Brunswick Mill, Bradford Road, Ancoats, 80,000 spindles. Further trade references for Bannerman Mills Co. Ltd appear in Worrals trade directories in 1887, 1889, 1892, 1898 and 1910.

The mill, under Bannerman's ownership, appears to have achieved a scale that surpassed the scale of the operation under Gilmour. Bannerman Order Books covering 1889-1897 and orders placed with Platts of Oldham indicate that a programme of mill equipment modernisation was taking place in the late 19th century. Although an earlier renewal is said to have occurred in 1884, it is not documented in the 1889-1897 order books.

Modernisation included the addition of new mules, preparatory equipment and a second steam engine. Orders were also placed for replacement scutchers, carding machines and mules up to 1308 spindles, which exceeded the length of the spindles documented in the 1856 schedule. In contrast to many late 19th-century mills with a transverse mule arrangement, which necessitated a significant reorganisation of the internal floor plan to accommodate the new, longer mules, requiring a longitudinal layout, it is thought that the wider space within the Brunswick main spinning mill avoided this need for modification.

The degree to which the mill operation achieved the same complete level of vertical integration as the building business of David Bellhouse is open to interpretation. An account in the Illustrated London News from July states, "*The firm thus not only manufactures some of its own yarn into goods but sells yarn to other manufacturers, though whose looms it, in the form of finished fabrics, ultimately reach the warehouse in York Street, Manchester*."

Other alterations to the mill by the Bannerman by the Ordnance Survey Map of 1893 (Plate 11) were the addition of two loading bays within the mill yard attached to the front block. The western bay may have fulfilled a complementary function for the Western Wing as an ingress point for raw cotton and as a preparatory function for the spinning activity in the West Block. The eastern bay may have functioned as a facility for the removal of spun yarn from the facility. Additional warehousing sheds were also added to the east of the site (Plate 11). The external boiler house was also added to the site, probably before 1889, and would have been located within the area of the coal shed and platform.



Plate 11: Ordnance Survey Map of 1893

In 1906 plans were drawn up to modify the newer engine house within the courtyard (Plate 12). The plan also shows the existing layout of the site which included three boiler beds within the boiler house along with a 'coal bunker' to the south (Plate 12). However, these plans were abandoned, and it was decided to replace the steam-generated power with electricity in 1907. An article in the Manchester Courier reported the mill was about to be equipped with a *"complete electric lighting and power-generating plant"* (Manchester Courier 1907). This resulted in Brunswick Mill becoming the first mill in Manchester to be powered by electricity (SA 2021).

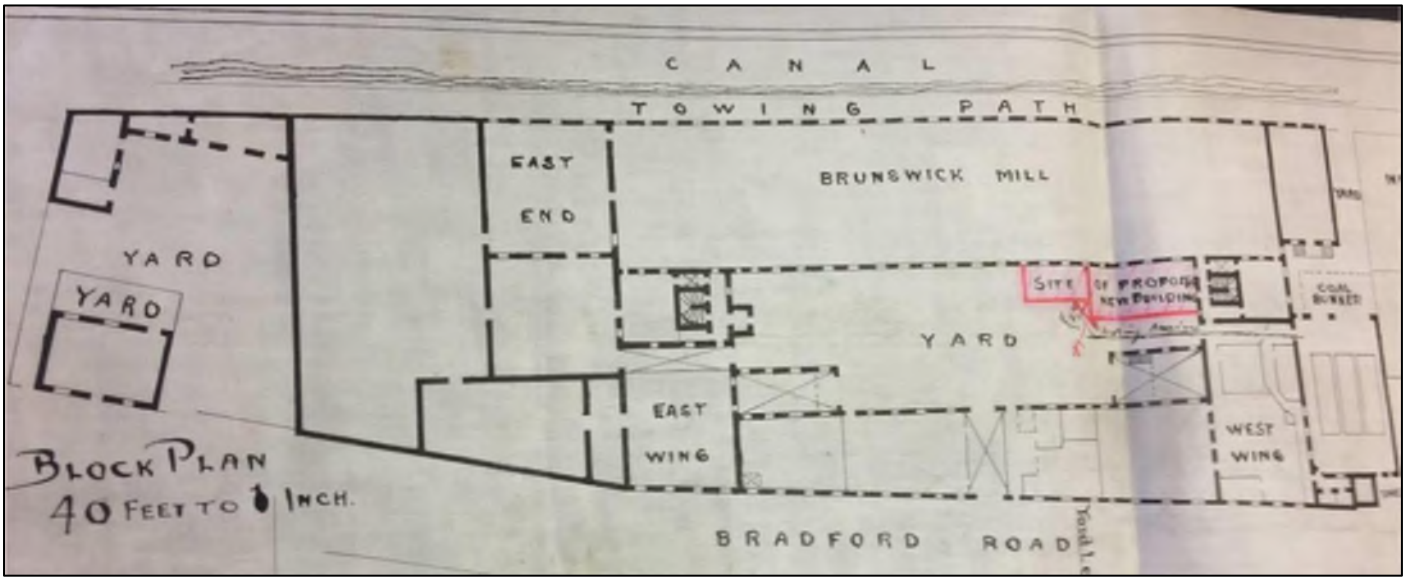


Plate 12: The 1906 ground floor plan, showing the proposed location of the new engine house which was never built

Electrification was completed by 1908 and was undoubtedly the most significant and complex alteration to the mill. Described in the Illustrated London News on 10 July 1909 as *"This conversion of an old-established mill, in continuous and successful operation for several generation, to the latest modern conditions, by the installation of electric power for driving the machinery that prepares and spins the cotton is a unique achievement, characteristic though it is of the enterprise and courage which have invariably distinguished the career of the Managing Director. For it required considerable courage to place the continuity of the running of the mill in the hands of an outside source of power, even though that be the Electricity Department of the City of Manchester"* (London News 1909).

The work was conducted by the British Thomson Houston Company, Ltd of Rugby, working in collaboration with the Manchester City Electrical Engineer, and principally consisted of replacing the two steam engines, including the gears and driveshafts, with electrical motors.

The question of production downtime during the electrification of the mill was also carefully considered and led to the decision to adapt an arrangement of two independent motor towers (Plate 13) adjoined to the main spinning block within the yard. The two motor towers each housed ten motors, allowing for two motors per spinning room. Power to other parts of the mill was supplied using some of the original mill drive shafts, which were connected to motors of different power ratings, depending on the requirements of that part of the mill operation. A small transformer house contained the electrical sub-station powering the mill.

During the remodelling, the firm installed a powered sprinkler system. This included the erection of a water tank on top of the eastern motor tower. The supply of water was provided by an electrically-driven pump, which had the capacity to raise 650 gallons of water a minute to the reservoir tank (SA 2021).

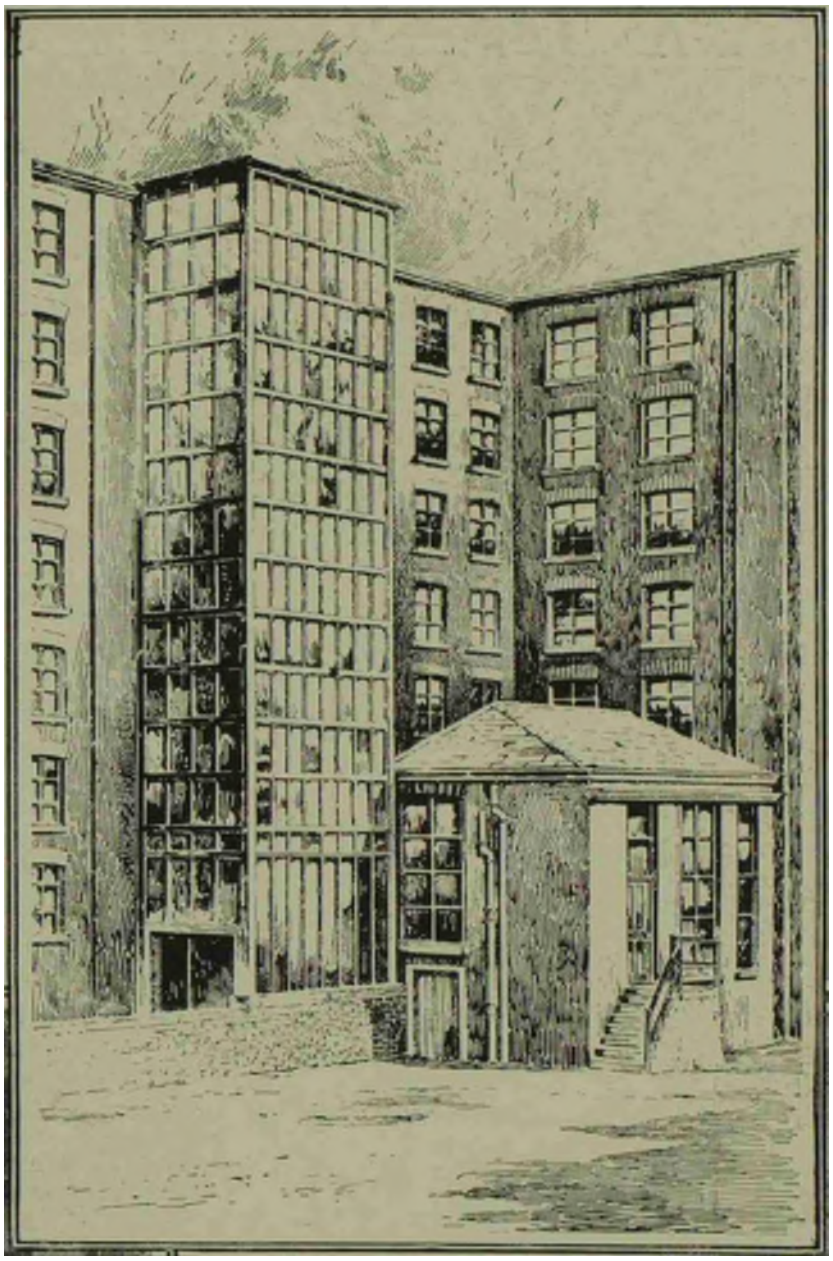


Plate 13: Motor Tower. Brunswick Mill from the Illustrated London News, July 10, 1909, p. xvii

At some point during this period, a large rectangular external dust flue was added to the western end of the Bradford Road block. This had a decorative and distinctive castellated top, with the dust chamber at its base inserted into the former boiler house. An additional storey with a flat concrete roof was also added to the Waste House. The east end wall of this storey contained six windows, in contrast to the lower storeys that had none.

Other modifications to the mill complex at this time included the replacement of all the original roofs. Also, the original cornice around most of the main walls were replaced with terracotta embellishment. Single-storey sheds with multi-aisle roofs were added to the eastern end of the site during the late 19th century. These were attached to the East Wing Mill and enclosed the ground floor of the Waste House. The precise function of these structures is uncertain, although they are likely to have been intended for storage and warehousing purposes. The following year, a trade directory accredited Brunswick Mill with 23,000 ring spindles, together with 46,500 mule spindles (Worrall 1910). This demonstrates that the process of replacing the traditional mule with the ring frame which dominated the final years of cotton spinning in Lancashire had been implemented at Brunswick Mill by the first decade of the 20th century.

In c.1919 the Carron Company Ltd of Falkirk fitted an “electrical” kitchen at the mill as well as at Bannerman’s warehouse on York Street and at their mill in Stalybridge. An article for The Electrical Journal on the 20th February 1920 explained

that workers were adopting a system of welfare in their factories. It recorded that *"one of the most satisfactory ways in which this can be done is to establish a canteen so that workers can obtain an adequate and well-cooked meal in the middle of the day".* It also records that the Carron Company installed a three-oven range, boiling table, a griller and a hot cupboard (Plate 14).

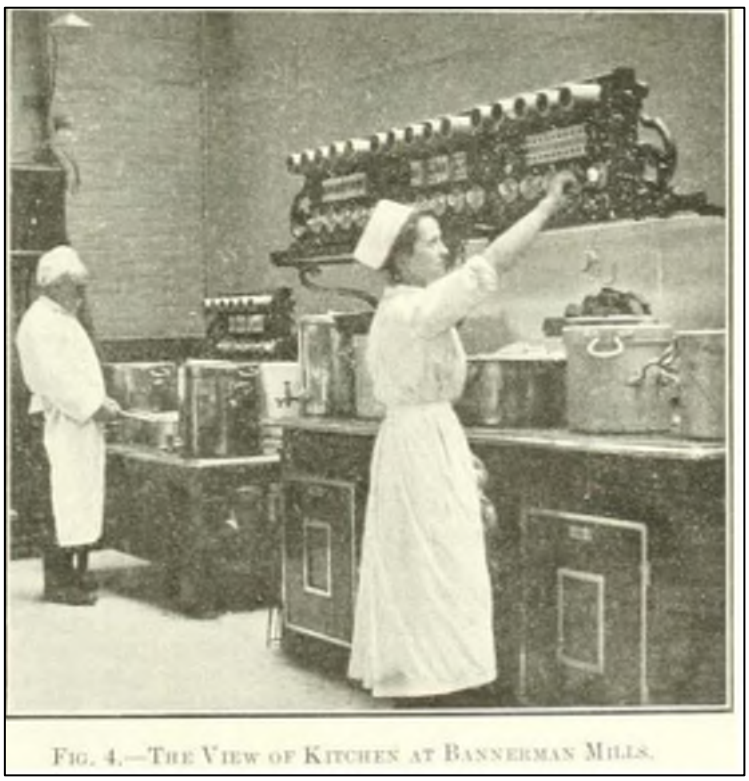


Plate 14: The first electrical cooking apparatus installed at Brunswick Mill

A visit to the mill by a representative of the *Empire Mail* in 1925 resulted in the publication of a useful article that described the mill at this time. The newspaper correspondent was clearly impressed with the scale and magnitude of the factory, commenting that 'it is one of the most interesting cotton mills in the country, one of the oldest and largest and best equipped' (*Empire Mail* 1925). The article also notes that the Bradford Road block had been raised to four storeys by 1925, and this incorporated a flat concrete roof with a row of inclined sky-lights.



Plate 15: An engraving of Brunswick Mill published in 1926

Trade references for Bannerman (Henry) and Sons appear to run up to 1924 in Skinner's Cotton Trade Directory of the World; however, Bannerman Mills Co. Ltd. is reported as having been wound up voluntarily, with the business merged into Henry Bannerman and Sons. The 1927-28 Skinner's Directory lists Brunswick Mill as registered under Bannerman (Henry) and Sons, and no further trade references are found for Bannerman Mills Co. Ltd.

Skinners' 1929 directory references the Lancashire Cotton Corporation Ltd as constituted in 1929 and "in the process of amalgamating cotton spinning and weaving companies". The Lancashire Cotton Corporation Ltd replaced the spinning mules with ring-spinning frames, presumably as part of a programme of modernisation in the face of increasing foreign competition. Ring-spinning frames were somewhat heavier than spinning mules, necessitating the strengthening of the original cast-iron floor structure (Jones 1985, 183). This was achieved by installing a system of trussed tie-rods mounted beneath the beams on short vertical brackets.

Goads Fire Insurance Map of 1928 shows both Lancashire Cotton Corp Limited notated over the main spinning mill with Henry Bannerman notated over the front block, suggesting an element of sub-letting had taken place (Plate 25). The map also shows the main block adjacent and parallel to the Ashton Canal to have been of seven-storeys, with brick-arched floors. The two wing blocks are similar shown to have been of seven-storeys high, with a 100ft high chimney situated on the Bradford Road frontage against the western wing (Plate 16).

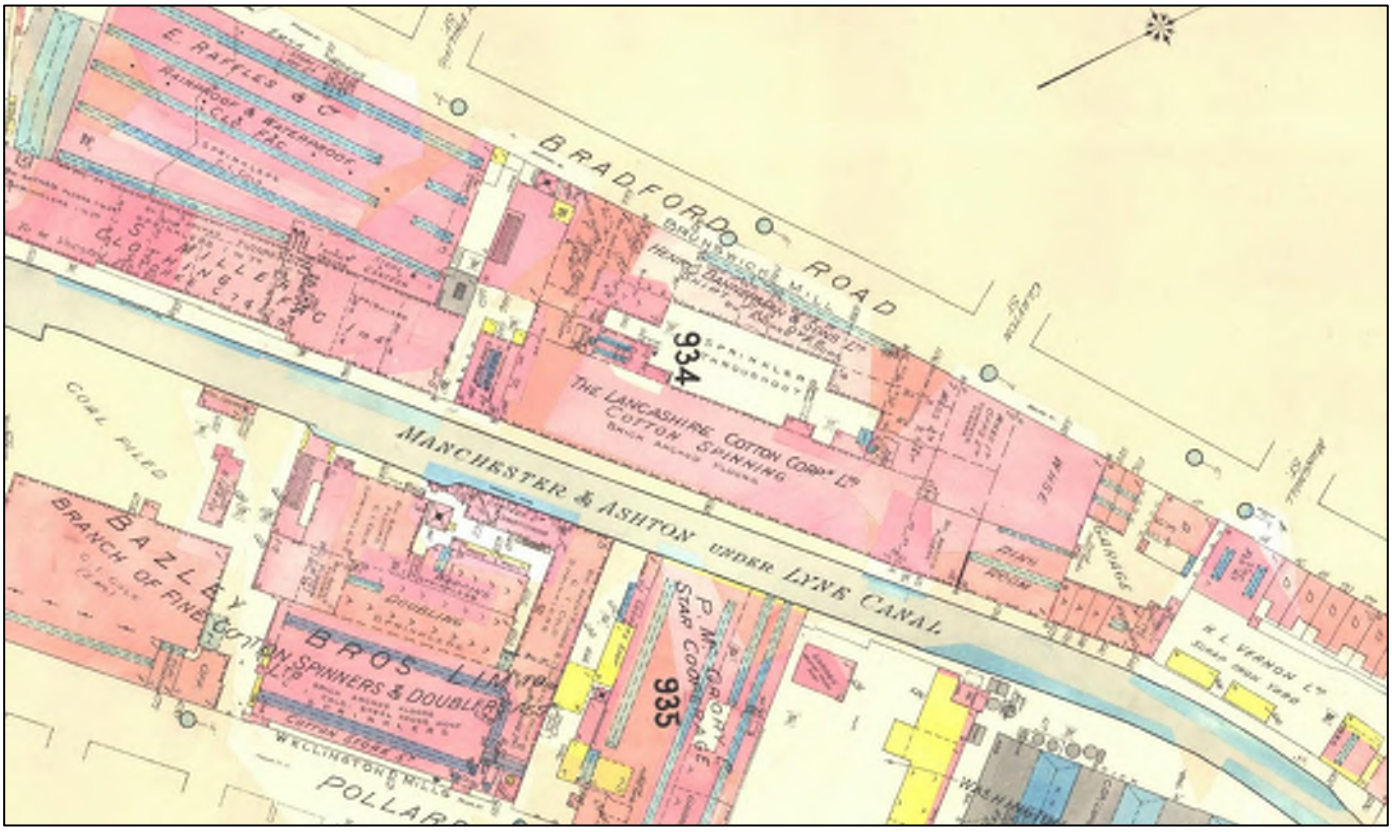


Plate 16: Extract form Goad's Insurance Map of 1928

Brunswick Mill ceased to be used for cotton production during the mid-1960s, and in January 1968 the mill was sold by the Lancashire Cotton Corporation Ltd to the Trownbay Property Company Ltd (SA 2121). Since that date, the mill complex has been used by a variety of small firms. At least one of these were associated with ancillary textile processes and, until recently, represented a very rare survival of textile-related industries still operating in Ancoats during the 21st century. Much of the mill is vacant, and prior to the redevelopment a music-related business occupies some of the building. The electric motor towers and coal yard/platform have been demolished.

2. Historic Building Investigation Results

2.1. General Layout of the Buildings

The programme of historic building investigation undertaken at the mill complex of Brunswick Mill on Bradford Road carried out to Historic England Level 2/3 standard. The site comprised three seven-storey buildings, two four-storey buildings, one three-storey building and four two-storey buildings.

2.2. The Spinning Block External Descriptions

The main mill building was situated to the south-east of the complex and fronted the Ashton Canal (Fig 2) and formed one of the oldest buildings on site. The building was of seven-storeys by 27-bays wide and was constructed in a Flemish bond with a flat roof below a shallow parapet wall capped with oversailing copings (Plate 17). The parapet also contained the moulded terracotta and dogtooth cornice that continued onto the elevations of the north-east and south-west wings (Fig 2). The corners contained a pilaster with a single-recessed panel at the centre.

The south-eastern elevation fronted the Ashton Canal and comprised 25 windows and two doorways to the ground floor with 27 windows to the upper floors (Fig 2). The 1.39m (4ft 6¾in) wide windows comprised flat-arched lintels with chamfered sandstone sills (Plate 18). The ground floor openings were brick infilled, however the upper floors had retained the replaced six-light timber framed windows (Plate 18).

The two late 20th-century doorways were inserted into two earlier window apertures to form emergency exits. The sills to the windows were removed and the openings were reduced to 0.91m (3ft) with an inserted reinforced concrete lintel situated 1.07m (3ft 6¼in) below the earlier flat-arched sandstone lintel (Plate 19). Housed within each of the openings was a flush steel door with a steel doorframe (Plate 19).



Plate 17: General view of the south-eastern elevation of the principal spinning block, looking north-east



Plate 18: Detail of the windows to the south-eastern elevation of the principal spinning block, looking north-east



Plate 19: Detail of the inserted doorway to the north-eastern end of the south-eastern elevation, looking north

The north-western elevation fronted the inner courtyard (Fig 3) and consisted of 20-bays and rising to seven storeys (Fig 3; Plate 20). The parapet also contained the moulded terracotta and dogtooth cornice; however, sections of both the parapet wall and the cornice were repaired in the 20th century (Plate 21).

The ground floor contained four doorways that afforded access into the subdivided industrial units that were created during the latter half of the 20th century (Fig 3). The two north-eastern openings were inserted into two earlier window apertures with the brickwork around the position of the sills having been repaired however the two south-eastern openings seemingly are original features (Plate 20). All four entrances comprised flat concrete lintels with steel roller shutter doors housed within the openings. The north-eastern entrance, along with the larger south-western doorway housed steel doors with exposed steel door frames (Plate 20).



Plate 20: General view of the north-western elevation, looking south



Plate 21: Detail of the one of the repaired sections to the parapet wall and cornice on the north-western elevation

The windows to each floor level comprised flat-arched sandstone lintels set above projecting sandstone sills. The openings measured 1.4m (4ft 7¼in) in width and housed a replaced six-light, timber-framed window fitted with clear glass panes (Plates 22 and 23). The windows located in the sixth bay from both the north-east and south-west ends had evidence of repair beneath their sills (Plates 22 and 23).

The electrification of the mill complex in early 20th century resulted in the construction of two motor towers, which were built against this elevation and incorporated the fifth and sixth bays on each floor. During the initial site investigation, wall scars associated with these former structures were recorded to either side of the windows within the affected bays (Plates 22 and 23).



Plate 22: The south-western end of the north-west elevation, detailing the position of the 1907 motor towers, looking south



Plate 23: The north-eastern end of the north-west elevation, detailing the position of the 1907 motor towers, looking east

A late 19th-century fire escape was situated to the 10th bay from the north-eastern end (Fig 3). This comprised cast-iron closed stringers, cast-iron treads with short decorative risers (Plate 24). The hollow tube handrails and guardrails were supported by slender turned balusters (Plate 24). The stairs and platforms to each exit were fixed to the elevation with decorative moulded brackets (Plate 24). The doorways on each level were inserted into the earlier window apertures, however, during the late 20th century the openings were infilled with bricks, rendering the feature unusable (Plate 24).

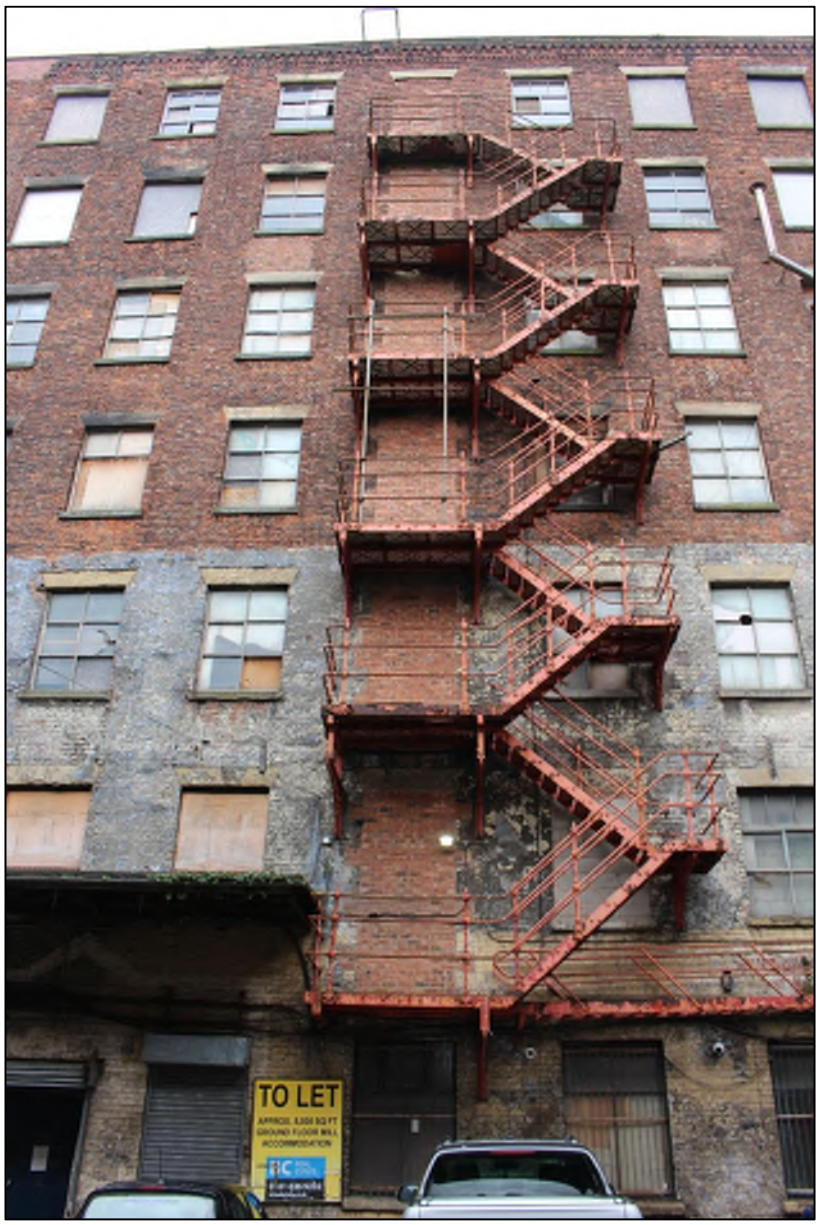


Plate 24: The cast-iron fire escape to the north-west elevation, looking south-east

2.3. The Spinning Block Internal Descriptions

The ground floor of the spinning block was divided into several rooms during the initial site investigation. These rooms were formed by modern concrete block partition walls and creature individual commercial units but had retained some of the original ground floor features.

R1 was entered through the two south-western doorways within the north-western elevation (Fig 5). This room comprised a concrete floor, with painted brick walls and a fireproof ceiling that had Hodgkinson-type jack arches (Plate 25). The cast-iron ceiling beams were supported by two rows of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 4.64m (15ft 2¾in) centres, aligned north-west/south-east and at 2.79m (9ft 2in) intervals, aligned north-east/south-west (Fig 5; Plate 25).



Plate 25: General view of R1, looking west

The walls to the south-east and north-west contained floor-to-ceiling recessed windows comprising segmental arched heads and with the south-west openings having flat brick sills while the north-eastern apertures had sloping sills (Plates 26 and 27). The window frames to south-east wall were removed with the 1.44m (4ft 8¾in) wide openings infilled with bricks (Plate 26). However, those to the north-west wall had retained their later 19th-century timber window frames (Plate 27).



Plate 26: Detail to the blocked windows to the south-eastern wall of R1, looking south-east



Plate 27: Detail to the windows to the north-west wall of R1, looking north

The room had retained few of its earlier features, however evidence of the power transmission system was evident. The jack arches had oil staining to each side of the columns, suggesting there were four rows of line shafting aligned north-east/south-west (Plate 28). The shafts would have been supported by hangers that were clamped to each of the ceiling beams.



Plate 28: Detail of the oil staining and two scares showing the position of the line shaft hangers to the ceiling of R1

The south-western wall had contained the upper section of a three-rowlock brick course arch at floor level (Plate 29). A removed bearing box was situated above the arch which consisted of an inserted steel lintel with an infilled brick opening. The arch and the bearing box had entered the attached engine house to the south-west of the site (Plate 29).



Plate 29: The blocked arch and bearing box within the south-western wall of R1, looking west

The north-eastern end of R1 was four internal rooms, R2-5 (Fig 5). These were created with timber-framed partition walls, however the north-western wall to each room was formed using the original north-west wall of the earlier mill (Plate 30). This had retained the earlier floor-to-ceiling recessed window apertures which consisted of segmental arched heads and short sloping sills. The opening had retained the late 19th-century timber-framed windows (Plate 30).



Plate 30: General view of R2 with the modern timber framed partition walls, looking east

R6 was situated to the south-west corner of R1 and was created using modern concrete blocks as the partition walls. The room was a single bay wide with a single floor-to-ceiling recessed window within the south-western wall (Plate 31; Fig 5). The window frame had been removed and the opening had been infilled by brick (Plate 31).



Plate 31: General view of R6 with the modern concrete block wall to the left of the photograph, looking south-east

R7 was situated to the north-east of R1, with access latterly afforded by north-eastern doorway within the north-west elevation (Fig 5). This room comprised a concrete floor, with painted brick walls and a fireproof ceiling of six-bays that had Hodgkinson-type jack arches (Plate 32). The cast-iron ceiling beams were supported by two rows of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 4.64m (15ft 2¾in) centres, aligned north-west/south-east and at 2.79m (9ft 2in) intervals, aligned north-east/south-west (Fig 5; Plate 32).

The windows to the north-east and south-west walls comprised floor-to-ceiling recessed openings with segmental arched heads and sloping sills. The window frames were removed from each of the openings and blocked with modern concrete block (Plate 33). A fire exit doorway was inserted into the second bay within the south-eastern wall. This consisted of an inserted concrete lintel and housed a modern timber fire door (Plate 33; Fig 5).



Plate 32: General view of R7, looking east



Plate 33: The south-eastern wall of R7, looking south-east

The original power transmission system was also evident within this room. The ceiling contained oil staining with the ceiling beams having compression marks that relate to the positioning of the line shaft hangers (Plate 32).

During the refurbishment works all modern partition walls were removed, opening out the ground floor to re-form its earlier layout. The concrete floor was partially removed which uncovered the earlier stone flag floor (Plate 34). These were of various sizes but were typically 0.6m x 0.6m (2ft x 2ft). The oiling staining to the ceiling was fully evident and spanned the entire ground floor (Plate 34).



Plate 34: General view of the ground floor of the spinning block after the soft-strip, looking south-west

The first floor was originally afforded access via the south-western stair tower, which comprised stoned risers and treads with a closed stringer. The mid-19th-century iron handrail had been retained to the tower and was fixed using wrought iron brackets.

The first-floor landing consisted of a stone flag floor, painted brick walls and a fireproof ceiling. The north-eastern wall contained two 1.55m (5ft 1in) wide window apertures with segmental arched heads, sloping sills and slayed bullnosed brick reveals (Plates 35 and 36). The openings had retained their late 19th-century six-light timber-framed windows with clear glass panes (Plates 35 and 36).



Plate 35: The north-eastern window to the first floor landing of the earlier south-western stair tower, looking south-west

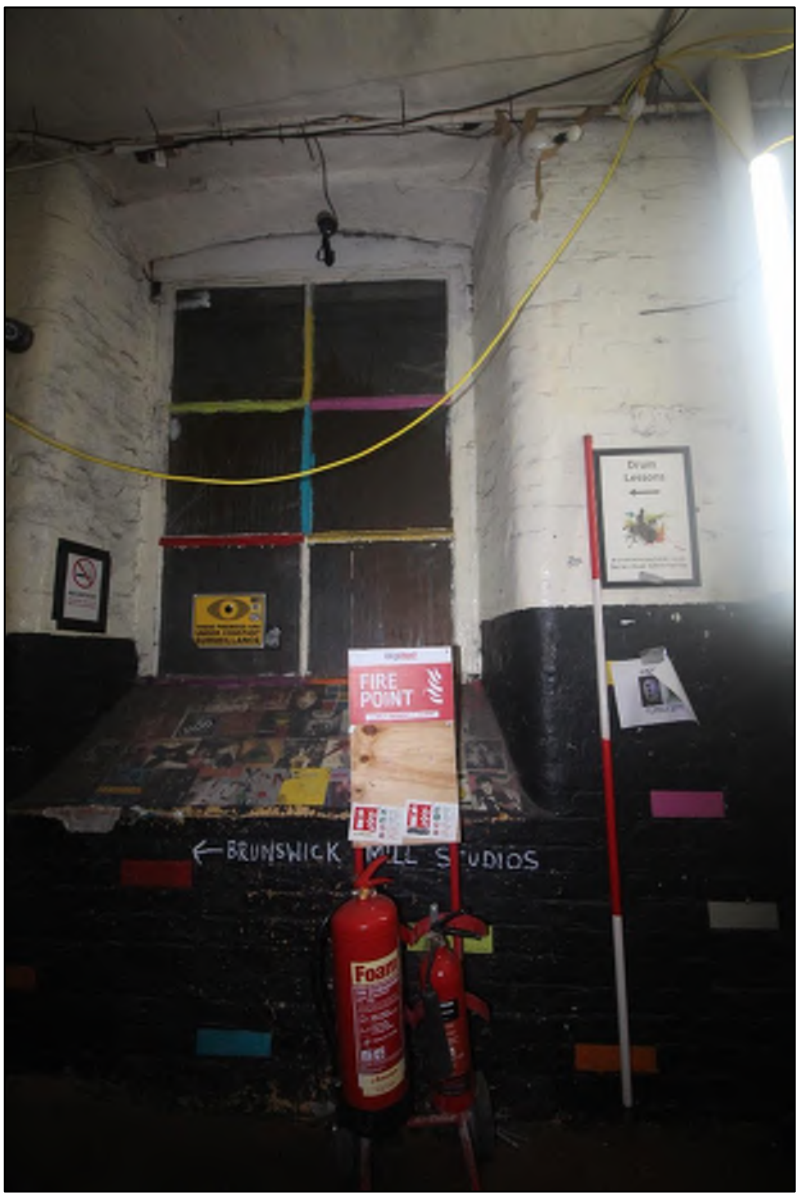


Plate 36: The south-eastern window to the first-floor landing of the earlier south-western stair tower, looking south-east

During the late 20th century the mill was used as a music recording and practising studio with the first floor divided into multiple rooms which were bounded by modern concrete block and timber-framed partition walls. However, these were removed during the soft-strip, which returned the floor to its original layout (Fig 6).

The north-eastern stair tower entered the spinning block with lateral access afforded by a segmental arch doorway within the south-eastern wall. This entered a small lobby area (R8) that was related to the late 20th-century music studio layout. The room comprised a concrete floor and painted walls (Plate 37). The ceiling was of a fireproof construction of four bays of the Hodgkinson style jack-arch vaulting. The beams in this room were supported by diagonally braced tensioning bars that reinforced the original iron beam (Plate 38). These were clamped to the soffits of the beams with bolts entering the springing points of the brick arches (Plate 38).

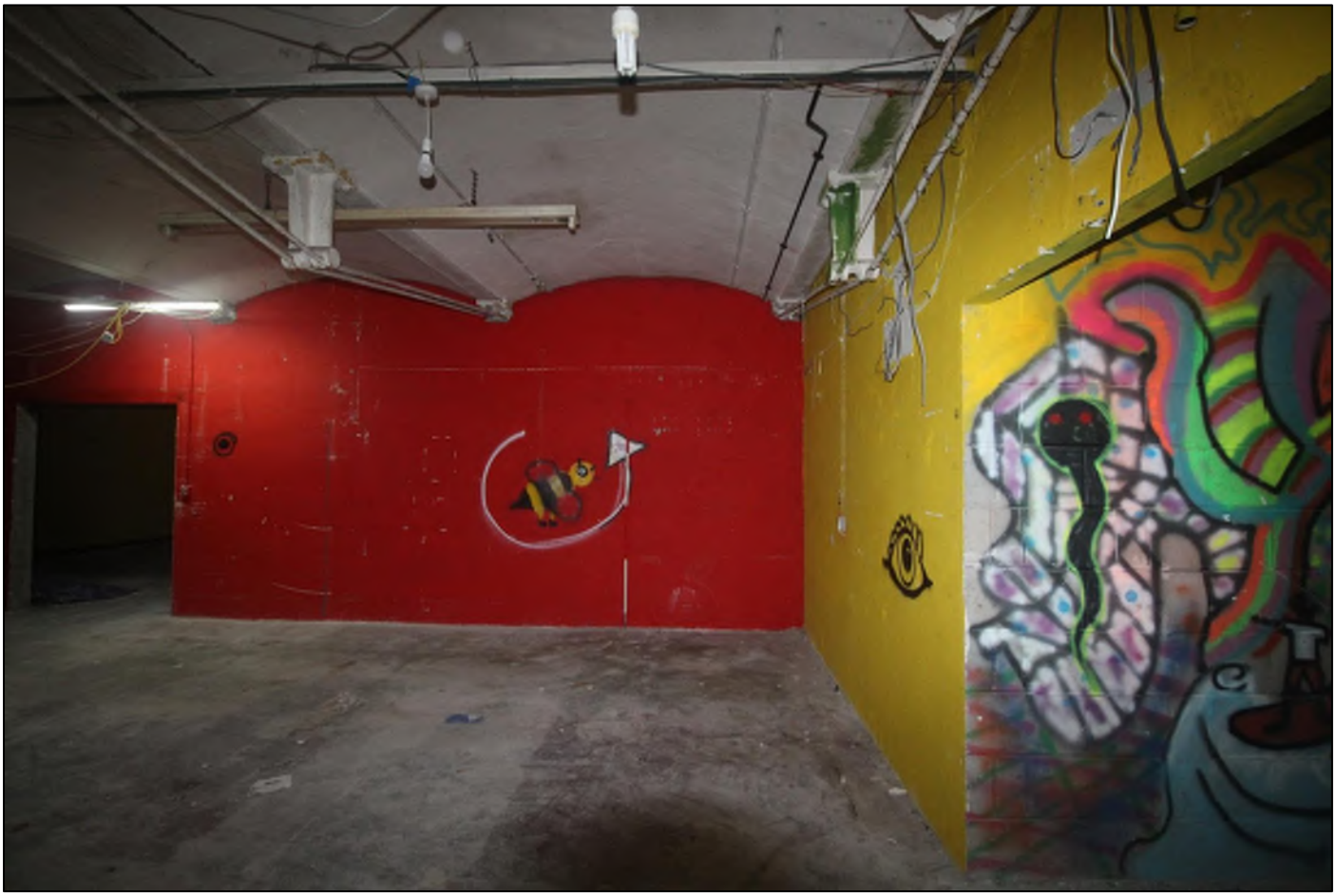


Plate 37: General view of the lobby to the north-east end of the spinning block, looking south-east



Plate 38: Detail of the braced tensioning bars that supported the ceiling

The north-eastern wall of the room had retained the original access into the projecting lift tower (Fig 6). This comprised a 1.93m (6ft 4in) wide recessed opening, however a late 20th-century steel concertina door with an inserted rolled steel I-section beam lintel replaced the earlier features (Plate 39).



Plate 39: The remodelled lift door to the projecting tower, looking north-east

The north-western wall also contained three four-arched doorways, with the two central openings blocked. The south-western doorway entered the north-east stair tower, while the north-eastern opening entered a small office within the north-eastern wing (Plate 40; Fig 6).

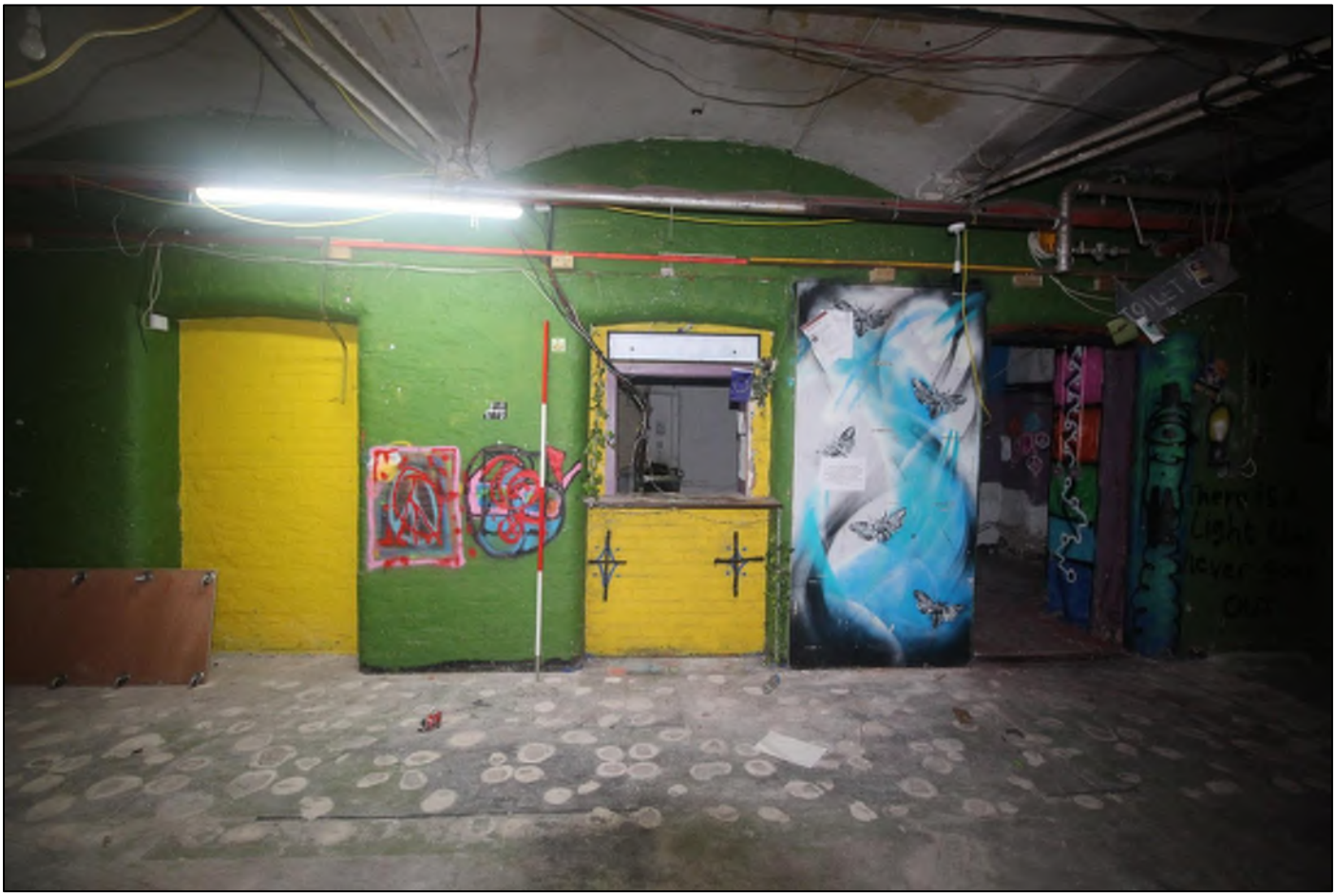


Plate 40: The blocked doorways to the north-western wall of first floor lobby, looking north-west

The lobby area entered the main mill floor that was originally used for spinning cotton. This section comprised Hodgkinson jack arches with a concrete floor and painted brick walls. The cast-iron ceiling beams were supported by two rows of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 4.64m (15ft 2¾in) centres, aligned north-west/south-east and at 2.79m (9ft 2in) intervals, aligned north-east/south-west (Fig 6; Plate 41). The columns were encased within steel frames that were bolted together to form protection (Plate 41). The outer bays had also been strengthened and supported by diagonally braced tensioning bars that reinforced the original iron beam (Plate 42). These were clamped to the soffits of the beams with bolts entering the springing points of the brick arches (Plate 42).



Plate 41: General view of the first floor of the spinning block, looking east



Plate 42: Detail of the braced tensioning bars that supported the ceiling

The windows to the north-west and south-east walls comprised floor-to-ceiling recessed openings with splayed bullnose brick reveals, segmental arched heads and sloping sills (Plate 43). The 1.47m (4ft 10in) wide openings had retained their late 19th-century six-light timber-framed windows with clear glass panes (Plate 43).



Plate 43: The windows to the south-eastern wall, looking south-east

A hatch was inserted into the ceiling that spanned the fifth and sixth bays from the south-western end (Fig 6). The hatch measured 2.65m (8ft 8½in) north-east/south-west by 4.51m (14ft 9½in) north-west/south-east. The original cast-iron beam at the centre of the opening was replaced with a concrete beam that spanned the two columns (Fig 6; Plate 44).



Plate 44: The inserted hatch within the ceiling

A large, blocked doorway was situated to the south-east end of the south-western wall. This was a later insertion comprising a concrete lintel spanning the 3m (9ft 10¼in) opening. The doorway was infilled during the 20th century; however, its original insertion was to afford access into the first floor of the attached engine house (Fig 6; Plate 45).



Plate 45: The inserted doorway within the south-west wall to the first floor, looking south-west

At the south-western end of the north-western wall were two doorways that afforded access into the south-western wing (Fig 6). These comprised segmental arched heads with bullnosed brick jambs, with the south-western 1.36m (4ft 5¾in) wide opening entering the south-west wing, while the 1.21m (4ft) wide north-eastern opening entered the first-floor landing of the stair tower (Plates 46 and 47; Fig 6).



Plate 46: The doorway within the north-western wall, entering of the south-west wing, looking north-west



Plate 47: The doorway within first floor landing of the south-west stair tower, looking north-west

The room had retained few of its original features; however, evidence of the power transmission system was evident. The jack arches had oil staining to each side of the columns, suggesting there was four rows of line shafting aligned north-east/south-west (Plate 42). The shafts would have been supported by hangers that were clamped to each of the ceiling beams. The south-western wall contained scarring possibly relating to a removed clamp for the vertical shaft that transferred the power from the earlier engine house to this floor (Plate 48).



Plate 48: The scarring to the south-western wall, possibly relating to the earlier vertical shaft clamp, looking south-west

The second floor was accessed by both the north-east and south-west stair towers (Fig 7). This floor was divided into two rooms during the late 20th century with a modern timber-framed partition wall. However, the original layout of the floor was a large open spinning floor, R10 (Fig 7). The original layout consisted of 28 fireproof jack-arched bays and painted brick walls. The cast-iron ceiling beams were supported by two rows of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 4.64m (15ft 2¾in) centres, aligned north-west/south-east and at 2.78m (9ft 1½in) intervals, aligned north-east/south-west (Fig 7; Plate 49). The beams were also supported by diagonally braced tensioning bars that reinforced the original cast-iron beam (Plate 49). These were clamped to the soffits of the beams with bolts entering the springing points of the brick arches (Plate 49). The original floor was obscured by the addition of 9in x 9in tiles (Plate 49).



Plate 49: General view of the original layout of the second floor, looking south-west

Natural light was afforded onto the original spinning floor by the window apertures to the north-west and south-east walls. The were floor-to-ceiling recessed apertures with segmental arched heads and shallow sloping sills. The 1.47m (4ft 10in) openings housed the late-19th-century six-light timber-framed windows (Plate 50).



Plate 50: The windows to the north-western wall of the second floor, looking north

The spinning floor was originally powered by the adjacent engine house located to the south-eastern corner of the complex (Fig 7). Evidence of the former power transmission system remained visible in the floor, where the positions of the line shafts could be identified on either side of the columns. Oil staining across the soffits of the jack arches indicated the presence of four rows of line shafting aligned on a north-east/south-west axis (Plate 51). These shafts would have been supported by hangers that clamped directly to the ceiling beams. The south-western wall contained scarring relating to a removed clamp for the vertical shaft that transferred the power from the earlier engine house to this floor (Plate 52).



Plate 51: The ceiling of the spinning floor detailing the oil staining to the vaulting



Plate 52: The scarring to the south-western wall, relating to the earlier vertical shaft clamp, looking south-west

The north-eastern wall of the floor contained a sliding door that entered the 1844 Waste House (Fig 7). This comprised bullnosed brick jambs with a concrete threshold. The original lintel was replaced in the mid-20th century, with an inserted concrete lintel. The earlier timber door with riveted iron sheets was reused along with the sloping door track above. This formed an automatic closing door mechanism intended to provide fireproofing between the two adjoining buildings (Plate 53).



Plate 53: The sliding doorway entering the 1844 Waste House, looking north-east

The northern corner of the room had retained the original access into the projecting lift tower (Fig 7). This comprised a 1.93m (6ft 4in) wide recessed opening, however a late 20th-century steel concertina door with an inserted rolled steel I-section beam lintel replaced the earlier features (Plate 54).



Plate 54: The remodelled lift door to the projecting tower, looking north-east

The third floor was also afforded lateral access from the north-east and south-west stair towers (Fig 8). This floor comprised a single room, R11, of 28 bays of Hodgkinson-type fireproof vaulting, a tiled floor and painted brick walls (Plate 55). The cast-iron ceiling beams were supported by two rows of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 4.64m (15ft 2¾in) centres, aligned north-west/south-east and at 2.78m (9ft 1½in) intervals, aligned north-east/south-west (Fig 8; Plate 55). The beams were also supported by braced tensioning bars that reinforced the original cast-iron beams (Plate 55). These were clamped to the soffits of the beams with bolts entering the springing points of the brick arches (Plate 55).

The windows to the north-west and south-east walls had recessed windows to floor level between 1.17m (3ft 10in) wide piers with bullnosed brick reveals. The apertures consisted of segmental arched heads with shallow sloping brick sills that housed the later 19th-century six-light timber-frames windows within the 1.48m (4ft 10½in) wide openings (Plate 56).



Plate 55: General view of the third floor of the spinning block, looking south-west



Plate 56: The windows to the north-western wall, looking north-west

A doorway was situated to the centre of the north-eastern wall which afforded access to the third floor of the 1844 Waste House (Fig 8). This was inserted into an earlier 1.56m (5ft 1½in) wide recessed window and comprised two timber doors set within an exposed timber doorframe (Plate 57). Above the door head was a single fixed transom light that was blocked with plywood sheeting (Plate 57).

To the south-east of the doorway, the wall contained two additional blocked windows. These differed from the standard window design used at Brunswick Mill. Their sills were positioned approximately 0.5m (1ft 7¾in) lower and contained a more pronounced slope (Plate 57). The openings were infilled with a modern timber-frame lined with plywood sheeting.



Plate 57: The doorway entering the Waste House with the different styling of windows to the right of the photo, looking north-west

Access to the south-western wing was originally provided by two doorways at the south-western end of the north-west wall (Fig 8). Both openings were constructed with segmental, bullnosed brick heads and jambs, although the south-western doorway later received an inserted timber lintel (Plate 58). The openings measured 1.28m (4ft 2½in) wide and were subsequently infilled with brick; however, the northern doorway retained its earlier timber doorframe (Plate 58).



Plate 58: The blocked doorways entering the south-western wing, looking north

The fourth floor was also afforded lateral access from the north-east and south-west stair towers (Fig 9). This floor comprised three rooms (R12-R14) with the largest (R12) of 28 bays of Hodgkinson-type fireproof vaulting, a tiled floor and painted brick walls (Plate 59). The cast-iron ceiling beams were supported by two rows of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 4.64m (15ft 2¾in) centres, aligned north-west/south-east and at 2.78m (9ft 1½in) intervals, aligned north-east/south-west (Fig 9; Plate 59). The beams were also supported by braced tensioning bars that reinforced the original cast-iron beams (Plate 59). These were clamped to the soffits of the beams with bolts entering the springing points of the brick arches (Plate 59).



Plate 59: General view of the fourth floor of the spinning block, looking south-west

The windows to the north-west and south-east walls had recessed windows to floor level between 1.17m (3ft 10in) wide piers with bullnosed brick reveals. The apertures consisted of segmental arched heads with shallow sloping brick sills and housed the late 19th-century six-light timber-framed windows within the 1.48m (4ft 10½in) wide openings (Plate 60).



Plate 60: The windows to the north-western wall, looking north-west

The north-eastern wall contained two doorways that provided access into the south-western wing with a further blocked doorway situated to the south-westernmost bay (Fig 9). The blocked entrance was constructed with bullnosed brick jambs and would have originally contained a segmental arched lintel. However, the lintel was removed and a I-section rolled steel beam was inserted over the 1.28m (4ft 2½in) wide opening.

The north-eastern opening afforded access into the fourth-floor landing of the wing and was constructed of a segmental arched head and bullnosed brick reveals (Plate 61). This opening was later remodelled: the earlier lintel removed and replaced with a timber beam spanning the 1.24m (4ft) wide opening. A large timber sliding door was installed on the south-east face, with its steel door track on a slight incline forming an automatic closing door (Plate 61).



Plate 61: The doorway entering the fourth-floor landing of the south-western wing, looking north-west

The south-western doorway accessed the adjoining wing and was remodelled during the 20th century. The original opening featured of a bullnosed brick, segmental arched lintel and jambs measuring 1.28m (4ft 2½in) wide. During the alterations, the opening was partial infilled with modern concrete blocks, and a new inserted timber doorframe of 0.87m (2ft 10¼in) wide was located to the south-western end of the earlier opening. A modern flush timber door was housed within this reduced opening (Plate 62).



Plate 62: The south-western doorway entering the south-western wing, looking north-west

Evidence of the former power transmission system remained visible in the floor, where the positions of the line shafts could be identified on either side of the columns. Oil staining across the soffits of the jack arches indicated the presence of four rows of line shafting aligned on a north-east/south-west axis (Plate 59). These shafts would have been supported by hangers that clamped directly to the ceiling beams. The south-western wall contained scarring relating to a removed clamp for the vertical shaft that transferred the power from the earlier engine house to this floor (Plate 63). The north-west pier of the south-west wall contained a further cast-iron mount which had supported the end bearing of the north-western line shaft (Plate 64).



Plate 63: The remains of the earlier vertical shaft clamp within the south-eastern wall of the floor, looking south-west



Plate 64: The remains of the earlier vertical shaft clamp within the south-eastern wall of the floor, looking south-west

The two individual rooms to the north-eastern corner of the spinning floor were used as storage rooms with the northern room affording access to the lift tower that projected out from the north-eastern elevation (Fig 9). The rooms consisted of a flat ceilings, painted brick walls and concrete floors (Plate 65). The lift entrance situated in R13 and was remodelled during the 20th century which included an inserted I-section rolled steel lintel and a concertina door that was housed within the 1.92m (6ft 3½in) wide opening (Plate 65).



Plate 65: The northern storeroom, R13, with the remodelled lift doorway to the north-eastern wall, looking north-east

The fifth floor followed a layout similar to the lower floors and comprised 28-bays of fireproof jack-arches, with painted brick walls and a tiled floor (Plate 66; Fig 10). The cast-iron ceiling beams were supported by two rows of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 4.64m (15ft 2¾in) centres, aligned north-west/south-east and at 2.78m (9ft 1½in) intervals, aligned north-east/south-west (Fig 10; Plate 66). The beams were also supported by braced tensioning bars that reinforced the original cast-iron beams. These were clamped to the soffits of the beams with bolts entering the springing points of the brick arches (Plate 67).



Plate 66: General view of the fifth floor, looking north-east



Plate 67: Detail of the tensioning bars to the ceiling of the fifth floor, looking north-east

The recessed window apertures to the north-west, south-east and south-west walls continued on this floor. These comprised 1.42m (4ft 6in) wide apertures located between 1.17m (3ft 10in) wide piers with bullnosed brick reveals. The apertures consisted of segmental arched heads with shallow sloping brick sills that housed the late 19th-century six-light timber-framed windows (Plate 68).



Plate 68: The windows to the north-west wall, looking west

This floor was also formally powered by the attached engine house with the original vertical shaft evident to the south-western wall. The mules to this floor were powered by four line shafts as oil staining was evident across the soffits of the jack arches (Plate 69). These shafts would have been supported by hangers that clamped directly to the ceiling beams. The south-western wall contained scarring relating to a removed clamp for the vertical shaft that transferred the power from the earlier engine house to this floor. The north-west pier of the south-west wall contained a further cast-iron mount which had supported the end bearing of the north-western line shaft.



Plate 69: Detail of the oil staining to the ceiling of the firth floor

The projecting lift tower was afforded access by the remodelled doorway located to the northern corner of the floor (Fig 10). The 2.03m (6ft 6in) wide opening comprised bullnosed brick jambs with a late 20th-century I-section rolled steel lintel and a concertina door (Plate 70).



Plate 70: The remodelled lift doorway to the north-eastern wall, looking north-east

The sixth floor also followed a layout similar to the lower floors and comprised 28-bays of fireproof jack-arches, with painted brick walls and a tiled floor (R16; Plate 71; Fig 11). The cast-iron ceiling beams were supported by two rows of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 4.64m (15ft 2¾in) centres, aligned north-west/south-east and at 2.78m (9ft 1½in) intervals, aligned north-east/south-west (Fig 11; Plate 71).



Plate 71: General view of the sixth floor, looking south-west

The recessed window apertures to all four walls on this floor comprised 1.42m (4ft 6in) wide apertures located between 1.17m (3ft 10in) wide piers with bullnosed brick reveals. The apertures consisted of segmental arched heads with shallow sloping brick sills with the majority of the openings having their window frames removed. However, several had retained their late 19th-century six-light timber-windows frames with clear glass glazing (Plate 72).



Plate 72: The windows to the south-east wall with the later-19th century window frame to the central of the photo, and two of the altered openings to the left and right of the photo, looking south-east

The projecting lift tower was afforded access by the remodelled doorway located to the northern corner of the floor (Fig 11). The 2.03m (6ft 6in) wide opening comprised bullnosed brick jambs with a late 20th-century I-section rolled steel lintel and a concertina door (Plate 73).



Plate 73: The remodelled lift doorway to the north-eastern wall, looking north-east

This floor was also formally powered by the attached engine house with the original vertical shaft evident to the south-western wall. A cast-iron bearing box was situated with the south-western wall, with a corresponding end bearing box within the north-eastern wall (Fig 11). The floor was powered by two line shafts, with the second shaft situated to the north-western end. The second pier from the north-west end of the north-eastern wall contained four large bolts which would have secured the cast-iron mount for the end bearing of the second shaft (Fig 11; Plate 74). These shafts would have been supported by hangers that clamped directly to the ceiling beams. The south-western wall contained scarring relating to a removed clamp for the vertical shaft that transferred the power from the earlier engine house to this floor (Plate 75). A hatch was also situated within the ceiling and would have originally housed the header bearing for the earlier vertical shaft (Plate 76).



Plate 74: The bearing box within the south-western wall, looking south-west



Plate 76: The four large bolts relating to the end bearing within the north-eastern wall, looking east



Plate 76: The hatch within the ceiling that would have originally housed the header bearing of the vertical shaft

2.4. The Engine House External Descriptions

The earliest phase of the mill was powered from the attached ending house situated to the south-western end of the spinning block (Fig 12). The north-western elevation formed the principal façade and comprised three-bays wide rising to three-storeys (Fig 2; Plate 77). The pitched lantern roof was below a shallow parapet wall with oversailing sandstone copings. This building had retained the original cornice comprising curved bricks which were then coated with stucco to form the appearance of stonework (Plate 78). The corners contained a projecting pilaster with a central recessed panel (Plate 77).



Plate 77: General view of the north-western façade of the attached ending house, looking south-east



Plate 78: Detail of the cornice the engine house with the remains of the stucco to the upper right corner of the photo

The ground floor consisted of two doorways with the central doorway forming the original entrance into the building. These comprised bullnosed brick jambs, with a rolled steel I-section lintel that had replaced the earlier lintel (Plate 79). The north-eastern entrance was a late 19th-century insertion consisting of a concrete lintel and threshold. The doors to each entrance were removed prior to the site investigation.



Plate 79: The central doorway to the ground floor of the north-west façade, looking south-east

The first and second floors contained three tall windows consisting of round-heads constructed with gauged bricks and stucco render imposts (Plate 80). The brick sills were situated to the first floor, however the original sandstone sills were situated and lintel height of the ground floor doorway (Plate 80). The central 1.7m (5ft 7in) wide opening had retained the late 19th-century timber-window frame (Plate 80). The two flanking apertures measured 0.96m (3ft 2in) wide with the south-western opening containing an inserted I-section lintel at ceiling height of the first floor (Plate 80). Each section had retained the outer frame of two individual window frames (Plate 80). The north-eastern aperture was infilled with bricks.



Plate 80: The upper floor windows to the north-west façade, looking south-east

The south-west elevation contained three blind recesses to the first and second floors. These comprised gauged brick round-heads with bullnosed brick sills to the ground floor (Fig 5; Plate 81). At floor height of the second floor was a projecting string course with stucco to form the appearance of stonework (Plate 81).



Plate 81: General view of the south-west elevation, looking east

The ground floor consisted of three inserted openings with concrete lintels spanning the 1.51m (5ft) wide openings (Fig 5; Plate 82). The central and south-eastern openings were latterly used as doorways while the north-western opening were blocked with brick infilling (Plates 82 and 83). Above the north-eastern lintel was a blocked cast-iron bearing box that would have supported an end bearing inside the building (Plate 84).



Plate 82: The central inserted doorway within the south-western elevation, looking north-east



Plate 83: The blocked entrance to the north-west of the ground floor, looking north



Plate 84: The blocked bearing box above the lintel of the north-western entrance, looking north

During the latter half of the 20th century a concrete and steel-framed lean-to was constructed against the elevation. The reinforced concrete beams at ceiling height of the ground floor were inserted into the elevation of the engine house along with a rolled steel I-section frame at first floor level (Plate 77).

The south-eastern elevation comprised three tall, round-headed windows with stone imposts (Plate 85; Fig 2). The 1.39m (4ft 6¾in) wide openings were brick-infilled at ground level, with a later brick sill inserted at ceiling height (Plate 85). At first and second floor levels, the openings retained replacement 14-light, timber-framed windows (Plate 85). The elevation additionally incorporated a recessed panelled pilaster to the south-western corner and a plain projecting string course above the window heads (Plate 85).



Plate 85: General view of the south-eastern elevation, looking north-west

2.5. The Engine House Internal Descriptions

Internally the building had been divided into three floors after the mill was converted into electrical power in early 20th century, however several of the original features had been retained.

The ground floor was previously inaccessible however during the redevelopment works, the area was cleared of all the debris. The level was originally afforded access by the central doorway to the north-western wall, with further access gained by the doorways to the south-western wall. The principal doorway comprised bullnosed brick jambs with a replaced rolled steel I-section lintel (Plate 86).



Plate 86: The doorway within the north-western wall, looking west

The main room (R17) comprised brick walls with a concrete ceiling supported by iron beams forming a fireproof room (Plate 87; Fig 5). The floor was removed with a black ash deposit used as bedding. During the survey, the floor was not removed to investigate if the engine beds had been retained (Plate 87).



Plate 87: General view of the ground floor, looking east

The two doorways in the south-western wall comprised five concrete lintels spanning the 1.49m (4ft 10¾in) wide openings, with the internal jambs rebuilt during the modifications (Plate 88). A third opening had been brick-infilled flush with late-20th-century brickwork (Plate 88). A substantial sandstone block measuring 1.72m (5ft 7⅔in) in width and 0.47m (1ft 6½in) height was located between the central entrance and the blocked north-western doorway, at a height of 1.98m (6ft 6in) above the floor level (Plate 88).



Plate 88: The central doorway within the south-western wall with the large sandstone block to the right of the lintel, looking south

The south-eastern wall contained three blocked window apertures with the central opening brick infilled flush with the central north-west/south-east aligned steel beam of the ceiling inserted into the blocking (Plate 89). The two flanking apertures consisted of flat sills with bullnose brick edges and reveals (Plate 89).



Plate 89: The south-eastern wall, looking south-east

The north-eastern wall contained a relieving segmental arch to the south-eastern end. This comprised two courses of rowlock bricks with a header course to the principal wall continuing at the springing points of the arch. The infilling was also brickwork, and the associated beds were also situated to the same level as those to the wall, further suggesting this was a relieving arch (Plate 90).



Plate 90: The relieving arch within the north-east wall, looking north-east

The northern corner of the room contained the later inserted staircase constructed with concrete brick walls with the landing on this level having access afforded by an internal doorway to the south-west and external access via the north-western doorway to the north-west elevation (Fig 5; Plate 77). The landing was largely filled with debris along with the stairwell, however the concrete threads and risers were partially recorded to the upper section.

The first floor was subdivided into two rooms, with the principal room located at the south-western end (Fig 6). This room, R18, comprised painted brick walls and a flat concrete ceiling, with a timber floor laid directly onto the concrete slab, forming a largely fireproof room (Plate 91). The ceiling was supported by steel frame to a rolled steel I-section stanchion at the centre of the room (Plate 91).

The north-western wall contained two window openings with bullnosed brick reveals and inserted brick sills (Plate 92). The concrete ceiling extended across the window apertures, dividing what was originally a single window opening into two separate windows. These formed part of the original engine house design, with their brick lintels positioned at second floor level.



Plate 91: General view of the first floor of the engine house, looking north-west



Plate 92: The two windows to the north-west wall of the first floor, looking north-west

The south-eastern wall contained three window apertures, each comprising bullnosed brick reveals with inserted low walls and flat brick sills to create deep recesses (Plate 93). The remains of an eight-light timber-frame window were housed within the openings (Plate 93). The central aperture was further remodelled with the head infilled flush with the piers, and a rolled steel I-section beam was positioned below. The central steel beam to the ceiling was inserted into this blocking (Plate 93).



Plate 93: The three windows to the south-east wall of the first floor, looking east

Laterally, access into the first floor of the mill was through a sliding doorway that was situated to the north-eastern wall. This comprised a steel-panelled sliding door with the door track on a slope to form an automatic closing door (Plate 94). The door furniture was on early 20th century including a sign noting that this room was used as an electrical switch room. However, during the mid-20th century this doorway was blocked during the construction of the internal staircase with concrete blocks (Plate 94).



Plate 94: The blocked sliding door to the north-east wall, looking north

The room retained several original features, including two bearing boxes set within the south-western wall (Plate 95). Each measured 0.54m (1ft 9¼in) wide, positioned 1.97m (6ft 5½in) apart and were situated 2.47m (8ft 1¼in) above the floor level. Both had been infilled with bricks (Plate 95). A third bearing box was formally located 1.97m (6ft 5½in) to the north-west of the north-west box. This was removed during the latter half of the 20th century and subsequently infilled with concrete bricks with steel water pipes exiting the building (Plate 96).

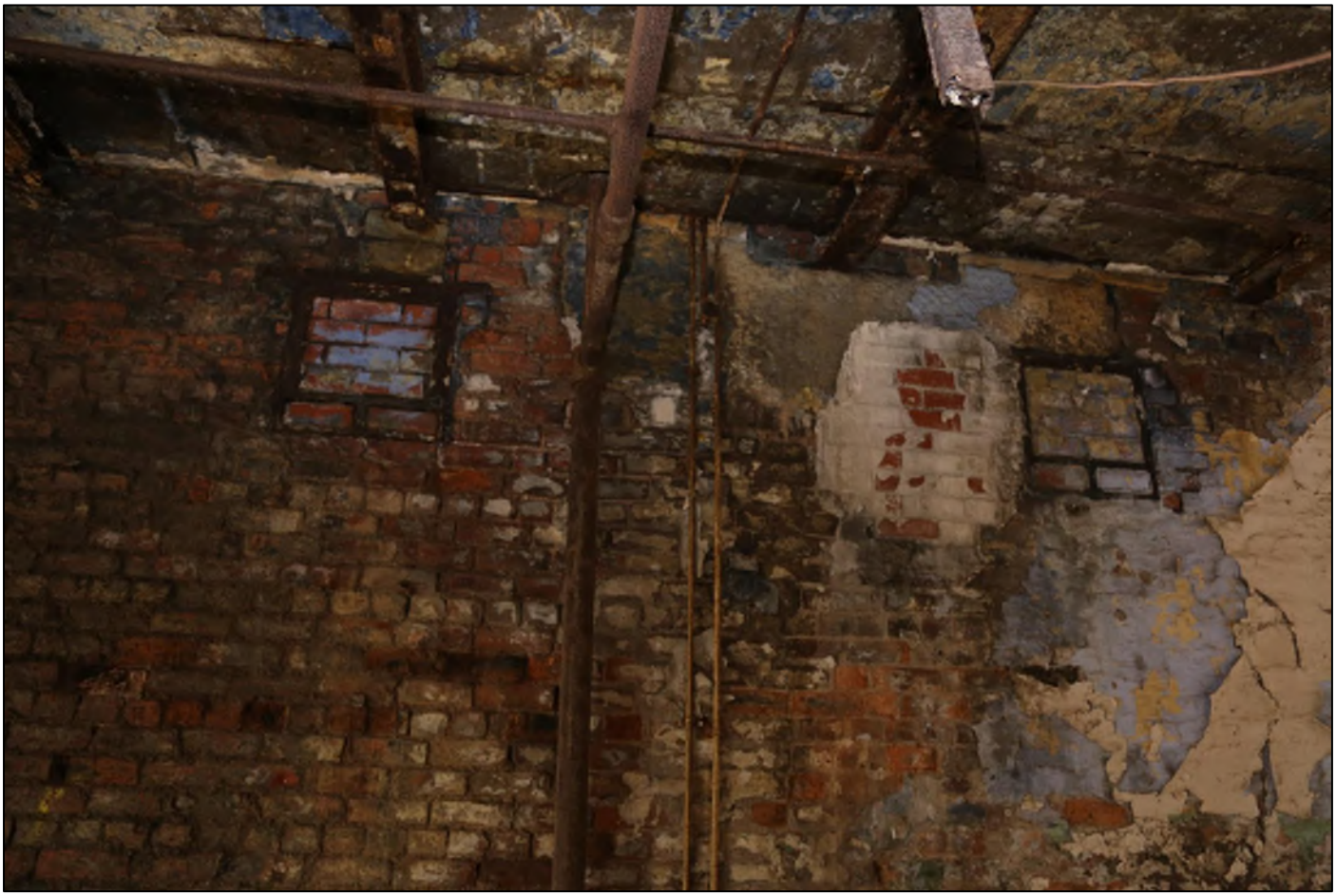


Plate 95: The two blocked bearing boxes to the south-western wall, looking south-west



Plate 96: The removed third bearing box to the south-western wall, looking south-west

The stairwell was accessible by the doorway to the north-eastern end of the room (Fig 6). The landing comprised a concrete floor, painted brick walls and an open ceiling. A narrow corridor was created to the south-west, R19, which entered a further landing to the north-west that afforded access to the stairs ascending to the second floor. The north-western wall of the corridor contained the north-east window of the original engine house and comprised bullnosed brick reveals. A 0.96m (3ft 2in) wide recessed opening was brick infilled (Plate 97).



Plate 97: The blocked window to the north-western wall of the narrow corridor, looking north

The second floor was laterally entered through a sliding door within the south-western wall of the spinning block's second floor (Plate 98; Fig 7). The 1.7m (5ft 7in) wide doorway was blocked during remodelling of the building in the latter half of 20th century with concrete blocks (Plate 98). These were partially removed during the soft-strip of the building, giving access into the second floor safely. The entrance had retained the earlier steel-panelled sliding door with the upper door track fixed to the wall with a slope to create an automatic closing door for fireproofing (Plate 98). The door had retained the manufacture's label noting it was manufactured by Mather & Platt Ltd in 1972 (Plate 98).



Plate 98: The doorway entering the second floor of the spinning block from the engine house, looking north-east



Plate 99: Detail of the manufactures metal label to the sliding door corridor, looking north-east

The second floor, R20, comprised painted brick walls, a mid-20th-century concrete floor and a fireproof ceiling consisting of five of Hodgkinson-type jack arches (Fig 7; Plate 100). At the centre of the ceiling were the remains of a lantern roof consisting of a timber frame, ridge beam and rafters (Plate 101).



Plate 100: General view of the second floor of the engine house, looking east



Plate 101: Detail of the lantern roof to the engine house

The south-eastern wall contained three round-headed windows with bullnosed brick reveals (Plate 102). The south-western window was situated within a mid-20th-century office/room with timber-framed walls lined with hardboard sheets (Plate 102). The openings to each of the apertures housed the remains of a timber-frame window that was inserted during the remodelling of the building (Plate 102). The north-west wall contained three windows, each consisting of bullnosed brick jambs and round-headed lintels. The flanking apertures were blocked while the central opening housed the replaced timber-framed window.



Plate 102: The windows to the south-eastern wall of the second floor, looking south-east

The north-east and south-west walls had retained several features relating to the former steam engine. Two sandstone blocks were situated at floor level to each wall, each measuring 0.7m (2ft 3½in) wide by 0.36m (1ft 2¼in) high. These supported a larger sandstone block measuring 2.34m (7ft 8¼in) wide. This feature would have supported the upper frame of the cast-iron entablature of the earliest engine (Plates 103 and 104). Associated blocked bearing boxes were situated along the north-eastern wall and originally entered the second floor of the spinning block (Plate 105). These measured 0.73m (2ft 4¾in) wide and contained oil staining to the wall face below (Plate 105).



Plate 103: The sandstone blocks to the north-eastern wall, looking east



Plate 104: The sandstone blocks to the south-west wall, looking south-west



Plate 105: The blocked bearing box to the south-east end of the north-eastern wall, looking north-east

2.6. Bradford Road Office Block External Descriptions

The north-western façade fronted Bradford Road and contained the principal access into the mill complex. The façade was 20-bays wide, rising to four-storeys and was constructed in a Flemish bond (Fig 2; Plate 106). The ground floor comprised 16 window apertures, three pedestrian doorways and a central cart entrance (Plate 106). The windows consisted of flat-arched sandstone lintels with flat brick sills (Plate 106). Several of the 1.4m (4ft 7¼in) wide openings were brick infilled while some were blocked with timber sheeting (Plate 106). The central four bays were set within a recessed panel, flanked by two brick pilasters (Plate 106).



Plate 106: General view of the north-western façade of the Bradford Road Block, looking south-east

The central doorway comprised a round-headed arch with rusticated stone and housed two large timber doors within the 4.7m (15ft 5in) wide opening (Plate 106). The south-western jamb had retained its original stone cart kicker which protected the corner of the opening (Plate 107); however, the corresponding feature on north-eastern jamb had been removed.



Plate 107: Detail of the stone cart kicker to the south-western jamb, looking south-west

The two flanking pedestrian doorways comprised rusticated sandstone surround with a stone keystone at the centre of the lintel. The 1.2m (3ft 11¼in) wide north-eastern opening was infilled with brick, while a replaced steel door was housed with the 1.15m (3ft 9¼in) wide south-western doorway (Plates 108 and 109).



Plate 108: The blocked north-eastern doorway to the north-western façade, looking east



Plate 109: The south-western doorway to the north-western façade, east

A third doorway was inserted into the third window from the south-western end of the ground floor. The 0.84m (2ft 9in) wide doorway consisted of an exposed timber doorframe that was 0.22m (8¾in) lower than the earlier flat-arched lintel. Housed within the opening was a mid-20th-century a steel door, with modern door furniture. The earlier window aperture was infilled with brick which was keyed into the north-eastern reveal (Plate 110).



Plate 110: The inserted south-western doorway to the north-western façade, looking east

The upper floors comprised flat-arched sandstone lintels with chamfered sandstone sills. The 1.4m (4ft 7¼in) wide openings were largely blocked with timber sheeting (Plate 111). However, a single aperture to the first floor and one to the second floor had retained a six-light timber-framed window with fragments of clear glass within some of the lights (Plate 111).



Plate 111: Detail view of the upper floor windows to the north-west façade, looking south-east

The original height of the block was only three-storeys with a short parapet wall, capped by oversailing sandstone copings. A projected cornice of moulded terracotta and dogtooth brick banding was situated above the ceiling height of the second floor (Plate 112). During the 1920s an additional floor was constructed to form a fourth storey. This was a smaller floor with the windows smaller in height. The design of the apertures reflected the floors below with flat-arched lintels, while the copings of the earlier phase was used as the sills (Plate 112). The 1.4m (4ft 7¼in) wide openings were blocked with timber sheeting during the initial site investigation. However, the north-eastern and south-western openings had retained the four-light timber-framed windows with clear glass glazing (Plate 111).



Plate 112: Detail view of the upper floor windows to the north-west façade, looking south-east

The south-eastern elevation fronted the inner courtyard and was largely a copy of the north-western elevation (Fig 4). The ground floor originally comprised 15 window apertures and three doorways, however the four bays to south-west and the four bays to the north-east were obscured by the two 1880s constructed two-storey extensions (Fig 4: Plate 113). The windows consisted of flat-arched sandstone lintels with chamfered sandstone sills. The 1.4m (4ft 7¼in) wide openings were blocked with timber sheeting with several infilled with modern concrete blocks (Plate 113). The central four bays were set within a recessed panel, flanked by two brick pilasters (Plate 113).



Plate 113: General view of the south-eastern elevation, looking west

The central doorway was a tall round-headed cart doorway with bullnosed brick jambs (Plate 114). The entrance had retained the original stone setts to the ground surface along with the two stone cart kickers to the north-east and south-was corners (Plate 114). As with the north-western façade, the principal entrance was flanked by two pedestrian doorways (Fig 4: Plate 114). The north-eastern opening was remodelled with a modern galvanised steel roller shutter door housed within the 1.57m (5ft 2in) wide opening (Plate 114). The south-western entrance was infilled with modern concrete blocks (Plate 114). The doorways had retained their original flat sandstone lintels (Plate 114).



Plate 114: Detail of the central section of the south-eastern elevation, looking north-west

The upper floor windows comprised flat-arched sandstone lintels with chamfered sandstone sills. The 1.4m (4ft 7¼in) wide openings housed a six-light timber-framed window with clear glass panes (Plate 115), however one of the north-eastern openings on the second floor had retained part of the original window frame. The upper section had retained the upper 21-lights of the earlier window, which suggests the original comprised 49-lights (Plate 116).



Plate 115: Detail of the first-floor windows to the south-east elevation, looking west



Plate 116: Detail of the remaining 21-lights of the earliest window frames to the mill buildings, looking north

The original parapet wall with moulded terracotta and dogtooth brick banding cornice was also located between the second and third floors (Fig 4; Plate 117). However, the original copings were removed and replaced with the chamfered sandstone sills for each of the window apertures while brick inserted as a replacement to each of the piers (Plate 117). The windows to the 1920s extension reflected the earlier apertures, comprising flat sandstone lintels and housed six-light timber-framed windows with clear glass glazing (Plate 117).



Plate 117: Detail of the third-floor windows to the south-east elevation with the original cornice below, looking west

A fire escape was added during the 1920s phase with doorways inserted into the first and second floor windows to the north-east of the principal entrance. The fire escape comprised cast-iron closed stringers, cast-iron treads with short decorative risers (Plate 118). The hollow tube handrails and guardrails were supported by slender turned balusters (Plate 118). The stairs and platforms to each exit were fixed to the elevation with decorative moulded brackets (Plate 119).



Plate 118: Detail of the fire escape to the south-eastern elevation, looking north-west



Plate 119: Detail of the decorative fire escape brackets, looking north-east

2.7. Bradford Road Office Block Internal Descriptions

The ground floor was divided into 12 rooms with four rooms situated to the north-eastern end of the covered entrance (Fig 5). R21 and R22 were afforded access by the two inserted doorways within the north-western wall of the 1880s extension.

R21 was situated to the north-eastern end of the building and comprised flag stone floor, painted brick walls and jack-arched ceiling (Plate 120). The north-western wall contained a single 1.39m (4ft 7¾in) wide window comprising a segmental arched head with a flat brick sill (Plate 121). The window frame was removed, and the opening was brick infilled (Plate 121).

The room contained the lower section of a brick constructed lift shaft, situated to the north-east corner (Plate 120). The 1.24m (4ft) wide entrance was situated within the south-western wall of the feature and contained a timber door to the external face. The entrance had retained the iron concertina door; however, the lift carriage could not be recorded (Plate 120).



Plate 120: General view of R21, looking north



Plate 121: The blocked window within the north-west wall of R21, with the lift entrance to the right of the photograph, looking north-west

R22 was situated to the south-west and was afforded access by the south-western doorway within R82 (Fig 5). This room was of two jack-arched bays with a stone flag floor and painted brick walls (Plate 122). The north-eastern wall was constructed from modern concrete blocks, suggesting R21 and R22 originally formed one room (Plate 122). The north-western wall contained two blocked floor-to-ceiling recessed window apertures (Plate 122). The north-eastern aperture had retained the brick sill; however, the south-western open's sill was removed (Plate 122).



Plate 122: General view of R22, looking north

The south-western section of the building was afforded access by the doorway within the south-eastern elevation (Fig 5). The doorway entered R23, which comprised five jack-arched bays, a flag stone floor and painted brick walls (Plate 123). The south-eastern wall contained a 1.65m wide doorway and comprised a timber lintel and exposed timber doorframe (Plate 123). The jambs to the doorframe contained four rectangular cutouts marking the position of the door hinges that were removed prior to the initial site investigation (Plate 123). These suggest the opening originally housed two doors.



Plate 123: General view of Rx, looking west

R23b was a small storage room and was a single bay wide (Fig 5). The room was created with modern concrete block walls and a flag stone floor (Plate 124). The north-eastern wall, however, was of brick construction and related to the earlier division of the ground floor. The north-western wall contained a single doorway that entered R24 and contained an exposed timber doorframe with a flush timber door housed within the 0.97m (3ft 2¼in) wide opening (Plate 124).



Plate 124: General view of R23b, looking west

R5 was of two bays of jack arches and consisted of a flag stone floor and painted brick walls (Plate 125). The north-western wall contained two floor-to-ceiling windows with segmental arched heads and flat brick sills. The late 19th-century timber-framed windows had been removed, and the 1.44m (4ft 8¾in) wide openings were infilled with brick (Plate 126).



Plate 125: General view of Rx, looking north-west

Rooms R24 and R26 were used as storage cupboards and comprised stone floors, painted brick walls and jack-arch ceilings. The rooms were of mid-20th century with the partition walls built using a mixture of concrete blocks and common brick.

The first floor of the south-western section, R29, was afforded access by the internal staircase to the northern corner, but also via an inserted doorway within the north-eastern wall of the south-western wing (Fig 6). This section was a single room of nine fireproof bays of jack-arches, a concrete floor and painted brick walls. The cast-iron ceiling beams were supported by a central row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.76m (9ft) centres, aligned north-east/south-west (Fig 6; Plate 126).

The fireproofing of the building was seemingly important as the doorway entering the south-west wing contained an iron-panelled door with the upper door track on a slight slope (Plate 127). This formed an automatic closing door which would have helped retain any fire spreading to either building.



Plate 126: General view of R29 on the first floor, looking east



Plate 127: The automatic sliding door within in the south-western wall entering the south-western wing, looking south-west

The windows to the north-west and south-east walls comprised floor-to-ceiling recesses with segmental arched heads and shallow sloping wills. The 1.41m (4ft 7½in) wide openings were blocked internally with timber sheeting (Plate 126).

The north-eastern half of the first floor was entered through the doorway within the north-western wall of the 1880s north-eastern extension. A further doorway originally provided access into the north-eastern wing; however, this had been blocked with modern concrete blocks (Fig 6).

This level was used as an office, R30, and possibly a warehouse with a goods lift situated to the northern corner (Plate 128; Fig 6). This lift was brick built with a timber lintel, however the 1.23m (4ft) wide opening was blocked with timber boarding (Plate 128). The room consisted of nine fireproof jack-arched bays with a timber floor and painted brick walls (Plate 129). The north-east and south-west walls contained the floor-to-ceiling recessed windows (Plate 129). These comprised segmental arched heads with shallow sloping sills. The 1.41m (4ft 7½in) wide openings to the south-eastern wall had retained the late 19th-century six-light timber-framed windows, while the north-west apertures were brick infilled (Plate 130).



Plate 128: The lift shaft situated to the northern corner of the first floor, looking north



Plate 129: General view of the first floor, R30, looking west



Plate 130: The window to the north-western wall, looking west

The second floor was a single room (R31) that spanned the entire width of the building (Plate 131). Lateral access was afforded by the north-east and south-west wings, with an inserted staircase ascending to the third floor at the south-western end (Fig 7). The room consisted of 20 fireproof jack-arched bays with a concrete floor and painted brick walls (Plate 131). The north-west and south-east walls contained the floor-to-ceiling recessed windows (Plate 131). These comprised segmental arched heads with shallow sloping sills. The 1.41m (4ft 7½in) wide openings had retained the late 19th-century six-light timber-framed windows; however, they were obscured internally with timber sheeting (Plate 131).



Plate 131: The windows to the north-western wall, looking west

This level was used as a warehouse and contained a goods lift situated to the northern corner (Plate 132; Fig 7). The lift was brick built with a timber lintel spanning the 1.24m (4ft) wide entrance that was situated within the south-western wall of the feature and contained a timber door to the external face. The entrance had retained the iron concertina door; however, the lift carriage could not be recorded (Plate 132).



Plate 132: The lift shaft to the northern corner of the second floor, looking north-east

A loading bay doorway was situated to the north-eastern end of the of the south-western wall. The doorway comprised a segmental arch head with a concrete threshold and bullnosed brick jambs. The 2.49m (8ft 2¼in) wide opening counted two timber doorways with an exposed timber doorframe. A late 20th-century hoist arm and electric hoist was situated internally (Plate 133).



Plate 133: The loading bay doorway within the south-eastern wall, looking west

The fire escape doorway was located to the south-west of the loading bay doorway (Fig 7). This opening had been inserted into an earlier window aperture, of which only the segmental arched head was retained. The remainder of the earlier opening was infilled with modern concrete blocks with a timber fire door set within an exposed timber door frame, which was positioned to the south-west (Plate 134).



Plate 134: The inserted fire escape doorway within the south-eastern wall, looking south-west

The staircase to the south-western end of the room was a mid-20th-century insertion consisted of closed timber stringers, timber treads and risers. The north-eastern wall was constructed using concrete blocks with plaster render. A hollow tubular steel handrail was bolted to the south-western wall of the building (Plate 135).



Plate 135: The inserted staircase at the south-western end of the floor, looking north-west

A segmental arched head doorway located at the south-eastern end of the south-west wall entered the south-western wing. The opening had a segmental arched head with an exposed wrought-iron doorframe. Housed within the 1.43m (4ft 8½in) wide opening was two iron doors, forming a fireproof barrier between the two buildings (Plate 136).



Plate 136: The doorway entering the south-western wing, looking south-west

The third floor was afforded access from the north-east and south-west wings along with ascending access from the second floor via the inserted staircase at the south-western end (Fig 8). This floor was used as warehousing and was divided into three rooms that originally formed one large room, R32. The north-eastern room formed a small lobby that entered the 20th-century canteen of the third floor of the north-eastern wing (Fig 8). The room consisted of a short sloping ceiling, painted brick walls and a concrete floor (Plate 137).

The room contained two doorways consisting of a flush timber lintel with and an exposed timber doorframe housed within the openings. The 0.89m (2ft 11in) wide doorway within the south-western wall accessed R64, with the 0.78m wide opening in the north-eastern wall entered the adjoining wing (Plate 137).



Plate 137: General view of the small storeroom, detailing the doorway entering R64 within the south-west wall, looking north-east

A small storeroom, R32a, was situated to the northern end, comprised a concrete floor, painted brick walls and a flat ceiling of two-bays with a cast-iron beam encased in concrete situated at the centre of the room (Plate 138; Fig 8). Each opening measured 1.4m wide with the north-eastern aperture retaining its late 19th-century six-light timber window frame (Plate 139). The south-western opening was later remodelled with a fire-exit doorway inserted into the lower south-western light of the original window frame.



Plate 138: General view of the small storage room R32a, looking south-west



Plate 139: The windows to the south-east wall of the storage room, looking south

The largest room on this floor, R32b, was situated to the south-east of the level and consisted of 17-bays wide. The room comprised a timber floor, painted brick walls and a flat concrete ceiling with cast-iron beams encased in concrete (Plate 140). The north-eastern section of the ceiling was sloped and contained timber-framed skylights with replaced glass panes (Plate 140). The 12 south-western bays were also supported by a single row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals with lamb's tongue cyma reversa profile flanges to the head plate. These were placed at 2.76m (9ft) centres, aligned on the north-east/south-west axis (Fig 8; Plate 141).



Plate 140: General view of R32b, looking south-west



Plate 141: General view of R32b, looking north-east

The south-east wall contained 16 windows comprising flat iron lintels with bullnosed brick reveals and lintels. Housed within the 1.4m (4ft 7¼in) wide openings was a six-light timber window frame. The north-west wall contained 19 window apertures also constructed with iron lintels, bullnosed brick reveals and sills. Owing to the sloping ceiling these apertures were reduced in height by approximately 1m (3ft 3½in). The earlier window frames were replaced with a timber framing, lined with plywood sheeting (Plates 142 and 143).



Plate 142: The windows to the south-western wall, looking south



Plate 143: The reduced height window to the north-west wall, looking west

2.8. The South-West Wing External Descriptions

The south-western wing originally formed part of the earliest phase of the mill complex and was of three-storeys high. However, after the collapse in 1841 the wing was rebuilt and extended to the north-west by five bays and an additional four-storeys with a flat roof were constructed. The terracotta and dogtooth cornice of the spinning block continued around this wing.

The north-western elevation fronted Bradford Road and was constructed in a Flemish bond, rising to seven-storeys (Fig 2; Plate 144). The corners contained a projecting pilaster that extended 0.05m (2in) from the main body of the wing and contained a single recessed panel with a stepped brick head (Plate 144).

Four 1.37m (4ft 6in) wide windows were situated to each of the floor levels. These comprised flat-arched sandstone lintels and chamfered sandstone sills. The openings to the third floor, along with two apertures to the fifth and sixth floors had retained the late 19th-century six-light timber-framed windows. The apertures to the other floors were blocked with timber sheeting or were brick infilled (Plate 144; Fig 2).

During the 1890s a tall dust shoot was constructed to the south-eastern end of the elevation. This was constructed in a three-stretcher course English Garden Wall bond and diminished was it extended up the wing (Plate 144). The parapet contained a frieze set within a rectangular recessed panel flanked by two short columns capped with stone copings (Plate 144).



Plate 144: The north-west elevation of the south-western wing, looking south-east

The south-eastern elevation was also of four-bays wide, however during the 1841 rebuild the elevation was incorporated into the south-eastern elevation of the spinning block. Due to this rebuild, the construction junction to the upper storeys was not evident, suggesting the main mill body and the wing were rebuilt as one continuous phase.

The south-west elevation consisted of 13-bays wide with the five south-eastern bays forming the south-western elevation of the main mill body. Two projecting pilasters formed the original corners of the mill building with a third situated two-bays to the north-west (Fig 3; Plate 145).



Plate 145: The south-west elevation of the south-western wing, looking north-east

The ground floor consisted of five arches to the north-west and three windows to the south-east. The arches comprised round-headed gauged brick heads with brick piers that had been encased in cast-iron (Plate 146). The 2.09m (6ft 10¼in) wide openings were blocked with concrete block infilling (Plate 146). Five of the arches related to the boiler house that were demolished during the 20th century. Between each pier was a projecting sandstone corbel which had originally supported the roof structure of the boiler house (Plate 146).

The south-eastern archway was partially blocked, however this afforded access to a covered entrance that entered the inner courtyard of the mill complex (Fig 3).



Plate 146: Detail of the arches within the south-western elevation, denoting the position of the former boiler house, looking north-east

The window apertures to the upper floors comprised flat-arched sandstone heads and chamfered sandstone sill. Several of the 1.39m (4ft 6¾in) wide openings had retained the late 19th century six-light timber-framed windows while those to the first floor had been blocked with brick infilling (Plate 145).

The north-western corner of the elevation had contained the 1890s dust shoot which projected 3.97m (13ft) from the body of the wing (Fig 3). This was constructed in a three-stretcher course English Garden Wall bond, which diminished as it extended up the wing (Plate 145). The parapet contained a frieze set within a rectangular recessed panel flanked by two short columns capped with stone copings (Plate 145).

The remains of the earlier chimney were also evidenced at the north-western end of the wing. A square brick structure with sooting internally was situated to the west of the dust shoot (Plate 147). A steel tank was inserted into the centre during the latter half of the 20th century (Plate 147). The dust shoot and the former chimney had scarring for a roof that was associated with a now removed lean-to building (Plate 147).



Plate 147: Detail of the former chimney, looking north

The north-eastern elevation fronted the inner courtyard and raised to the full height of seven-storeys (Fig 4). The ground to third floor were largely obscured by the adjoining buildings (Fig 4). At the centre of the ground floor was round-headed archway which afforded access into the covered entrance (Plate 148). The windows to the upper floors comprised flat arched sandstone lintels and projecting sills. The 1.39m (4ft 6¾in) wide openings housed the late 19th-century six-light timber-framed windows with clear glass glazing (Plate 149).



Plate 148: The archway to the ground floor of the north-east elevation of the south-western wing, looking south-west



Plate 149: The north-east elevation of the south-western wing, looking south-west

2.9. The South-West Wing Internal Descriptions

Entry into the south-eastern section of the wing was afforded by a single doorway within the north-western wall of the spinning block. This comprised bullnosed brick jambs with a segmental arched brick head. The original timber doorframe with a replaced timber door was housed within the 1.29m (4ft 2¾in) wide opening (Fig 5).

This section contained the toilets that was accessed by a small corridor (Fig 5). These comprised late 20th-century brick walls and a concrete rendered floor. All sanitaryware was also of late 20th-century in date (Plate 150).



Plate 150: The toilets to the south-eastern end of the wing, looking west

A blocked doorway was situated within the north-western wall of the corridor (Fig 5). This comprised a segmental arched head with bullnosed brick jambs. The 1.63m (5ft 4¼in) wide opening was infilled with brick (Plate 151). Access was latterly afforded by a small, inserted doorway that was situated to the northern corner of this section (Plate 152). This comprised a rolled steel I-section lintel with a modern roller shutter door housed within the 0.9m (2ft 11½in) opening (Plate 152).



Plate 151: The blocked doorway wintering the ground floor of the wing from the narrow corridor to the south, looking west



Plate 152: The inserted doorway entering the ground floor of the wing, looking north-west

During the refurbishment works access was afforded into the north-western section (R34). This comprised a single fireproof room with painted brick walls. The north-western wall contained four floor-to-ceiling recessed windows while the south-western wall originally contained six blocked windows (Fig 5). The floor of the room was removed during the mid to late 20th century and several tile lined tanks were installed (Plate 153).



Plate 153: General view of R34, looking west

The first floor was latterly afforded access by the two doorways within the north-western wall of spinning block, and ascending access by the stair tower to the south-eastern corner of the wing (Fig 6). The wing was divided into four principal rooms, R37-R38.

R37 was entered by the south-west doorway within the north-eastern wall. This room was a small lobby that afforded access into the privies on this floor (Fig 6). The room comprised two fireproof jack arches, a concrete floor and painted brick walls (Plate 154). The south-western wall contained two doorways that entered the privies and three window apertures. The doorways consisted of timber lintels with exposed timber doorframe; however, the doors were removed from the 0.76m (2ft 6in) wide openings prior to the site investigation (Plate 154).



Plate 154: The south-western wall of R37, looking west

The north-eastern wall contained a 1.17m (3ft 10in) doorway that afforded entry into the lift. This consisted of a painted concrete lintel and housed a replaced 20th-century steel concertina door (Plate 155; Fig 6). A second doorway to the north-west of the lift entered a narrow corridor, linking the room with the first-floor landing of the stair tower. This consisted of a two-course rowlock brick round-arched head with bullnosed brick jambs (Plate 156). A replaced timber door with and exposed timber doorframe was housed within the 1.14m wide opening (Plate 156).



Plate 155: The lift doorway within the north-eastern wall of R36, looking north-east



Plate 156: The doorway entering the small linking corridor with the north-western wall of R36, looking north-east

The north-western wall contained a blocked doorway that originally entered the north-western room of the wing (Fig 6). This consisted of a segmental arched head with bullnosed brick jambs. The 1.21m (4ft) wide opening was brick infilled during the late 20th century (Plate 157).



Plate 157: The blocked doorway within the north-western wall of R36, looking west

The privies had all the sanitaryware removed prior to the initial site investigation, however these had retained the individual cubicles. These were constructed from lightweight bricks, most likely from the mid to late 19th century. The south-eastern wall of the combined cubicles contained two window apertures (Fig 6). These comprised segmental arched heads with shallow sloping brick sills. The window frames were removed, and the 1.43m (4ft 8½in) wide openings were infilled with modern concrete blocks (Plate 158).



Plate 158: The north-western window to the south-western wall of the privies, looking south-west

The first-floor landing was of a single fireproof bay with a concrete floor and painted walls (Plate 159). The north-eastern wall contained two 1.34m (4ft 4¾in) wide window apertures with a segmental arched head, splayed reveals with bullnose brick edges and a sloping sill. A replaced 19th-century six-light timber window frame was housed within the openings (Plate 160).

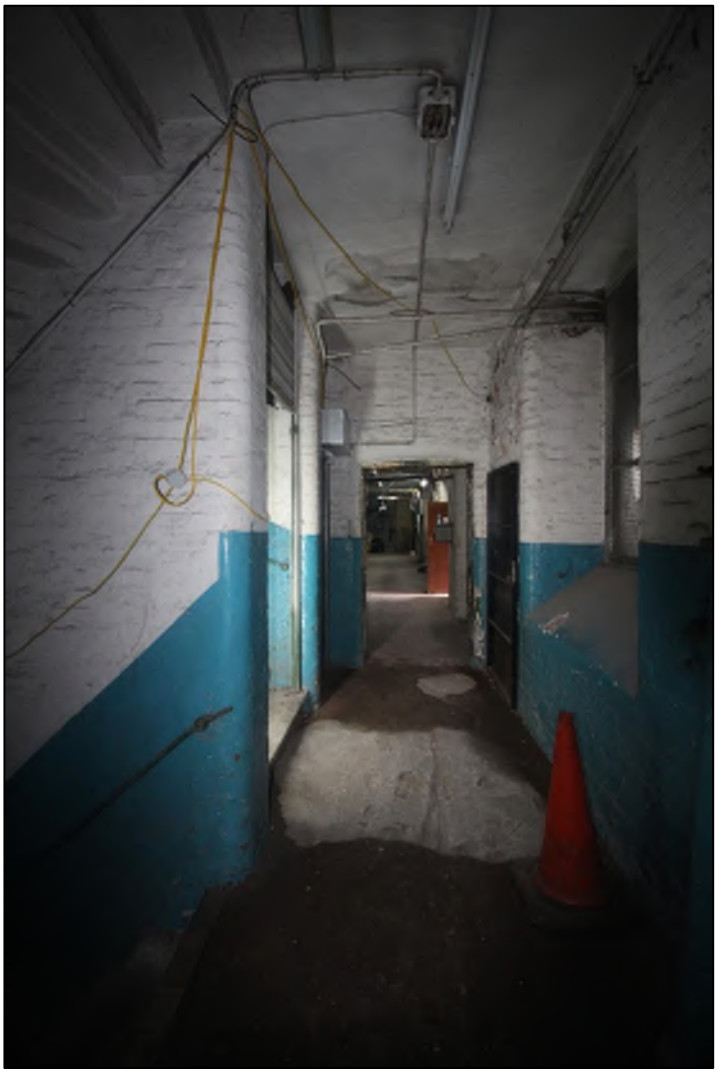


Plate 159: The first-floor landing of the south-western stair tower, looking north-west



Plate 160: The south-eastern window to the north-west wall of the stair tower, looking east

The north-western room, R38, was of seven bays of fireproof jack-arched vaulting, a concrete floor and painted brick walls (Plate 161). The cast-iron ceiling beams were supported by a central row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.83m (9ft 3½) centres, aligned north-west/south-east and at 2.79m (9ft 2in) intervals, aligned north-east/south-west (Fig 6; Plate 161). The capitals also contained bolted clamps for additional support (Plate 162). The two sections were bolted around the capital using square headed bolts with hexagonal nuts (Plate 162).



Plate 161: Genera view of R38 on the first floor of the wing, looking west



Plate 162: Detail of the additional clamps bolted to the capitals of each column

The windows to this room were situated to the north-west, south-west and north-east walls (Fig 6). These comprised floor-to-ceiling recessed openings with segmental arched heads, splayed reveals with bullnose brick edges and a sloping sills. The window frames had been removed, and the 1.34m (4ft 4¾in) wide openings were infilled with brick (Plate 163). The second window from the north-west end of the south-western wall was remodelled with a small 0.4m (1ft 3¾in) cut-out that removed the part of the sloping sill and the wall below (Plate 164).



Plate 163: The windows to the south-western wall of Rx, looking south-west



Plate 164: Detail of the cut-out to one of the windows on the south-western wall, looking south-west

A doorway was inserted into the north-eastern wall that afforded access to the first floor of the 1880s south-western extension (Fig 6). This was inserted into an earlier window aperture; however, the sill and window frame were removed. A late 20th-century timber-framed partition and doorway was inserted into the earlier opening, replacing the late 19th-century remodelling (Plate 165).



Plate 165: The doorway within the north-eastern wall affording access into the first floor of the 1880s south-western extension, looking north-east

The second floor was divided into four rooms, R39-R41. The stair tower landing, R39, was also of a single fireproof bay with a concrete floor and painted walls (Plate 166). The north-eastern wall contained two 1.34m (4ft 4¾in) wide window apertures with a segmental arched head, splayed reveals with bullnose brick edges and a sloping sill. A replaced 19th-century six-light timber window frame was housed within the openings (Plate 166). The doorway into the spinning block to the south-east was blocked with modern concrete blocks, however entry into R41 was afforded by the north-western doorway (Fig 7).



Plate 166: The second floor landing of the stair tower, looking south-east

R40 was located to the south-west of the stair tower and was laterally used as a small corridor with the privies positioned further to the south-west (Fig 7). This area comprised two bays formed with Hodgkinson-style jack-arches, painted brick walls and a concrete floor (Plate 167). The privies were a late 20th-century addition, constructed with lightweight brick partition walls and fitted with modern sanitaryware that had since been removed.



Plate 167: General view of R40 on the second floor, looking south

The north-western room, R41, was of seven bays of fireproof jack-arched vaulting, a concrete floor and painted brick walls (Plate 168). The cast-iron ceiling beams were supported by a central row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned north-west/south-east (Fig 7; Plate 168). The capitals also contained bolted clamps for additional support (Plate 168). The two sections were bolted around the capital using square headed bolts with hexagonal nuts (Plate 168). This floor was also stabilised with the addition of tensioning bars that were supported internally by cast-iron L-brackets and terminated externally with circular tie rod backing plates (Plate 168).



Plate 168: General view of Rx on the second floor of the wing, looking north

The windows to this room were situated to the north-west, south-west and north-east walls (Fig 7). These comprised floor-to-ceiling recessed openings with segmental arched heads, splayed reveals with bullnose brick edges and sloping sills. The window frames had been removed, and the 1.34m (4ft 4¾in) wide openings were blocked with timber sheeting (Plate 169).



Plate 169: The windows to the south-western wall of R41, looking south

The third floor was divided into four rooms, R41-R44. The stair tower landing, R42, was also of a single fireproof bay with a concrete floor and painted walls. The north-eastern wall contained two 1.34m (4ft 4¾in) wide window apertures with a segmental arched head, splayed reveals with bullnose brick edges and a sloping sill. A replaced 19th-century six-light timber window frame was housed within the openings. The doorway into the spinning block to the south-east was blocked with modern concrete blocks, however entry into Rx was afforded by the north-western doorway (Fig 8).

R43 was latterly used as a storeroom with access into the privies to the south-west and to the narrow linking corridor to the north-east (Fig 8). The room consisted of two fireproof jack-arches, painted brick walls and a concrete floor (Plate 170). A blocked doorway was located to the centre of the south-eastern wall, which originally afforded access into the spinning block. The entrance comprised bullnosed brick, segmental arched head and jambs while the 1.35m (4ft 5¼in) wide opening was infilled with bricks (Plate 170).



Plate 170: General view of R43, looking south-east

The privies were located to the south-western corner of the wing (Fig 8). The privies were a late 20th-century addition, constructed with lightweight brick partition walls and fitted with modern sanitaryware that had since been removed.

As with the floor below, the north-western room, R44, was of seven bays of fireproof jack-arched vaulting, a concrete floor and painted brick walls (Plate 171). The cast-iron ceiling beams were supported by a central row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll moulded capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned north-west/south-east (Fig 8; Plate 171). The capitals also contained bolted clamps for additional support (Plate 172). The two sections were bolted around the capital using square headed bolts with hexagonal nuts (Plate 172). This floor was also stabilised with the addition of tensioning bars that were supported internally by cast iron L-brackets and terminated externally with circular tie rod backing plates (Plate 172).



Plate 171: General view of R44 on the third floor of the wing, looking south-east



Plate 172: Detail of the columns and the tensioning rods within Rx, looking north-west

Natural light was afforded by the windows to the north-west, south-west and north-east walls (Fig 8). These comprised floor-to-ceiling recessed openings with segmental arched heads, splayed reveals with bullnose brick edges and sloping sills. The window frames had been removed, and the 1.34m (4ft 4¾in) wide openings were blocked with timber sheeting (Plate 172). The north-western aperture to the south-west wall was however infilled with brick during the construction of the attached dust shoot in the 1890s (Plate 173).



Plate 173: The blocked window to the north-western end of the south-west wall, looking north-west

The machinery to this floor was originally powered by a single line shaft that was situated to the south-western end. A single cast-iron bearing box was situated to the centre of the south-western pier of the north-western wall. The shaft would have been supported by hanger brackets that were clamped to the ceiling beams, and a corresponding bearing box would have been situated within the south-eastern wall. However, this had been removed during the 20th century, and the wall was repaired with later 20th-century bricks.

The south-eastern wall contained two doorways entering the stair tower to the north-east R42 and R43 to the south-west (Fig 8). These consisted of bullnosed brick, segmental arched heads and jambs and originally measured 1.3m (4ft 3¼in) wide. Both openings contained replaced timber doorframes and doors (Plate 174).



Plate 174: The doorways within the south-east wall, looking south-east

The fourth floor was divided into four rooms, R45-R47. The stair tower landing, R45, was also of a single fireproof bay with a concrete floor and painted walls. The north-eastern wall contained two 1.34m (4ft 4¾in) wide window apertures with a segmental arched head, splayed reveals with bullnose brick edges and a sloping sill. A replaced 19th-century six-light timber window frame was housed within the openings. The doorway into the spinning block to the south-east was blocked with modern concrete blocks, however entry into R47 was afforded by the north-western doorway (Fig 9).

R46 was latterly used as a storeroom with access into the privies to the south-west and to the narrow linking corridor to the north-east (Fig 9). The room consisted of two fireproof jack-arches, painted brick walls and a concrete floor. A blocked doorway was located to the centre of the south-eastern wall, which originally afforded access into the spinning block. The entrance comprised bullnosed brick, segmental arched head and jambs while the 1.35m (4ft 5¼in) wide opening was infilled with bricks (Plate 175).

As with the floor below, the north-western room, R47, was of seven bays of fireproof jack-arched vaulting, a concrete floor and painted brick walls (Plate 175). The cast-iron ceiling beams were supported by a central row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned north-west/south-east (Plate 175). The capitals also contained bolted clamps for additional support (Plate 175). The two sections were bolted around the capital using square headed bolts with hexagonal nuts (Plate 175). This floor was also stabilised with the addition of tensioning bars that were supported internally by cast iron L-brackets and terminated externally with circular tie rod backing plates (Plate 175).



Plate 175: General view of R47 on the fourth floor of the wing, looking north

The fifth floor was again divided into four rooms with access afforded by the stair tower to the eastern corner and lateral access into the spinning block (Fig 10). The stair tower landing, R48, was also of a single fireproof bay with a concrete floor and painted walls. The north-eastern wall contained two 1.34m (4ft 4¾in) wide window apertures with a segmental arched head, splayed reveals with bullnose brick edges and a sloping sill. A replaced 19th-century six-light timber window frame was housed within the openings. The doorway into the spinning block to the south-east was blocked with modern concrete blocks, however entry into R50 was afforded by the north-western doorway (Fig 10).

R49 was a small access corridor comprising two fireproof jack-arches, a concrete floor and painted brick walls (Plate 176). Access into the earlier lift shaft was afforded by the doorway positioned at the south-eastern end of the north-west wall (Fig 117). The opening had retained its original timber lintel and outer timber doorframe; however, the earlier door had been replaced in the late 20th-century by a steel concertina door (Plate 177).



Plate 176: General view of R49 on the fifth floor of the wing, looking north-west



Plate 177: The lift entrance within the north-eastern wall, looking north-east

The privies were again located to the south-western corner of the level. These were a mid-20th-century addition to the wing and comprised of timber-framed partitions lined with hardboard and plaster render. The sanitaryware was of mid-20th-century date.

R50 was the largest room to the wing and was situated to the north-western end (Fig 10). This was of seven bays of fireproof jack-arched vaulting, a concrete floor and painted brick walls (Plate 178). The cast-iron ceiling beams were supported by a central row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned north-west/south-east (Fig 10; Plate 178). This floor was also stabilised with the addition of tensioning bars that were supported internally by cast iron L-brackets and terminated externally with circular tie rod backing plates (Plate 178).



Plate 178: General view of R50 on the fifth floor of the wing, looking north

Natural light was afforded by the windows to the north-west, south-west and north-east walls (Fig 10). These comprised floor-to-ceiling recessed openings with segmental arched heads, splayed reveals with bullnose brick edges and sloping sills. Housed within the 1.34m (4ft 4¾in) wide openings were the late 19th-century six-light timber-framed windows (Plate 179). The north-western aperture to the south-west wall was however infilled with brick during the construction of the attached dust shoot in the 1890s (Plate 179).



Plate 179: The windows to the north-eastern wall of Rx, looking north

As with the floors below, the sixth floor was accessible by the stair tower to the north-east corner and was divided into three rooms (Fig 11). The landing, R51, originally contained three doorways that consisted of replaced bullnosed brick flat arched heads and jambs (Plate 180). The opening into R16 was partially infilled with brick to a height of approximately 1m from floor level (Plate 180). Above the infilling was a flat timber sill, jambs and head of an inserted window frame (Plate 180). The hoist doorway within the south-eastern wall comprised a round-headed arched lintel with bullnosed brick jambs. The 1.17m (3ft 10in) wide opening was infilled with brick and a timber shelving unit was fixed to the blocking (Plate 180).



Plate 180: General view of the sixth floor landing, with the partially blocked south-eastern doorway entering into the spinning block, looking south-east

R53 was situated to the north-western end of the wing (Plate 181; Fig 11). This was of five jack-arched bays, a tiled floor and painted brick walls (Plate 181). As with the floor below, the cast-iron ceiling beams were supported by a single row of 0.18m (7in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned on a north-west/south-east axis (Fig 11; Plate 181).

Natural light entered the room through the windows to the north-west, south-west and north-east walls. These comprised floor-to-ceiling recesses with segmental arched heads, bullnosed brick reveals and sloping sills. The 1.5m (4ft 11in) wide openings in the north-west wall had retained their late 19th-century six-light timber window frame replacements, while the other openings had their windows removed (Plate 182).



Plate 181: General view of R53, looking north



Plate 182: The windows to the south-western wall, looking west

The privies were again located to the south-western corner of the level. These were a mid-20th-century addition to the wing and comprised of timber-framed partitions lined with hardboard and plaster render. The sanitaryware was of mid-20th-century date.

2.10. The North-East Wing External Descriptions

The north-east wing originally 1842 extension of the mill complex and was of seven-storeys high with a flat roof. The terracotta and dogtooth cornice of the spinning block continued around this wing.

The north-western elevation fronted Bradford Road and was constructed in a Flemish bond, rising to seven-storeys (Fig 2; Plate 183). The corners contained a projecting pilaster that extended 0.05m (2in) from the main body of the wing and contained a single recessed panel with a stepped brick head (Plate 183).

As with the south-western wing, this contained four 1.37m (4ft 6in) wide windows to each of the floor levels. These comprised flat arched sandstone lintels and chamfered sandstone sills. The openings to the first, fourth and sixth floors, had retained the late 19th-century six-light timber-framed windows. The apertures to the other floors were blocked with timber sheeting or were brick infilled (Plate 183; Fig 7).



Plate 183: The north-western elevation of the north-eastern wing, looking south-east

The north-eastern elevation was largely obscured by the 1844 Dust House to the south-eastern end and the 1950s office building that fronted Bradford Road (Fig 10; Plate 184). The exposed section of the wing comprised six-bays wide, rising to seven storeys (Fig 3). The windows to each floor consisted of flat arched sandstone lintels and chamfered sandstone sills. A six-light timber-framed window was housed within the 1.42m (4ft 6in) wide openings (Plate 184). Two projecting pilasters formed the original corners of the mill building with a third situated two-bays to the north-west (Fig 3; Plate 184).

A hoist tower was situated to the at the junction between wing and the north-eastern elevation of the spinning block (Fig 3). The tower was constructed in a three stretcher course English Garden Wall bond with a flat roof below a short parapet wall (Plate 184). Two flush sandstone lintels were situated at ceiling height of the six floor to the north-western and south-eastern elevations (Plate 184). These relate to the position of the hoist gearing that was installed for strengthening the internal walls.



Plate 184: The north-eastern elevation of the north-eastern wing, looking south-west

The south-west elevation fronted the inner courtyard and raised to the full height of seven-storeys (Fig 4). The ground floor comprised two doorways with a single window to the south-eastern end (Fig 4; Plate 185). The north-western doorway comprised a round-headed archway that afforded access into the wing from the courtyard (Plate 185). The 2.51m (8ft 3in) wide opening housed two timber doors with an exposed timber doorframe (Plate 185). A second doorway to the south-east afforded access into the stair tower (Plate 185). The 1.55m (5ft 1in) wide opening housed a timber door with an exposed timber doorframe. A timber fanlight was situated above the door head (Plate 185).

The single window to the ground floor and the windows to the upper floors comprised flat arched sandstone lintels and projecting sills. The 1.39m (4ft 6¾in) wide openings housed the late 19th-century six-light timber-framed windows with clear glass glazing (Plate 186).



Plate 185: The ground floor of the south-west elevation to the north-eastern wing, looking north-east



Plate 186: The upper floors of the south-west elevation to the north-eastern wing, looking north-east

2.11. The North-East Wing Internal Descriptions

Internally, the ground floor of the wing was divided into three rooms with internal access into the 1950s office building and the single-storey warehouse to the north-east (Fig 5). Access was afforded by the two doorways within the south-western elevation, with the south-eastern doorway entering the stair tower.

The large arched doorway to the north-west entered a narrow fireproof corridor (R54) of a single jack arch, painted brick walls and a flag stone floor (Plate 187). The north-east wall of the original corridor was removed during the construction work of the 1950s office and was remodelled into an archway for structural stability (Plate 188). The room was extended 1.8m (5ft 11in) and entered R85 of the office block (Plate 187; Fig 5). The corridor also continued at 90 degrees at the western corner to form an entry into the single-storey warehouse R86 (Fig 5).



Plate 187: General view of the entrance corridor R54, looking south-west



Plate 188: General view of the entrance corridor R54, looking north-east

A blocked doorway was situated to the south-western end of the south-eastern wall. The 1.21m (4ft) wide opening was infilled with brick, however the segmental arched lintel had been retained. The north-western wall had contained a doorway that afforded access into R55 (Fig 5). This comprised a timber lintel with and exposed timber doorframe and housed two timber doors within the 1.82m (6ft) wide opening (Plate 189).



Plate 189: The doorway entering R55 within the north-west wall of R54, looking north

R56 consisted of four fireproof bays with a concrete rendered floor and painted brick walls (Plate 190). The cast-iron ceiling beams were originally supported by two rows of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 4.64m (15ft 2¾in) centres, aligned north-west/south-east and at 2.79m (9ft 2in) intervals, aligned north-east/south-west (Fig 5; Plate 190). However, several columns had been replaced with rolled steel I-section stanchions that were encased within concrete rendering for added protection. The windows within the north-western wall comprised floor-to-ceiling recessed with segmental arched heads and flat brick sills. The 1.35m (4ft 5¼in) wide openings were brick infilled internally.



Plate 190: General view of R56, looking north

The first floor was afforded access by the north-eastern stair tower and by a doorway within the north-western wall of the spinning block (Fig 6). This doorway entered a small self-contained office that was associated with the former music studios; however, the partition walls were removed during the soft strip of the building. The room's (R58) original layout consisted of two fireproof bays, comprising concrete floor and painted brick walls (Plate 191).



Plate 191: General view of R58, looking east

The south-western wall had retained the only entrance into the projecting lift tower. This comprised a tall recessed 1.35m (4ft 5¼in) wide opening with a two-brick course rowlock round arched head with bullnosed brick jambs. The opening had retained the timber door with a tongue and groove timber panel above the exposed doorframe (Plate 192). The wall also contained a narrow 1.09m (3ft 7in) doorway with a round-headed arch and bullnosed brick jamb to the south-east. The opening afforded access into a narrow corridor, that entered the north-western end of the ground floor landing of the stair tower (Plate 193; Fig 6).



Plate 192: The doorway entering the lift shaft within R58, looking north-west



Plate 193: The doorway entering a small access corridor within the south-west wall, looking west

The north-western wall contained a blocked doorway that originally afforded access into the north-western end of the wing (Fig 6). This consisted of a segmental arched head with bullnosed brick reveals (Plate 194). The 1.18m (3ft 10½in) wide opening was infilled with modern bricks (Plate 194).



Plate 194: The blocked doorway to the north-western wall of R58, looking north

The first floor was afforded access by the stair tower to the south-eastern corner of the building (Fig 6). The principal room of the wing (R59) comprised five fireproof jack-arched bays with a timber floor with each board measuring 0.152m (6in) wide and painted brick walls (Plate 195). The cast-iron ceiling beams were supported by a single row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned north-west/south-east (Fig 6; Plate 195).



Plate 195: General view of R59 on the first floor of the wing, looking north

The north-western wall contained four floor-to-ceiling recessed window apertures (Plate 196). These comprised segmental arched heads with shallow sloping sills and slayed bullnosed brick reveals. The 1.39m (4ft 6¾in) wide openings had retained their late 19th-century six-light timber-framed windows (Plate 196).



Plate 196: The windows within the north-western wall of R59, looking north

The four original window apertures to the north-eastern wall were remodelled into doorways that afforded access into the first floor of the 1950s office block. The segmental arched heads were retained however the sills, window frames and low walls were removed (Fig 6; Plate 197).



Plate 197: The remodelled windows within the north-east wall of R59 entering the first floor of the 1950s office block, looking north-east

A doorway was situated to the north-western end of the south-western wall which entered the first floor of the 1880s north-eastern extension that was situated within the north-east corner of the courtyard (Fig 6). This consisted of a cast-iron lintel with an exposed timber doorframe situated within the 1.1m (3ft 7½in) wide opening (Plate 198).



Plate 198: The doorway within the south-western wall entering the first floor of the adjoining 1880s north-eastern extension, looking west

The stair tower to the southern corner of the building afforded access onto the second floor (Fig 7). The landing afforded access into the spinning block to the south-east and the north-western room of the wing (Fig 7). This floor was heavily modified and divided into three modern rooms with timber-framed partition walls, however some of the original features had been retained. The original layout of R61 was of five fireproof jack arched bays, painted brick walls and a replaced timber floor (Plate 199). The cast-iron ceiling beams were supported by a single row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned north-west/south-east (Fig 7; Plate 199).



Plate 199: General view of the remodelled north-western room (R61) on the second floor, looking north

The windows to the north-west, south-west and north-east walls were floor-to-ceiling recessed with segmental arched heads, bullnosed brick reveals and shallow sloping sills. The window framed to the 1.5m (4ft 11in) wide openings were removed and infilled with brick (Plate 200).



Plate 200: The blocked windows to the south-western wall of Rx on the second floor, looking west

The second window from the north-western end of the south-east wall had been modified into a doorway that afforded access into the Bradford Road office block (Fig 7). The segmental arched head had been retained; however, the sill was removed and an exposed wrought-iron doorframe was housed within the opening. Two iron doors were housed within the opening, forming a fireproof barrier between the two buildings (Plate 201).



Plate 201: The doorway entering Rx of the Bradford Road office building, looking west

A single doorway within the south-eastern wall entered R60 situated to the eastern corner of the floor (Fig 7). The doorway consisted of a segmental arched lintel with bullnose brick jambs and edges to the lintel. The 0.98m (3ft 3¾in) wide opening had retained the original exposed timber doorframe however a late 20th-century timber door was housed within the opening (Plate 202).

Room R62 was heavily modernised with plasterboard to the walls and ceiling and modern carpet floor tiles obscuring the original floor (Plate 203). The north-eastern wall contained two 1.53m (5ft) wide window apertures. The lintels were obscured by the flat ceiling, along with the bullnosed brick reveals, however the shallow sloping sills and a six-light timber-framed windows were retained (Plate 203).



Plate 202: The doorway entering R62 form R61 on the second floor, looking south-east



Plate 203: General view room R62 on the second floor, looking east

The third floor continued a similar layout to the floors below, with access afforded by the stair tower located to the southern corner and was divided into three principal rooms, R63-R65. The stair tower landing, R63, consisted of a single bay of jack-arch vaulting, a concrete floor and painted brick walls (Plate 204). The north-east wall contained two 1.53m (5ft) wide window apertures consisting of a segmental arched head, sloping sills and a six-light timber-framed window (Plate 205).

Access into the goods lift was originally situated to the south-east end of the north-eastern wall (Fig 8). This doorway consisted of a two-rowlock brick course round-headed lintel with bullnosed brick jambs. However, the opening was infilled with brick during the mid-20th century (Plate 206).



Plate 204: General view third floor landing, looking south-east



Plate 205: Detail of the windows to the south-western wall of the third floor landing, looking south



Plate 206: The blocked lift doorway within the second floor landing, looking east

The landing originally contained three doorways that afforded access to R64 to the north-west, R65 to the north-east and R11 on the third floor of the adjoining spinning block to the south-east (Fig 8). These consisted of bullnosed brick segmental arched heads and jambs. The opening into R11 was infilled with brick, while the openings to the R64 and R63 contained recently installed exposed timber doorframes.

Room R65 was entered from a narrow corridor to the northern corner of the landing (Fig 8). This room comprised two fireproof jack-arched bays, painted brick walls and a tiled floor (Plate 207). The south-east wall contained two locked doorways that originally entered the 1844 Waste House (Fig 8). These comprised bullnosed brick segmental arched heads and jambs. The 1.26m (4ft 1¾in) wide openings were infilled with bricks, however the south-western opening had retained the exposed timber doorframe and timber door (Plate 207). A further blocked doorway was situated to the south-east end of the south-western wall. This originally afforded access into the lift shaft and comprised a round-arched head with bullnosed brick jamb and the 1.23m (4ft) wide opening was infilled with brick (Plate 208).



Plate 207: General view of the R65, looking east



Plate 208: The blocked doorways to the south-east and south-west walls of Rx, looking south

The north-western room, R64, was remodelled as the canteen in 1919 and had retained several timber-framed partition walls that subdivided the space into multiple areas during its operation. The original configuration comprised five jack-arched bays, a concrete floor and glazed tiles to the walls (Plate 209). As with the floor below, the cast-iron ceiling beams were supported by a single row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned on a north-west/south-east axis (Fig 8; Plate 209).

The south-western wall incorporated a doorway providing access to the Bradford Road office block (Fig 8). This opening contained a timber doorframe fitted with a fixed transom light above the door head and an adjacent fixed side panel comprising of two lights. The joinery appears to originate to the remodelling phase of the wing into its use as a canteen during the early 20th century.



Plate 209: General view of the remodelled canteen, looking west

The windows to the north-west, south-west and north-east walls were floor-to-ceiling recessed with segmental arched heads, bullnosed brick reveals and shallow sloping sills. The window frames to the 1.5m (4ft 11in) wide openings were removed and infilled with brick (Plate 210).



Plate 210: The windows to the north-east wall of R64, looking north-east

The fourth floor was again divided into three rooms with access afforded by the stair tower (Fig 9). The landing originally contained three doorways that afforded access to R68 to the north-west, R67 to the north-east and R12 on the fourth floor of the adjoining spinning block to the south-east (Fig 9). These consisted of bullnosed brick segmental arched heads and jambs.

Room R67 was accessed from a narrow corridor entering at the northern corner of the landing (Fig 9). This room comprised two fireproof jack-arched bays, painted brick walls and a tiled floor. (Plate 211). The south-western wall contained two entrances, with the corridor entered through the bullnosed brick, round-headed doorway to the north-west (Plate 211). The south-eastern opening afforded access into the lift shaft, which also comprised bullnosed brick, round-headed doorway. Both openings measured 1.1m (3ft 7½in) wide.



Plate 211: General view of Rx, looking south

The privies were entered through a late 20th-century timber-framed partition wall, lined with plasterboard (Plate 212). Internally, these were divided with further timber partition walls and contained late 20th-century sanitaryware. The north-western wall of the area contained the originally positioned window apertures (Fig 9). These comprised segmental arched heads with bullnosed brick reveals and sloping sills. However, the 1.53m wide openings housed replaced fixed two-light window frames (Plate 212).

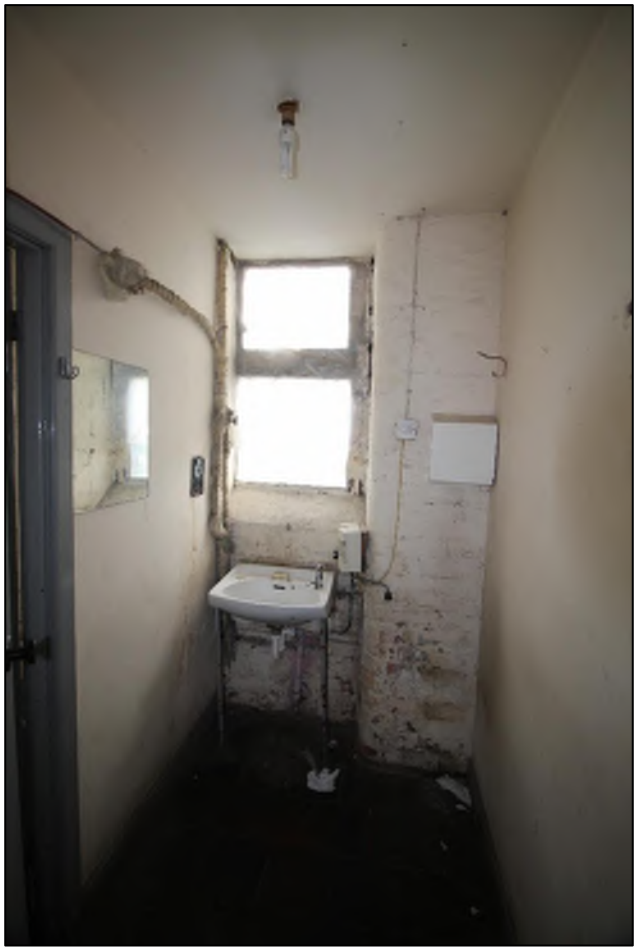


Plate 212: One of the 20th-century cubicles within the privy area of the fourth floor, looking north-east

R68 was the largest room and was located to the north-eastern end of the wing (Plate 213). This was of five jack-arched bays, a tiled floor and painted brick walls (Plate 213). As with the floor below, the cast-iron ceiling beams were supported by a single row of 0.18m (7in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned on a north-west/south-east axis (Fig 9; Plate 213). The room also contained a late 20th-century area to the western corner. This was created using timber-framed partition walls lined with plasterboard.



Plate 213: General view of R68, looking north

Natural light entered the room through the windows to the north-west, south-west and north-east walls. These comprised floor-to-ceiling recesses with segmental arched heads, bullnosed brick reveals and sloping sills. The 1.5m (4ft 11in) wide openings in the north-west and south-east walls had retained their late 19-century six-light timber window frame replacements, along with the south-eastern aperture to the south-west wall. The four north-western openings in this wall, however, had been infilled with brick (Plate 214).



Plate 214: The windows to the north-western wall, looking north-west

The fifth floor was accessible by the stair tower to the south-western corner and was divided into three rooms (Fig 10). The landing, R69, originally contained three doorways that afforded access to R70 to the north-west, R71 to the north-east and R15 on the fifth floor of the adjoining spinning block to the south-east (Fig 10). These consisted of replaced bullnosed brick fla-arched heads and jambs (Plate 215). The opening into R15 was partially infilled with brick to a height of approximately 1m from floor level. Above the infilling was a flat timber sill, jambs and head of an inserted window frame (Plate 215). The hoist doorway within the north-eastern wall comprised a round-headed arched lintel with bullnosed brick jambs. The 1.17m (3ft 10in) wide opening was infilled with brick and a timber shelving unit was fixed to the blocking (Plate 215). The stair tower landing comprised stone floor, painted brick walls and a flat ceiling (Plate 215). The south-western wall contained two 1.33m wide windows with sloping sills and segmental arched heads and housed replaced timber-framed windows (Plate 216). The former winding department was housed within this level as the central pier contained a painted sign with “NO 6 WINDING DEPT” (Plate 217).



Plate 215: General view of the sixth floor landing, with the partially blocked south-eastern doorway entering into the spinning block, looking north-east



Plate 216: The windows to the south-western wall of the fifth floor landing, looking south-west



Plate 217: The winding department sign to the south-western wall of the fifth floor landing, looking south-west

R70 was situated to the north-western end of the wing (Plate 218; Fig 10). This was of five jack-arched bays, a tiled floor and painted brick walls (Plate 218). As with the floor below, the cast-iron ceiling beams were supported by a single row of 0.18m (7in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned on a north-west/south-east axis (Fig 10; Plate 218).

Natural light entered the room through the windows to the north-west, south-west and north-east walls. These comprised floor-to-ceiling recesses with segmental arched heads, bullnosed brick reveals and sloping sills. The 1.5m (4ft 11in) wide openings in the north-west wall had retained their late 19th-century six-light timber window frame replacements, while the other openings had their window removed (Plate 218).



Plate 218: General view of R70, looking north

The south-eastern room, R71, was of two bays of fireproof jack arches and consisted of a tiled floor and painted brick walls (Plate 16). The north-eastern wall contained two 1.56m wide floor to ceiling recessed windows comprising bullnosed segmental arched heads and sloping sills (Plate 219). The window frames had been removed prior to the initial site investigation and replaced with a timber frame lined with plywood sheeting (Plate 219).



Plate 219: General view of R71, looking east

The sixth floor was also accessible by the stair tower to the south-western corner and was divided into three rooms (Fig 11). The landing, R72, originally contained three doorways that afforded access to R73 to the north-west, R74 to the north-east and R16 on the sixth floor of the adjoining spinning block to the south-east (Fig 11). These consisted of replaced bullnosed brick flat arched heads and jambs (Plate 220). The opening into R16 was partially infilled with brick to a height of approximately 1m from floor level (Plate 220). Above the infilling was a flat timber sill, jambs and head of an inserted window frame (Plate 220). The hoist doorway within the north-eastern wall comprised a round-headed arched lintel with bullnosed brick jambs. The 1.17m (3ft 10in) wide opening was infilled with brick and a timber shelving unit was fixed to the blocking (Plate 220).



Plate 220: General view of the sixth floor landing, with the partially blocked south-eastern doorway entering into the spinning block, looking south-east

R73 was situated to the north-western end of the wing (Plate 221; Fig 11). This was of five jack-arched bays, a tiled floor and painted brick walls (Plate 221). As with the floor below, the cast-iron ceiling beams were supported by a single row of 0.18m (7in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.85m (9ft 4¼in) centres, aligned on a north-west/south-east axis (Fig 11; Plate 222).

Natural light entered the room through the windows to the north-west, south-west and north-east walls. These comprised floor-to-ceiling recesses with segmental arched heads, bullnosed brick reveals and sloping sills. The 1.5m (4ft 11in) wide openings in the north-west wall had retained their late 19th-century six-light timber window frame replacements, while the other openings had their window removed (Plate 223).



Plate 221: General view of R73, looking north



Plate 222: Detail of the columns within R73, looking north



Plate 223: The windows to the south-western wall, looking west

The south-eastern room, R74, was of two bays of fireproof jack arches and consisted of a tiled floor and painted brick walls (Plate 224). The north-eastern wall contained two 1.56m wide floor to ceiling recessed windows comprising bullnosed segmental arched heads and sloping sills (Plate 224). The window frames had been removed prior to the initial site investigation and replaced with a timber frame lined with plywood sheeting (Plate 224).



Plate 224: General view of R74, looking east

The south-eastern wall contained a window to the south-west and a doorway to the north-east, these openings originally formed part of the earlier window arrangement associated with the original height of the spinning block, but both apertures were later remodelled. The window opening, measuring 1.34m in width, was altered to include an inserted I-section iron beam lintel and a four-light timber-framed window (Plate 224). The doorway, 1.17m wide, incorporated two timber lintels from two different construction phases. Housed within the opening was an exposed timber doorframe, however the door was removed prior to the site investigation (Plate 224).

2.12. The 1844 Waste House External Descriptions

The waste house was situated to the eastern corner of the mill and comprised three-bays that was constructed in Flemish bond rising to four-storeys. The flat roof was situated below the short parapet wall with oversailing sandstone copings with a terracotta and dogtooth cornice enveloping the building (Plate 225). The north-western elevation was largely obscured by the 1950s constructed office building, however the upper two floors could be observed. These floors contained three window apertures comprising flat-arched sandstone lintels and projecting sills (Plate 225). The 1.33m (4ft 4½in) wide windows to the second floor housed a six-light timber-framed window with clear glass panes (Plate 225). The third floor openings were infilled with brick during the 20th century (Plate 225).

The north-eastern elevation comprised six window apertures to the third floor. As with the north-western elevation apertures, these comprised flat-arched lintels and chamfered sills. The 1.4m (4ft 7¼in) wide openings were brick infilled (Plate 225).



Plate 225: General view of the 1844 Waste House, looking south

The south-east elevation fronted the Ashton Canal and contained part of a recessed panel to the north-east corner (Plate 226). The elevation contained four window apertures to each floor level (Fig 2). These comprised flat-arched sandstone lintels and chamfered projecting sandstone sills (Plate 226). The first and second floor openings housed the late 19th-century six-light timber-framed windows within the 1.41m (3ft 9in) wide openings (Plate 226). The ground floor openings were infilled with modern concrete blocks while the third floor windows were brick infilled (Plate 226).



Plate 226: The south-eastern elevation of the 1844 Waste House, looking west

2.13. The 1844 Waste House Internal Descriptions

The ground floor, R75, was inaccessible during the initial site investigation, however during the redevelopment the building was accessible. The ground floor consisted of a single room, comprising a concrete floor, with painted brick walls and a fireproof ceiling that had Hodgkinson-type jack arches (Plate 227). The cast-iron ceiling beams were supported by a single row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.93m (9ft 7½in) centres, aligned north-east/south-west (Fig 5; Plate 227). The concrete floor had been removed during the redevelopment works, which uncovered the bedding consisting of a silty clay with crushed building material inclusions (Plate 227).



Plate 227: General view of the ground floor, R75, of the 1844 Waste House, looking south-east

The south-eastern wall contained four blocked floor-to-ceiling recessed windows. These comprised segmental arched heads and flat brick sills. The window frames were removed during the latter half of the 20th century with the 1.41m (3ft 9in) wide openings infilled with concrete blocks (Plate 228).



Plate 228: The blocked windows within the south-eastern wall to the ground floor of the 1844 Waste House, looking east

The first floor was afforded access by a 1.76m (5ft 9¼in) wide inserted doorway within the north-eastern wall of the spinning block (Fig 6). This floor was a single fireproof room (R76) comprising four Hodgkinson jack arches, painted brick walls and a tiled concrete floor (Plate 229). The cast-iron ceiling beams were supported by a single row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.93m (9ft 7½in) centres, aligned north-east/south-west (Fig 6; Plate 229).



Plate 229: General view of the first floor of the 1844 Waste House, looking east

The north-west wall contained three windows with the south-east wall containing four windows. These comprised floor-to-ceiling recessed openings with segmental arched heads and short sloping brick sills (Plate 230). The slayed reveals had bullnosed brick reveals, with the late 19th-century timber-framed six-light windows housed within the 1.45m (4ft 9in) wide openings (Plate 230).



Plate 230: The windows to the north-western wall to the first floor of the 1844 Waste House, looking north-west

The south-western wall had retained one of the spinning block's earlier window apertures to the south-eastern end. This formed the external face of the aperture consisted of a 1.56m (5ft 1½in) wide opening with the soffit of the flat-arched sandstone sill partially observed. The window frame and sill had been removed, with the opening remodelled into a doorway. However, this was blocked with a timber frame and boarding during the latter half of the 20th century (Plate 231).



Plate 231: The remodelled window of the original spinning block within the south-western wall of the 1844 Waste House, looking south-west

The second floor was afforded access by a 1.76m (5ft 9¼in) wide inserted doorway within the north-eastern wall of the spinning block (Fig 7). This floor was divided into two rooms during the latter half of the 20th century, however the original layout was a single fireproof room (R77) comprising four Hodgkinson jack arched, painted brick walls and a tiled concrete floor (Plate 232). The cast-iron ceiling beams were supported by a single row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals. These were placed at 2.93m (9ft 7½in) centres, aligned north-east/south-west (Fig 7; Plate 232).



Plate 232: General view of the second floor of the 1844 Waste House, looking east

As with the floor below, the north-west wall contained three windows with the south-east wall containing four windows. These comprised floor-to-ceiling recessed openings with segmental arched heads and short sloping brick sills (Plate 233). The slayed reveals had bullnosed brick reveals, with the late 19th-century timber-framed six-light windows housed within the 1.45m (4ft 9in) wide openings (Plate 233).

A blocked doorway was located at the to the south-east end of the south-western wall. This feature comprised a segmental arched head constructed from two brick courses, with squared jambs and a concrete threshold. The opening, measuring 1.56m (ft 1½in) wide, had been fully infilled with brick. Its original function was to provide access into the adjoining spinning block (Fig 7; Plate 233).



Plate 233: The blocked doorway to the south-west wall, looking south

The rear of a bearing box was located to the north-west of the doorway, and was positioned along the alignment of one of the central line shafts to the adjoining spinning block. The retained cast-iron housing of the bearing box was infilled with bricks during the later phase of the building's use, most likely after the electrification in 1907 (Plate 234; Fig 7).



Plate 234: The rear of a bearing box with the south-western wall of the Waste House, looking east

The third floor was entered through the central doorway within the north-eastern wall of the spinning block's third floor (Fig 8). This floor (R78) formed the upper floor of the building and consisted of a concrete floor and brick walls (Plate 235). The ceiling comprised reinforced concrete and supported by cast-iron beams that were encased in concrete (Plate 235). The beams were supported by a single row of 0.152m (6in) diameter hollow cylindrical cast-iron astragal columns, with simple roll mould capitals and lamb's tongue cyma reversa profile flanges to the head plate. These were placed at 2.93m (9ft 7½in) centres, aligned north-east/south-west (Fig 8; Plate 235).



Plate 235: General view of the third floor of the 1844 Waste House, looking east

The windows to the north-west, south-east and north-east walls consisted of flat cast-iron lintels with bullnosed brick reveals and sills (Plate 236). The 1.47m (4ft 10in) wide openings were blocked internally with a timber frame lined with plywood sheeting (Plate 236). However, the central aperture to the north-eastern wall was infilled with bricks, while the north-eastern opening was blocked using a honeycomb design for ventilation (Plate 236).



Plate 236: The blocked windows to the north-east and south-east walls, looking north-east

A small plant room was located to the north-west end of the floor, R79. The concrete ceiling beams and concrete floor of R78 continued into the room with the plant room's south-east wall constructed around existing structural elements (Plate 237). The room was entered through a 1.34m wide doorway with an exposed timber doorframe and two timber doors (Plate 237). The room contained a late 20th-century air ventilation system, and a large louvered vent was positioned within the north-eastern wall (Plate 238).



Plate 237: The doorway entering the plant room, looking west



Plate 238: The air ventilation fan within the plantroom, looking north-east

2.14. The 1880s South-West Extension External Descriptions

During the 1880s a two-storey extension was constructed to the south-west of the south-eastern elevation of the Bradford Road Office block (Fig 4). The extension was constructed in a Flemish bond, rising to two-storeys with a small plinth (Plate 239). The flat roof was obscured by a shallow parapet roof with oversailing sandstone copings (Plate 239).



Plate 239: General view of the south-western 1880s extension, looking east

The north-eastern elevation contained a tall 2.96m (9ft 8½in) wide loading bay doorway at the centre (Plate 55). The opening housed two timber doors to each floor with a I-section roller steel hoist arm extending from the first floor (Plate 239). During the mid-20th century, the building was further extended to the north-east with a lean-to structure clad in asbestos cement sheeting and constructed with a rolled steel L-section fame (Plate 239).

The south-eastern elevation contained four 1.38m (4ft 6½in) wide window apertures to each floor (Plate 239). These comprised flat-arched sandstone lintels with projecting sills. During the initial site investigation, the ground floor apertures were blocked with timber sheeting while the first-floor openings housed six-light timber-framed windows (Plate 239).

2.15. The 1880s South-West Extension Internal Descriptions

Internally the ground floor was inaccessible due to safety concerns and was not recorded during the site investigation. The first floor was divided into two rooms, R80 and R81 with access afforded by the inserted door to the north-eastern wall of the south-western wing and by a further doorway within the south-eastern wall of the Bradford Road office block (Fig 6). The south-western room (R80) was of two bays wide comprised timber board floor, a flat ceiling and painted brick walls. The flat roof was partially exposed due to the poor state of the ceiling.

The windows to the north-west wall were obscured, but formed the earlier windows to the adjoining office block (Fig 6). The windows to the south-eastern wall comprised timber lintels with bullnosed brick sills while the 1.53m wide openings were blocked internally with timber sheeting (Plate 240).



Plate 240: General view of R80 on the first floor of the extension, looking south-west

The north-eastern room (R81) was also of two bays with the north-east wall containing the upper half of the large timber loading bay doors (Plate 241). The ceiling contained a rolled steel I-section frame with a central beam that extended out of the doorway. This would have supported a tracked hoist (Plate 241).



Plate 241: General view of R81 on the first floor of the extension, looking south-east

2.16. The 1880s North-Eastern Extension External Descriptions

A further extension was constructed in the 1880s to the north-eastern end of the Bradford Road office block (Fig 4). The extension was of three-storeys and built in a Flemish bond (Plate 242). The flat roof was obscured by a shallow parapet roof with oversailing sandstone copings (Plate 242). The building was originally two-storeys, but was extended a further floor in the 1920s. During the mid-20th century, the building was further extended to the north-east with a lean-to structure clad in asbestos cement sheeting and constructed with a rolled steel L-section fame (Plate 242).



Plate 242: General view of the north-eastern 1880s extension, looking north

The south-western elevation contained a tall 2.86m (9ft 4¾in) wide doorway comprising a two-brick course segmental arched head with bullnosed brick jambs (Plate 243). The opening housed two tall timber doors with a four-light transom window situated above a timber-panelled frieze (Plate 243). The 1920s third floor contained two 1.41m (4ft 7½in) wide window apertures comprising sandstone flat arched lintels and projecting sandstone sills (Plate 243). A six-light timber-framed window was housed within the openings (Pate 243).



Plate 243: The south-west elevation of the north-eastern 1880s extension, looking north-east

The south-eastern elevation to the original 1880s building contained four windows apertures to each of the floors. These reflected the design of the earlier mill buildings, and comprised 1.39m (4ft 6¾in) wide openings, flat-arched lintels and projecting sandstone sills. The ground floor openings were blocked with timber sheeting with later 20th-century ventilation ducting installed. The first-floor openings had retained their original six-light timber-framed windows with clear glass panes (Plate 244). The 1920s third floor extension also contained four windows that replicated those to the lower floors, with flat-arched lintels sandstone sills and six-light timber window frames housed withing the 1.42m (4ft 6in) wide openings.



Plate 244: The south-east elevation of the north-eastern 1880s extension, looking north

2.17. The 1880s North-Eastern Extension Internal Descriptions

Internally, the ground floor was a single room, R82, with a late 20th-century brick-built office to the eastern corner (Fig 5). The room comprised a flag stone floor, painted brick walls and an open ceiling exposing the 0.1m (4in) wide timber floor joists to the first floor (Plate 245). The south-eastern wall contained four 1.65m (5ft 5in) window apertures comprising flush timber lintels and shallow sloping concrete rendered sills (Plate 245). The openings were blocked with timber sheeting (Plate 245).



Plate 245: General view of the ground floor to the 1880s north-eastern extension, looking north-west

The north-eastern wall contained a blocked doorway that originally entered the north-eastern wing (Fig 5). This consisted of a flush timber lintel with bullnosed brick jambs. Two steel framed doors were housed within the 1.54m wide opening (Plate 246).



Plate 246: The blocked doorway within the north-eastern wall of Rx, looking north-east

The north-western wall originally formed the south-eastern elevation of the 1842 office block, and originally contained four window apertures. These comprised flat-arched sandstone lintels with projecting stone sills. The openings measured 1.35m (4ft 5¼in) wide with two of the openings blocked while two were remodelled into doorways entering R21 and R22 situated within the north-eastern end of the Bradford Road office block (Fig 5; Plates 247 and 248).



Plate 247: The doorway entering R22 and the blocked window within the north-west wall of R22, looking north



Plate 248: The doorway entering R21 within the north-west wall of Rx, looking north-west

The first floor was afforded lateral access through the doorway situated within the south-western wall of the adjoining north-eastern wing (Fig 6). This floor was a single room, R83, comprising a flat ceiling, painted brick walls and a timber floor (Plate 249). The south-eastern wall contained four window apertures, comprising flash timber lintels, bullnosed brick reveals and sills (Plate 249). The wide openings were blocked internally with timber sheeting (Plate 250).



Plate 249: General view of first floor, R83, looking south-west



Plate 250: The blocked windows to the south-east wall, looking south-east

The north-western wall contained an inserted doorway that afforded access into the Bradford Road office block (Fig 6). This opening had been formed within the aperture of an earlier window belonging to the original office building, and the flat-arched sandstone lintel associated with the window survived *in situ*. However, the lintel had been heavily over-painted prior to the site investigation, obscuring much of the detail (Plate 251).



Plate 251: The inserted doorway entering the Bradford Road Office block within the north-west wall, looking north-west

2.18. The Substation External Descriptions

The two motor towers that were constructed in 1907 during the electrification of the mill. These were powered by the substation building that was constructed to the southern corner of the inner courtyard. This building was constructed in a three stretcher course English Garden Wall bond, rising to two storeys with a hipped tiled roof (Plate 252).



Plate 252: General view of the 1907 substation, looking south

The north-eastern elevation contained a tall, 1.12m (3ft 6in) wide recessed window aperture at the centre. This comprised a concrete lintel and sill with a tall eight-light, timber-framed window (Plate 253). A small doorway was originally situated below the windowsill (Plate 253). The original opening measured 0.82m (2ft 8¼in) wide with a steel plate lintel. However, the opening was infilled with late 20th-century brickwork (Plate 253). The remails of a small wall was situated to the south-eastern of the blocked doorway (Plate 253). This related to a small wall that is depicted on the 1909 newspaper article photograph (Plate 13).



Plate 253: The north-eastern elevation of the 1907 substation, looking south-west

The north-western elevation of the comprised three window apertures with a small doorway to the south-western end. The windows comprised steel lintels with concrete sills. The central opening measured 3.82m (12ft 6½in) wide and housed a 24-light timber-framed window (Plate 254). The south-western opening measured 1.36m (4ft 5¾in) wide and housed the retained original eight-light timber window frame. The north-eastern opening was a remodelled doorway that had retained the exposed timber doorframe with a four-light timber window frame above. During the latter half of the 20th-century the door was removed and timber-framed panel with a ventilation fan was inserted to the central section (Plate 254). Access to the original opening was afforded by a steel platform and staircase that was fabricated from rolled L-section angle iron that was depicted within the newspaper article (Plate 254). However, after the doorway was blocked elements of the frame were removed including the handrail (Plate 254).

The doorway to the south-west was a later insertion, with a timber lintel situated 1.5m (4ft 11in) from the ground level of the courtyard. The 0.87m (2ft 10¼in) wide opening housed an exposed timber doorframe and flush timber door (Plate 255). The entrance also contained a steel framed gate for security (Plate 255).



Plate 254: The north-west elevation of the 1907 substation, looking south



Plate 255: The inserted doorway to the south-west of the north-east elevation, looking south

2.19. The Substation Internal Descriptions

Internally, only the lower ground floor was accessible as the first floor was unsafe to enter during the site investigation. This floor was a single room (R84) comprising a concrete floor, brick walls and a concrete clock ceiling, forming a fireproof room (Plate 256). The room had contained late 20th-century electrical equipment, with all the original early 20th-century equipment removed (Plate 256).



Plate 256: The lower ground floor of the substation, looking north-east

2.20. The 1950s Office External Descriptions

During the 1950s a small two-storey office building was constructed to the north-eastern corner of the site (Fig 12). This was a brick building constructed in stretcher bond with a flat roof below a parapet wall with oversailing concrete copings (Plate 257). The north-west elevation fronted Brandford Road with the ground floor containing a central doorway and two window apertures to the north-east and south-west ends, with the first floor containing six windows (Fig 2; Plate 257). The doorway consisted of a flush concrete lintel that was obscured by a modern sign and a concrete threshold. A flush timber door was housed within the 1.17m (3ft 10in) wide opening (Plate 257). A letter box with an inserted sandstone lintel was situated to the south-east of the doorway (Plate 257).

The windows apertures to the ground and first floor consisted of flush concrete lintels and sills. The lower openings housed a three-light timber-framed window, while the first floor opeings contaied a mixture of four and 12 light windows (Plate 257).

The north-east elevation only contained two windows to the first floor, while the ground floor was obscured by the adjoining late 20th-century single -torey warehouse (Plate 257). The windows comprised flush conctret lintels and sills and housed a four-light timber-framed window witin the 1.17m (3ft 10in) wide opeings (Plate 257).



Plate 257: General view of the 1950s office building, looking south-west

2.21. The 1950s Office Internal Descriptions

Internally, the ground floor was divided into two principal rooms, R85-R86 (Fig 5). R85 was the principal office room and consisted of painted brick walls and a concrete floor (Plate 258). The flat concrete ceiling was supported by rolled steel I-section beams and stanchions (Plate 258). The north-eastern corner of the room contained five small individual areas which formed part of a canteen area including a set of toilets and a small kitchenette. R86 was a toilet area containing late 20th-century sanitaryware.



Plate 258: General view of R85 within the 1950s office building, looking west

The first floor was largely inaccessible due to the poor state of the building, however sections could be recorded from the adjoining north-eastern wing (Fig 6). The floor was divided into 10 rooms, however only the three south-western rooms were recorded (Fig 6). Each room consisted of painted prick walls, a concrete floor and a flat ceiling and hold no archaeological interest.



Plate 289: The north-western room to the first floor of the 1950s office, looking north-east

3. Discussion

3.1. Introduction

The historical building investigation of Brunswick Mill has provided a valuable opportunity to record an example of an early 19th-century mill complex, to mitigate any loss of historic fabric as part of the redevelopment. It has also enabled a review of the available documentary material to be combined with the physical evidence embedded in the historic fabric to produce a detailed narrative of the building's development, enhancing the questions posed by the North West Regional Research Framework.

3.2. Brunswick Mill- Phase 1: 1835-1843

Brunswick Mill's origins can be traced through a set of deeds that recorded a plot of land was released by Sir Oswald Mosley to David Worthington in 1836. The land was situated to the north-east of Pooley's Mill, which was an early cotton mill that was built in 1826 by Fairbairn and Lillie for Charles Pooley. The newly released land was 5084 sq. yards and was rented at £105.18.4. A further deed in 1837 showed the site to have been rented by Charles Pooley, Alexander Kelly and J. Gilmour. The plot was divided into two sections with Kelly and Gilmour having the largest portion of 4736sq. yards while Pooley occupied the remaining 348sq. yards, which adjoined his existing cotton-spinning mill to the south-west. However, the plot was combined to form a single block of land in September 1838 and released to Kelly and Gilmour for redevelopment. It is thought the initial mill was constructed in 1838-1839.

Brunswick Mill was constructed by David Bellhouse Jr with documentary evidence showing the original complex to comprise a seven-storey spinning block that fronted the Ashton Canal, a three-storey wing to the south-western end and is noted on the 1841 hand-drawn plan as a warehouse although it did not extend to Bradford Road full (Plate 6). The mill was of fireproof construction with transverse brick-vaulted ceilings supported by cast-iron beams and columns and comprised the Hodgkinson-type cast-iron floor beams with parabolic bottom flanges. The Hodgkinson-type beams were developed in the 1820s by Eaton Hodgkinson at the foundry of William Fairbairn in Ancoats, Manchester (Williams with Farnie 1992). Fireproof mill design prior to this was largely a failure due to the casting techniques and beam design causing the collapse of mills, including Islington Mill in Salford in 1824. This caused several fatalities due to the collapse of several floors that are believed to have been caused by the structural failure of the cast-iron beams (BB Heritage Studio 2018). The earlier beams consisted of inverted T-section beams. Hodgkinson's experiments at Fairbairn's foundry resulted in I-section beams with a wider bottom flange, with the sides forming a convex parabolic curve. The upper flange was narrower and was hidden within the thickness of the floor (Fitzgerald 1988). This type of beam was widely used in the construction of some of Greater Manchester's mills, including Orrell's Mill in Stockport (1834) and Brunswick Mill in Manchester (c.1840) (Williams with Farnie 1992).

The windows to each of the floors comprised recessed apertures with shallow slopping sills. Flat sill windows have been suggested to have been constructed in later textile mills, whilst sloping sills are a design of earlier mills (Williams with Farnie 1992). This is seemingly true as Old Mill (1798) and Decker Mill (1801-2) of A&G Murray's Mills in Ancoats in Manchester (Miller and Wild 2007), and Ditherington Flax Mill (1796) (Giles and Williams 2015) and Salford Twist Mill (1801) (Miller 2024) comprised sloping sills (Giles and Williams 2015). A drawing produced by William Crieghton, who was one of James Watt's draftsmen for Lee's Salford Twist Mill, shows the windows to have segmental arched heads and sloping sills to each of the floors (not reproduced but is included in Miller 2024). The flat sill theory is true for the newly constructed 1831 mill replacement at Weir Mill in Stockport (Civic 2025), however flat sills have also been recorded at Quarry Bank Mill in Styal (1784) (OA North 2014) and the rebuild of Medlock Mill (1801-07) (Civic 2025). This construction method is more likely due to the preference of an individual mill builder rather than any changing style or technological advancement, as sloping sills were also a feature of Talbot Mill (1855) in Manchester (SA 2017).

In 1840 the wing was extended to meet Bradford Road and add a further two-storeys forming a five-storey building. The alterations were built by Mr William Haile (also spelt Hale) with the iron beams for supporting the new floors provided by Lillie. During construction, the wing collapsed and killed four people in 1841 just prior toits completion. The cause of the collapse was initially thought to have been caused by wet weather causing the new mortar to fail or completely washed away. However, an inquest that was reported in the Manchester Gurdian stated Fairbairn blamed the builder, Mr Hale for the collapse due to not securing the arches of the new building adequately, saying that he did not blame the

failure of the beam-boxes holding the arch ceilings stating "T*he new building was substantially built, and just like the same as the old mill*". He continued "*… I consider Mr Kelly is a good judge of work; but he might not be aware of the immediate danger. He and Mr Gilmore were there, I believe every day. Before I began my work I had examined the foundations of the iron pillars and of the walls, and found them quite sufficient….Last Friday….the cap of one of the pillars, which was next but one to the outer wall, broke, and w repaired it, and put it in again as perfect as ever. Ot took it out by two screw jacks which I used to lift up the super incumbent weight, until it was done"* (The Manchester Gurdian July 14th 1841). After a seven-hour inquest the jury returned a verdict that the deaths were accidental due to *"….one or more of the caps of the beam-boxes breaking*". They also found that no blame was attributed to anyone (The Manchester Gurdian July 14th 1841).

After the collapse, the wing was rebuilt but to the full height of the spinning block of seven-storeys. The designs also included the erection of a further wing to the full height to the north-eastern end along with a three-storey entrance block fronting Bradford Road. This design influenced by Fairbairn's input into a similar cotton mill in Stockport known as Orrel's Mill erected in *c* 1834 (Williams and Farnie 1992). This comprised a U-shaped mill, seven-storeys high with two projecting wings, but with a small entrance forming a trapezoidal shape (Plate 290).

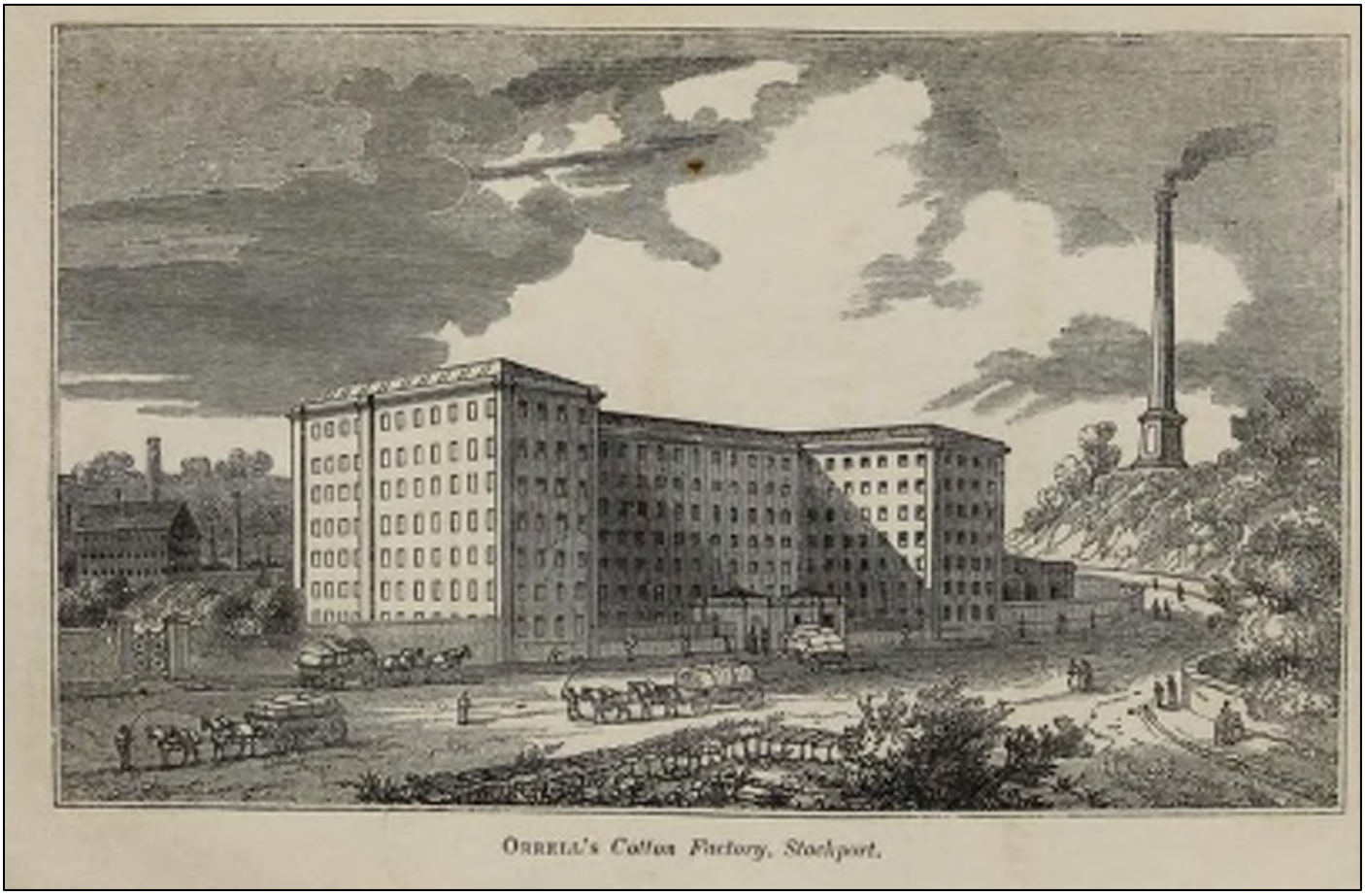


Plate 290: Orrell's Mill in Stockport (Ure 1835)

However, Pigot's and Slaters Map of 1843 indicates that the site contained the L-shaped building. The map depicts the spinning block fronting the Ashton Canal, with the western wing having been extended towards Bradford Road. This plan form relates to the 1841 extension prior to the collapse of the western wing and subsequent rebuilding.

The drawing of 1841 does not show the position of the engine house; however, the mill would have been powered by steam and is first marked on the Pigot's and Slaters Map of 1843. This the engine would have been housed within the extant engine house attached to the south-western elevation of the spinning block. The mill would have been powered by a double-beam engine which was described in the 1856 schedule as a "47in low-pressure cylinders and 26in high-pressure cylinders connected via spur wheels. Evidence of this engine was recorded during the site investigations with the large sandstone blocks situated to the second floor of the engine house, which would have supported the cast-iron

entablature. Sections of the brickwork above the sandstone blocks had been repaired suggesting the beams were placed on top the blocks and not supported by corbels. The power would have then been transferred to each of the floors by a vertical shaft situated to the centre of the south-western wall of each floor. A blocked hatch was recorded in the ceiling to the floors along with the remains of clamps that would have supported the shaft. The engine is most likely of a 'pusher-type' and not a McNaught type as the high-pressure cylinders connected to spur wheels, suggesting that they were situated close to the flywheel in the southern end pf the engine house. The line vertical shaft would have then powered the mules directly from belt drums on the line shafts, of which there was evidence of three shafts running along the length of the spinning block. The end walls to each floor had retained bearing boxes that housed the end bearings of the shafts.

The boilers powering the engine were initially situated within the ground-floor of the south-western wing within an internal boiler house attached to an external coal shed and platform. These were likely a wagon boiler type with the historical building investigation recording a row of five arches to the south-western elevation of the south-west wing. These arches are indicative of the position of the boilers to internal boiler houses of larger cotton mills. However, by the 1856 schedule these would have been replaced by a bank of Lancashire boilers housed within an external boiler house.

3.3. Brunswick Mill- Phase 2: 1844-1849

In 1844 a new Waste House was constructed to the north-eastern end of the spinning block. In the general design of cotton processing operations, waste houses were facilities designed to serve as collection points and subsequent reprocessing centres for cotton spinning waste products, which were spun into lower-quality yarn. Construction was similar to that of the main block, with structural loading provided by columns and brick vaulting.

3.4. Brunswick Mill- Phase 3: 1850-1870

After Kelly's death in 1856 who bequeathed his share of the business to Gilmour, a schedule was drawn up detailing the equipment, which was valued at £29,779. The schedule also gives a vertical production flow line with what type of machinery was present on each floor of each building which is detailed in the tables below. The schedule also listed five gas metres, together with fixtures and fittings required for 994 gas lights. The historical building investigation found no evidence of this which helps to confirm the OA North DBA's conclusion that it implies the gas was derived from the Manchester Corporation (OA North 2009).

Building	Storey	Functional Inventory
Spinning Block	7	16 x 1 3/8in mules (408 spindles), 12 x 1 1/4in mules (448 spindles)
	6	16 x 1 3/8in mules (408 spindles), 12 x 1 1/4in mules (448 spindles)
	5	16 x 1 3/8in mules (408 spindles), 12 x 1 1/4in mules (448 spindles)
	4	16 x 1 3/8in mules (408 spindles), 12 x 1 1/4in mules (448 spindles)
	3	56 roving frames, 42 slubbing frames, 14 drawing frames
	2	238 cards, 231 bobbin machines, 7 window hoists
	1	16 x 1 3/8in mules (396 spindles), 12 x 1 1/4in mules (436 spindles)

Building	Storey	Functional Inventory
South-west Wing	7	4 x 1 3/8in mules (520 spindles)
	6	4 x 1 3/8in mules (520 spindles)
	5	4 x 1 3/8in mules (516 spindles)
	4	Mechanics shop
	3	5 roving frames, 4 x 1 3/8in mules (516 spindles)

	2	Mixing room, blowing room
	1	Store

Building	Storey	Functional Inventory
North-east Wing	7	4 x 1 3/8in mules (520 spindles)
	6	4 x 1 3/8in mules (520 spindles)
	5	4 x 1 3/8in mules (520 spindles)
	4	4 x 1 3/8in mules (520 spindles)
	3	8 roving frames, 4 drawing frames, 4 slubbing frames
	2	18 cards, 8 cop reels
	1	34 cop reels

Building	Storey	Functional Inventory
Waste House	3	4 x 1 3/8in mules (324 spindles)
	2	20 cards, window hoist
	1	Counting houses, offices, making up room

The mill was mortgaged from James Gilmour to William Young and James Alexander Bannerman in 1856 but Gilmour was still listed as the occupier of Brunswick Mill in Slater's Trade Directory of 1861. However, this was short lived as in March 1865 Gilmour mortgage was not repaid and the entire site was conveyed to Young and Gilmour (Salford Archaeology 2021).

Henry Bannerman was a former farmer from Scotland who, sensing opportunities in the developing textile industry in Manchester in the 19th century, diversified to form Henry Bannerman & Sons. Initially, they operated as textile merchants diversifying into cotton spinning in 1864. Brunswick Mill was one of four complementary textile operations to be acquired, covering both spinning and weaving; however, these operations were likely managed as a single concern by 1880.

3.5. Brunswick Mill- Phase 4: 1880s

During the 1880s Bannerman & Sons was listed in The Cotton Spinners & Manufacturers' Directory as spinners at Brunswick Mill, Bradford Road, Ancoats, 80,000 spindles. The company Bannerman Mills Company was registered as a limited liability company in 1889, which was followed by the registration of the parent company Henery Bannerman & Sons Ltd in 1890.

The mill, under Bannerman's ownership, appears to have achieved a scale that surpassed the scale of the operation under Gilmour. Bannerman Order Books covering 1889-1897 and orders placed with Platts of Oldham indicate that a programme of mill equipment modernisation was taking place in the late 19th century. Although an earlier renewal is said to have occurred in 1884, it is not documented in the 1889-1897 order books (RCHME Main Report, UoM Special Collections).

During this period two two-storey extensions were constructed against the south-eastern elevation of the Bradford Road block. The south-western building was primarily for taking in raw cotton as the adjoining wing contained the initial preparation machinery. This retained the hoist arm that extended from the first floor of the large doorway to its north-eastern elevation. The north-eastern wing however contained yarn reeling machinery, suggesting that the eastern building was used for the dispatching of the spun yarn to its market. A weighing machine was seemingly installed to the south-west of the main covered entrance (Plate 291).



Plate 291: The weighing machine to the south-west of the covered entrance

3.6. Brunswick Mill- Phase 5: 1890s

In 1890s a single cylinder horizontal steam engine had been installed to supplement the power provided by the original twin cylinder beam engine, providing a combined power of 1600 ihp (*The Times*, 21 March 1911). This new engine was located in the south-western corner of the mill yard. Power transmission from this engine to the machinery utilised a rope drive system, whereby the main line shafts on each floor were driven from the engine flywheel by a number of cotton ropes, providing a more efficient, reliable and quieter drive than the traditional geared system. Developed in America, the installation of rope drive systems became widespread in England during the 1880s.

During this period, possibly associated with the installation of the new engine, the original spinning mules were replaced by larger mules that were orientated longitudinally along the main block (Plate 292). The precise date at which this occurred is uncertain, although a renewal of machinery in 1884 is documented (Mills 1917, 68). The mill was accredited with operating 80,000 mule spindles at this time (Worrall 1884), although it is unknown whether this total accounted for the new machinery. Similarly, orders for new scutchers, carding engines and ten mules of up to 1308 spindles were placed with Platts of Oldham between 1889 and 1893. This programme of renewal led to a strike by the minders and piecers in the mule-spinning department, the eleventh strike at the mill since 1876 (*ibid*).

The addition of the dust chute is also attributed to this period. This was of seven-storeys with a decorative castellated top situated to the north-western end of the south-west wing. The dust chamber was at its base which was located within the earlier boiler house.

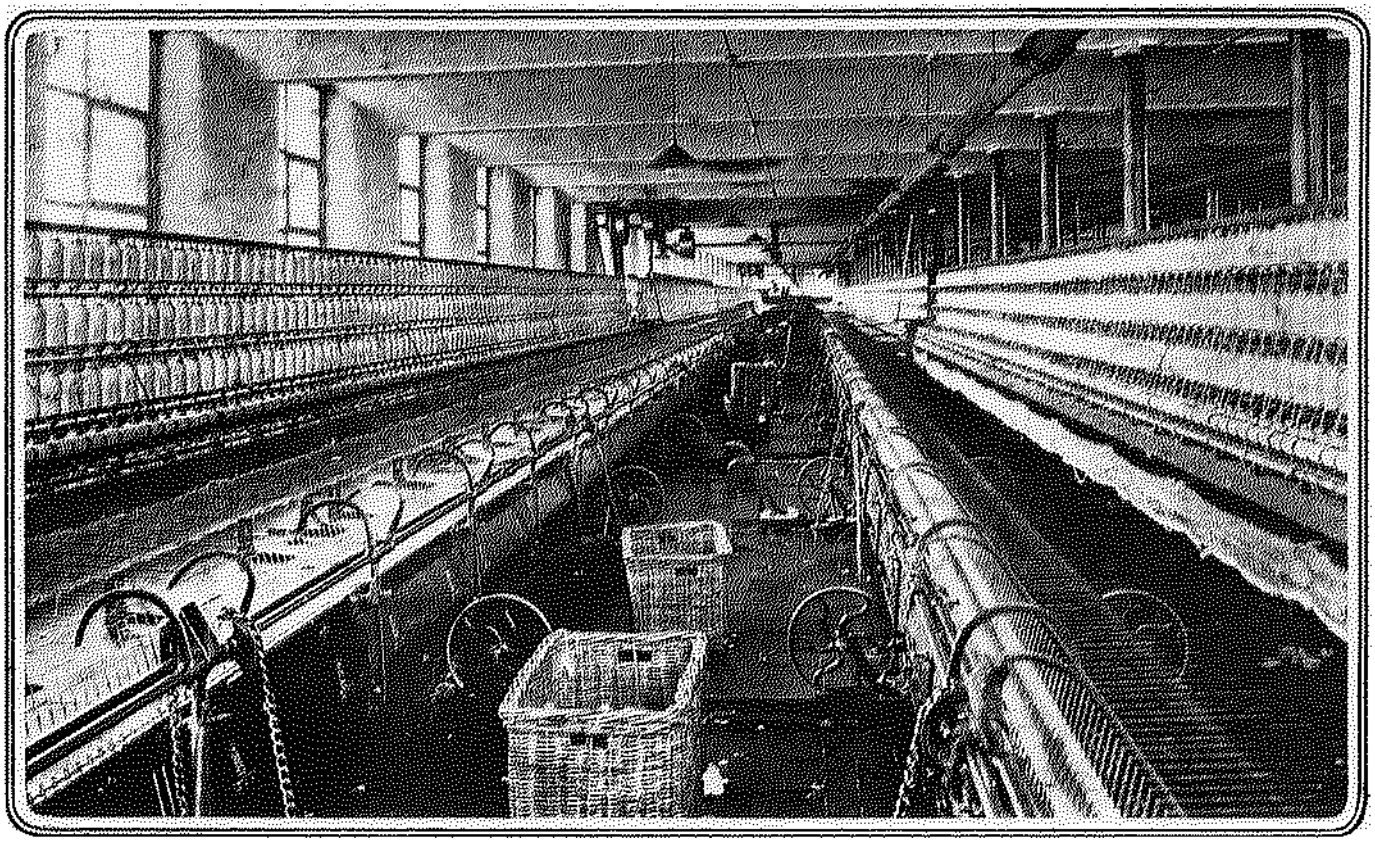


Plate 292: A view along one of the spinning rooms at Brunswick Mill, showing the remodelled mules arranged longitudinally (reproduced from the Illustrated London News, July 1909)

3.7. Brunswick Mill- Phase 6: 1906

In 1906 plans were drawn up to modify the newer engine house within the courtyard (Plate 12). However, these plans were abandoned, and it was decided to replace the steam generated power with electricity in 1907. An article in the Manchester Courier reported the mill was about to be equipped with a *"complete electric lighting and power-generating plant"* (Manchester Courier 1907). This resulted in Brunswick Mill becoming the first mill in Manchester to be powered by electricity (Salford Archaeology 2021). Electricity was supplied from the Manchester Corporation main at 6,500 volts and was transformed down to 400-440 volts for machinery and 220 volts for lighting purposes. A new transformer house was constructed to the south-western corner of the courtyard and replaced the late 1890s engine house. The steam engine within the original engine house was also removed.

The new system comprised 37 electric motors, which were supplied by the British Thompson-Houston Company of Rugby. Most of these motors were installed within two external towers that were erected against the courtyard elevation of the main block (Plate 8). These towers were constructed of steel framing with glazed casings, purportedly to protect the electric motors from dust (*Textile Mercury* 1910), although concerns of fire associated with what was essentially untried technology is likely to have been a factor.

Each spinning floor was served by two electric motors, which were fixed directly to the spinning mules' line shafts by means of a flexible coupling. Each of the motors for the spinning mules was rated at 75hp, and ran at 485 revolutions per minute. The motors used to power the ring spinning frames were rated at 30hp, running at 725 revolutions per minute, and were similarly coupled to existing line shafts by flexible couplings (*Illustrated London News* 1909). These motors were all installed in the eastern tower, and one motor was required to drive four ring spinning frames per floor. A more powerful motor, rated at 45hp, was installed in the western tower to drive six frames. For driving the preparation machinery, electric motors were directly coupled to the original line shafts (*ibid*). An engraving from 1926 shows the motor towers were situated within the central courtyard (Plate 15). This evidence is supported by the scarring to the north-western elevation of the spinning block there were recorded during the historic building investigation (Plates 22 and 23).

The firm took advantage of the remodelling necessitated by the installation of electric motors to install a new sprinkler system. This included the erection of a water tank atop the eastern motor tower, which can be seen on the 1926 engraving (Plate 15). The supply of water was provided by an electrically-driven pump, which had a capacity to raise 650 gallons of water a minute to the reservoir tank (Plate 293).

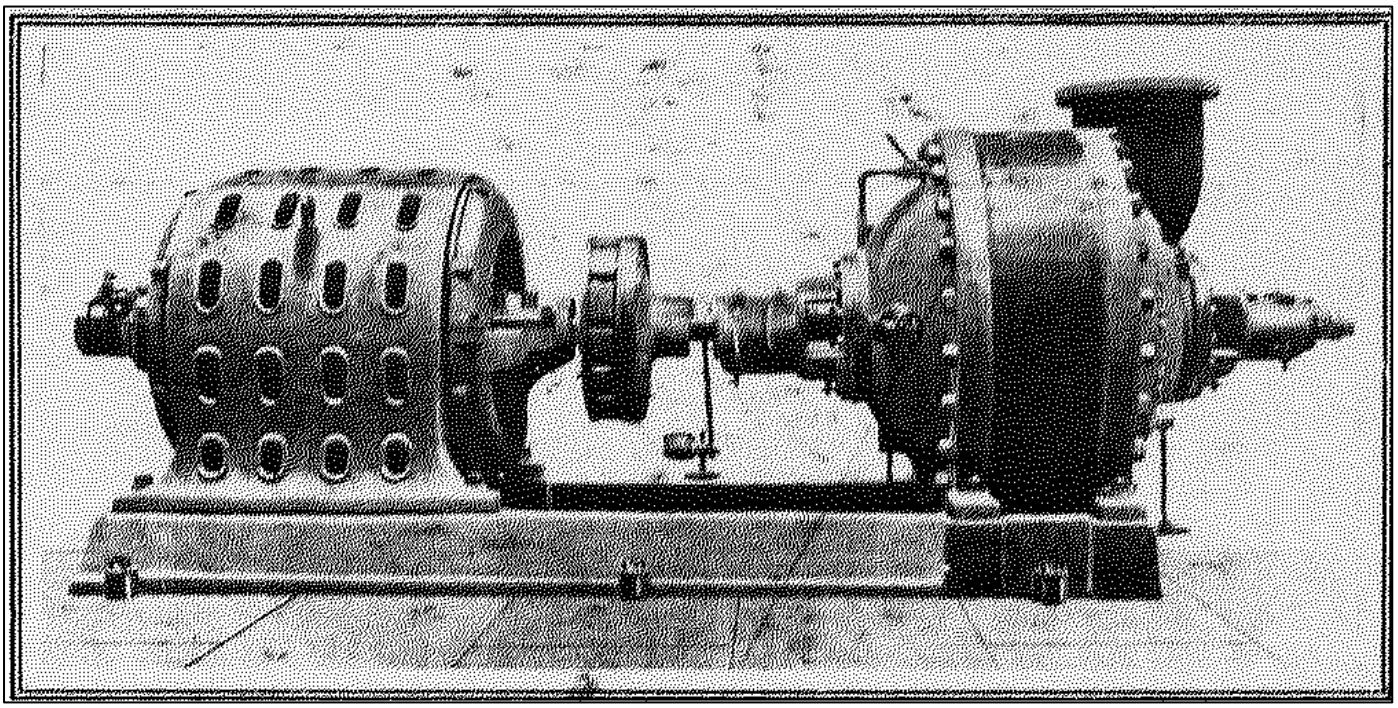


Plate 293: The electrically-driven, high-lift turbine pump that supplied water to the sprinkler system (reproduced from the Illustrated London News, July 1909)

During the alterations, the original engine house was also modified with the insertion of two floors to create a three-storey building internally. The alterations included concrete ceilings and automatic closing doors along with the insertion of an internal staircase. Goad's Insurance Map of 1928 notes a card room to the second and third floors which were also noted on the insurance map of 1943 (Plates 16 and 295)

3.8. Brunswick Mill- Phase 7: 1910-1930

In c.1919 the Carron Company Ltd of Falkirk fitted an "electrical" kitchen at the mill as well as at Bannerman's warehouse on York Street and at their mill in Stalybridge. An article for The Electrical Journal on the 20th February 1920 explained that workers were adopting a system of welfare in their factories. It recorded that *"one of the most satisfactory ways in which this can be done is to establish a canteen so that workers can obtain an adequate and well-cooked meal in the middle of the day".* It also records that the Carron Company installed a three-oven range, boiling table, a griller and a hot cupboard (Plate 14). This canteen was recorded during the site investigation and was located on the fourth floor of the north-eastern wing and is supported by Goad's insurance map of 1943, where it is annotated as Mess 4th floor Plates 294 and 295).



Plate 294: The former canteen on the third floor of the north-eastern wing

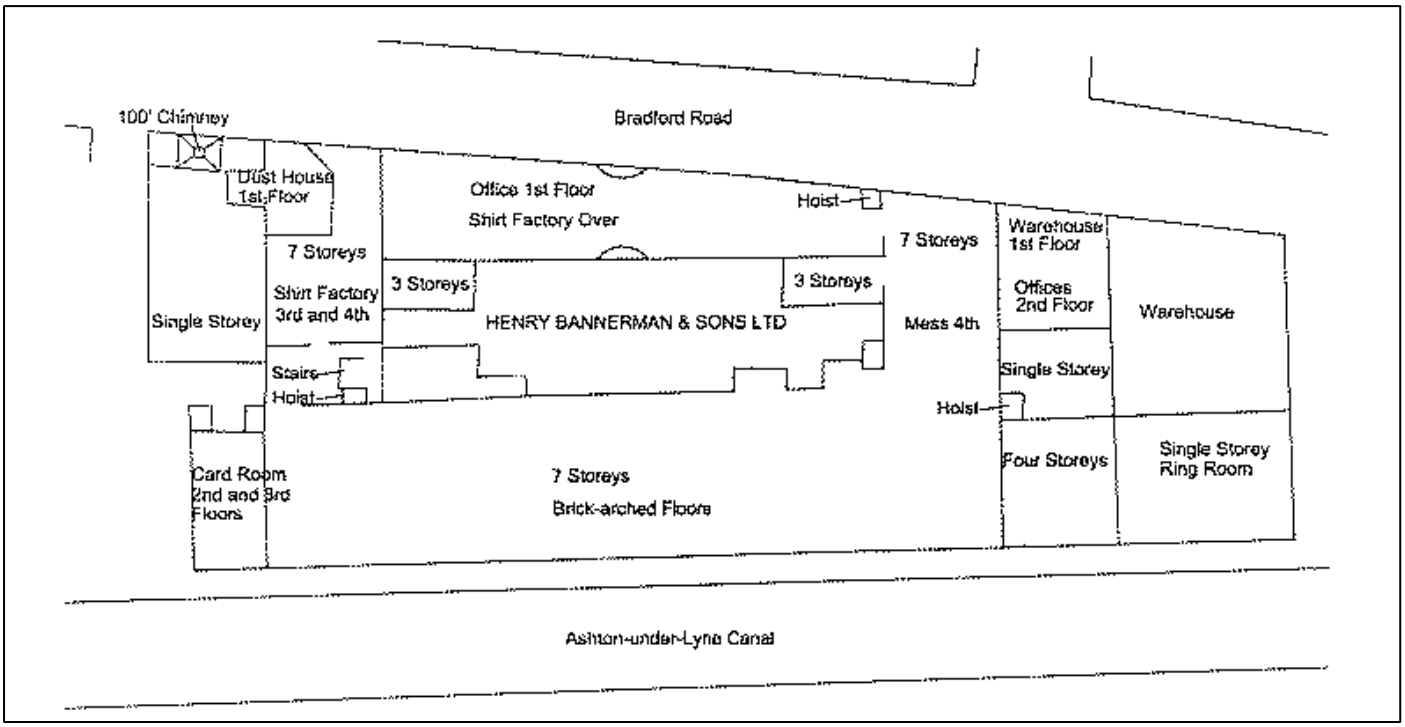


Plate 295: Plan of Brunswick Mill, based on Goad's insurance plan of 1943, showing 'Mess 4th' to the north-eastern wing

During the 1920s several modifications were made to the mill complex. An additional floor was added to the Waste House. The north-eastern wall of this extension included six-window apertures which was in contrast to the lower floors that has none. The historic building recording noted that this floor comprised a flat concrete ceiling, compared to the jack-arches to the lower floors.

Other modifications to the mill complex at this time included the replacement of all the original roofs. Also, the original cornice around most of the main walls was replaced with terracotta embellishment. Single-storey sheds with multi-aisle roofs were added to the eastern end of the site during the late 19th century. These were attached to the East Wing Mill, enclosing the ground floor of the Waste House. The precise function of these structures is uncertain, although they are likely to have been intended for storage and warehousing purposes. The following year, a trade directory accredited Brunswick Mill with 23,000 ring spindles, together with 46,500 mule spindles (Worrall 1910). This demonstrates that the process of replacing the tradition mule with the ring frame which was to dominate the final years of cotton spinning in Lancashire had begun at Brunswick Mill by the first decade of the 20th century.

The visit to the mill by a representative of the *Empire Mail* in 1925 resulted in the publication of a useful article that described the mill at this time. The newspaper correspondent was clearly impressed by the scale and magnitude of the factory, commenting that '*it is one of the most interesting cotton mills in the country, one of the oldest and largest and best equipped'* (*Empire Mail* 1925). It is clear within the published article that the Bradford Road block had been raised to four storeys by 1925, and this incorporated a flat concrete roof with a row of inclined sky-lights. Whilst the additional floor is not shown on an engraving published in 1926 (Plate 15), it is probable that this had actually been produced several years earlier.

By 1923, the Bannerman Mills Company Limited was in liquidation, and the business was merged with the parent company. Hence, Brunswick Mill continued to operated under Henry Bannerman & Sons Ltd, as listed in trade directories subsequently. The final entry for the firm in association with the entire mill complex, however, occurs in a directory for 1928, as the following year Henry Bannerman & Sons Ltd was amalgamated with the Lancashire Cotton Corporation Ltd, and Brunswick Mill was conveyed to this new combine. Within 12 months, the Bradford Road block had been leased back to Henry Bannerman & Sons Ltd, initially for a period of ten years.

The Lancashire Cotton Corporation Ltd replaced the spinning mules with ring-spinning frames, presumably as part of a programme of modernisation in the face of increasing foreign competition. Ring-spinning frames were somewhat heavier than spinning mules, necessitating the strengthening of the original cast-iron floor structure (Jones 1985, 183). This was achieved by installing a system of trussed tie-rods mounted beneath the beams on short vertical brackets.



Plate 296: An advertisement for Henry Bannerman & Sons Ltd taken from Skinner's Directory for 1928

3.9. Brunswick Mill- Phase 8: 1950s

During the 1950s several of the buildings to the northern corner of the site were demolished and a new two-storey office block was constructed. A new hoist tower was also constructed during this period and was adjoining the Waste House. This also added a further series of corridors that joined the hoist to the main mill and office block.

3.10. Brunswick Mill- Phase 9: 1960s-2010

Brunswick Mill ceased to be used for cotton production during the mid-1960s, and in January 1968 the mill was sold by the Lancashire Cotton Corporation Ltd to the Trownbay Property Company Ltd (SA 2121). Since that date, the mill complex has been used by a variety of small firms. At least one of these was associated with ancillary textile processes and, until recently, represented a very rare survival of textile-related industries still operating in Ancoats during the 21st century. Much of the mill is vacant, and prior to the redevelopment a music-related business occupied some of the building. The electric motor towers and coal yard/platform have been demolished along with the original chimney during the 1970s.

In 1994, Brunswick Mill was granted Grade II Listed status in recognition of its special architectural and historic interest, particularly as a largely intact 19th-century cotton spinning mill.

4. Conclusion and Recommendations

The historical building investigation provided a valuable opportunity to compile a detailed record of the former Brunswick Mill complex in Manchester, to mitigate the loss of historic fabric as part of the redevelopment of the site, it has also enabled a review of the available documentary material to be combined with the physical evidence embedded in the historic fabric to produce a detailed narrative of the mill's development, enhancing the questions posed by the North West Regional Research Framework. No further mitigation is needed on the north-eastern end of the redevelopment which includes Brunswick Mill.

5. Acknowledgements

Civic would like to thank Jason Dones, Daniel Wright and Jamie Parker of Arrowsmith Investments Ltd for commissioning the building investigation and to Ian Miller of GMAAS for his advice and assistance.

The historic building investigation was carried out by Lewis Stitt who compiled the report. Aaron Bazler undertook the historical research, and the illustrations were by Richard Ker and Lewis. The report was edited by Lewis, who was also responsible for the project management.

6. Archive

The results of the archaeological investigation form the basis of a full archive that has been prepared to professional standards, in accordance with current Historic England guidelines, the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990), and current CIfA standards and guidance for the creation, compilation, transportation and deposition of archaeological archive. The project archive represents the collation and indexing of all the data and material gathered during the course of the project. The deposition of a properly ordered and indexed project archive in an appropriate repository is considered an essential and integral element of all archaeological projects by the CIfA in that organisation's code of conduct.

The archive will be submitted entirely in digital format, in PDF and TIFF format to the Archaeological Data Service (ADS) website. As part of the archiving process, the on-line OASIS (On-line Access to Index of Archaeological Investigations) form will be completed.

The documentary and digital archive generated from the historic building investigation is currently in the possession of Civic. A copy of this report (PDF-A format) will be submitted to the Greater Manchester Historic Environment Record in digital and hard copy formats as the project did not yield an artefactual archive. A digital copy of the report will be publicly available on the Archaeological Data Service (ADS) website, OASIS and the Museum of Science and Industry (subject to their approval.

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8. Appendix A- Figures

Figure 1 Site Location

Figure 2 South-east elevation fronting Ashton Canal; North-west elevation fronting Bradford Road; North-west elevation of the engine house

Figure 3 North-east elevation of the north-east wing; South-west elevation of the south-west wing; North-west elevation of the spinning block

Figure 4 South-east elevation of the Bradford Road block; North-east elevation of the south-west wing; South-west elevation of the north-east wing

Figure 5 Ground floor plan

Figure 6 First floor plan

Figure 7 Second floor plan

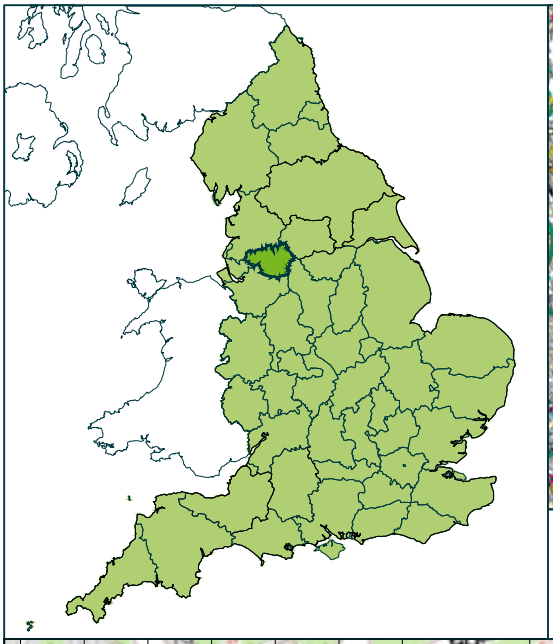
Figure 8 Third floor plan

Figure 9 Fourth floor plan

Figure 10 Fifth floor plan

Figure 11 Sixth floor plan

Figure 12 Phasing Plan

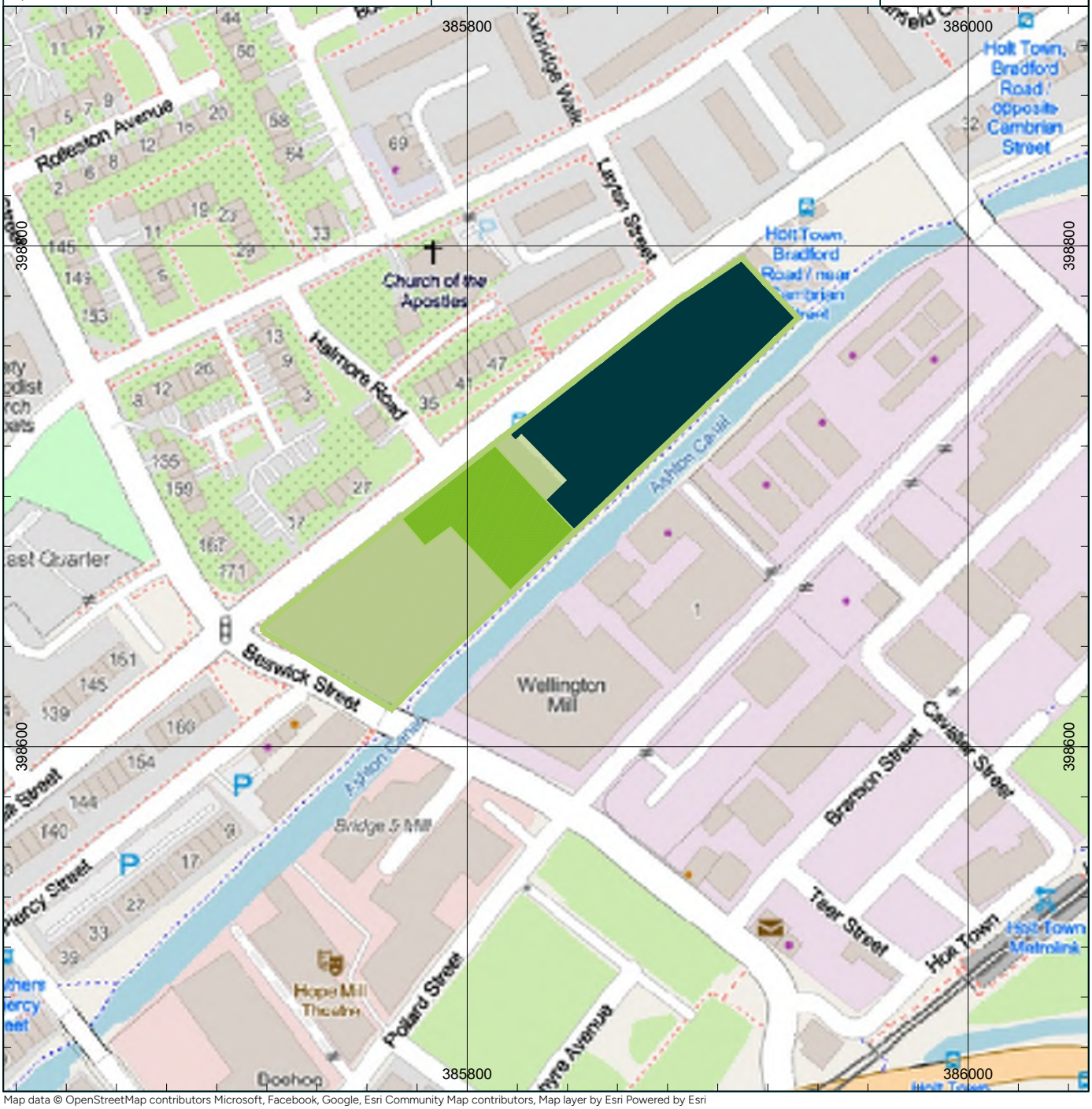




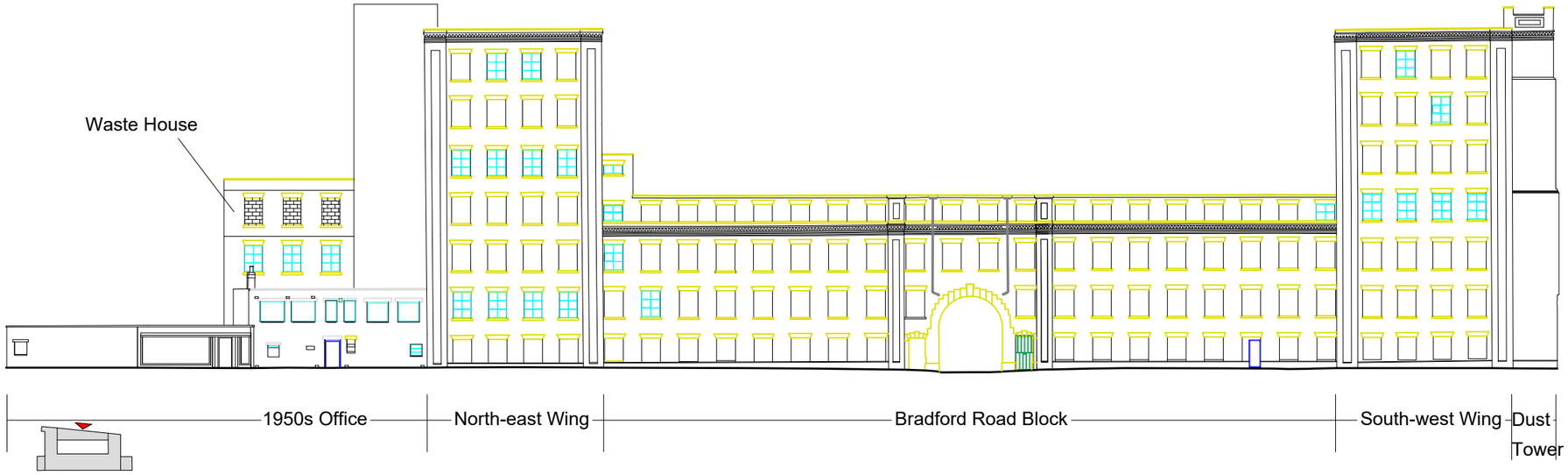
Brunswick Mill, Manchester
Project Code: 61081
Figure 1: site location

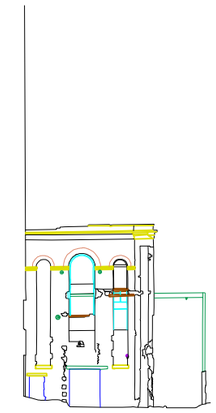
Site boundary
Historic building survey
Archaeological excavation

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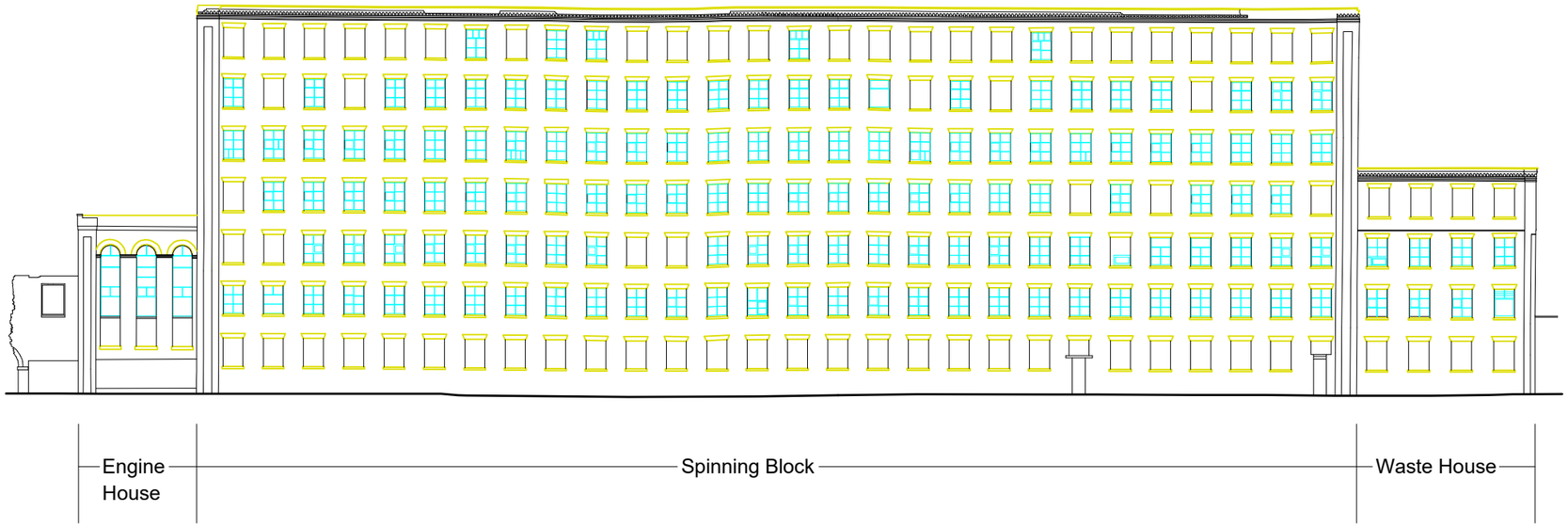


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Engine House



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0 20 m
Scale at A3 1:400

Brunswick Mill
Project Code: 61081
Figure 2: South-east elevation and north-west elevation

Key:
- Door
- Window
- Metal
- Stone detail
- Brick detail

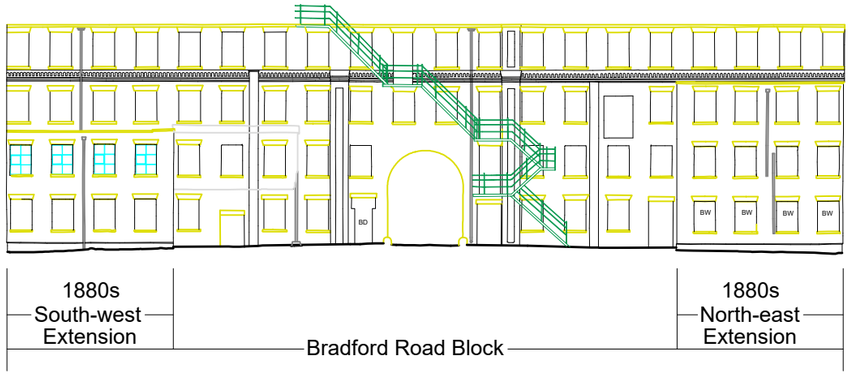


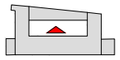
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Carver's Warehouse
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0 20 m
Scale at A3 1:400

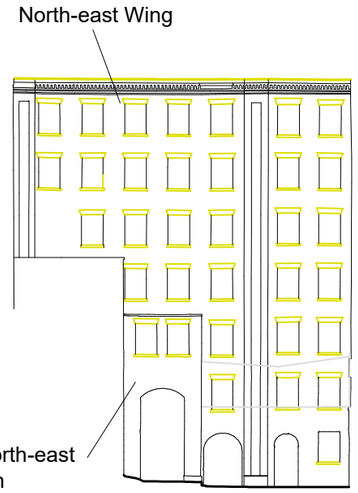
Brunswick Mill
Project Code: 61081
Figure 3: Elevations 2

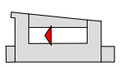
Key:
Door
Window
Metal
Stone detail
Brick detail
Metal / Railings

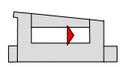










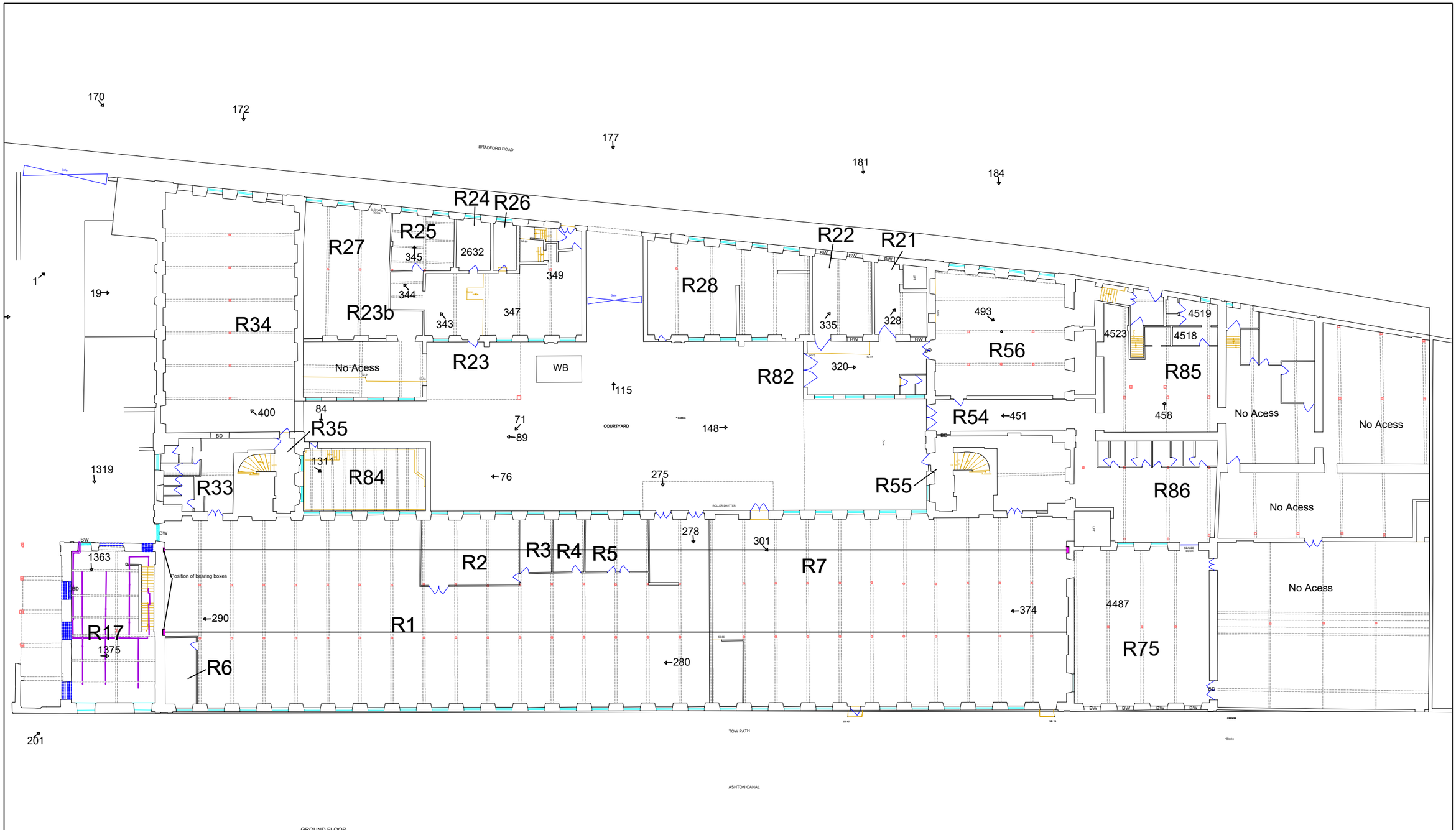


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Carver's Warehouse
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0 20 m
Scale at A3 1:400

Brunswick Mill
Project Code: 61081
Figure 4: Elevations 3

Key:
Door
Window
Metal
Stone detail
Brick detail
Metal / Railings

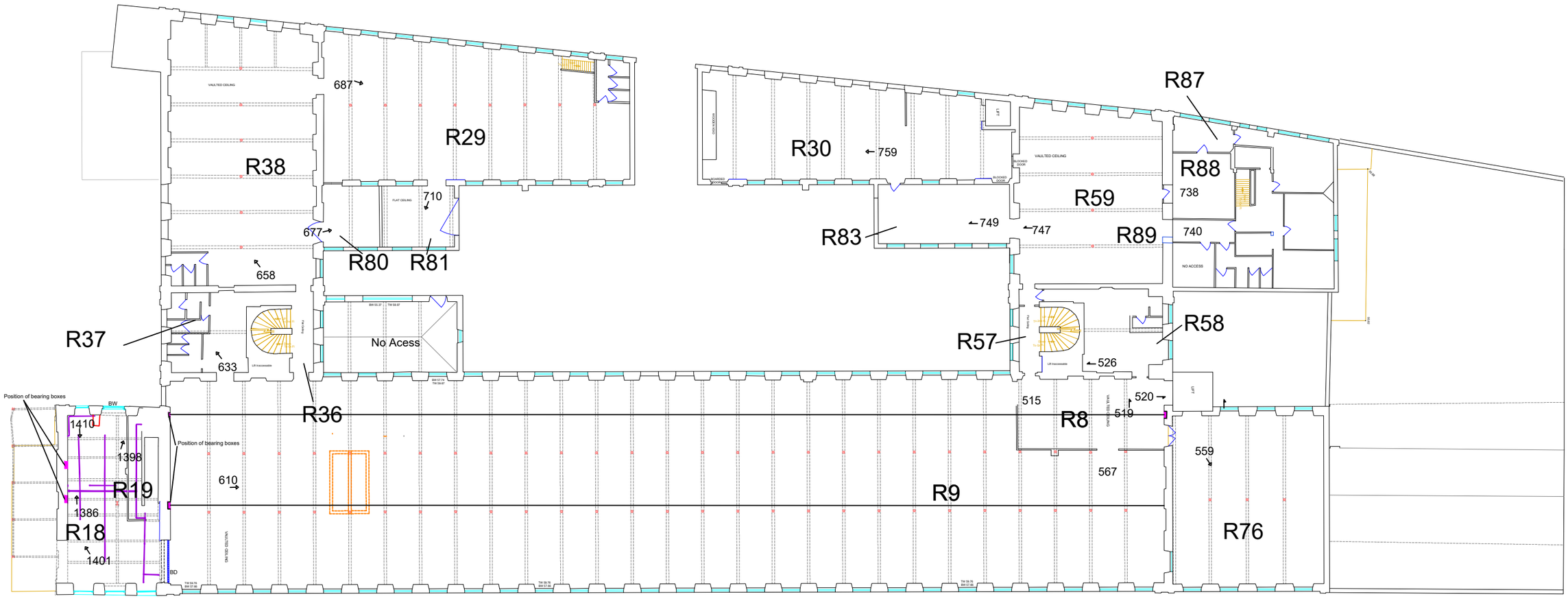


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0 — 20 m

Brunswick Mill, Manchester
Project Code: 61081
Figure 5: Ground floor plan

Key:
- Door
- Window
- Beam
- Column
- Fixture
- Bearing box location
- Steps
- Pipes
- Blocked window
- Blocked door
- Photograph Number and Direction

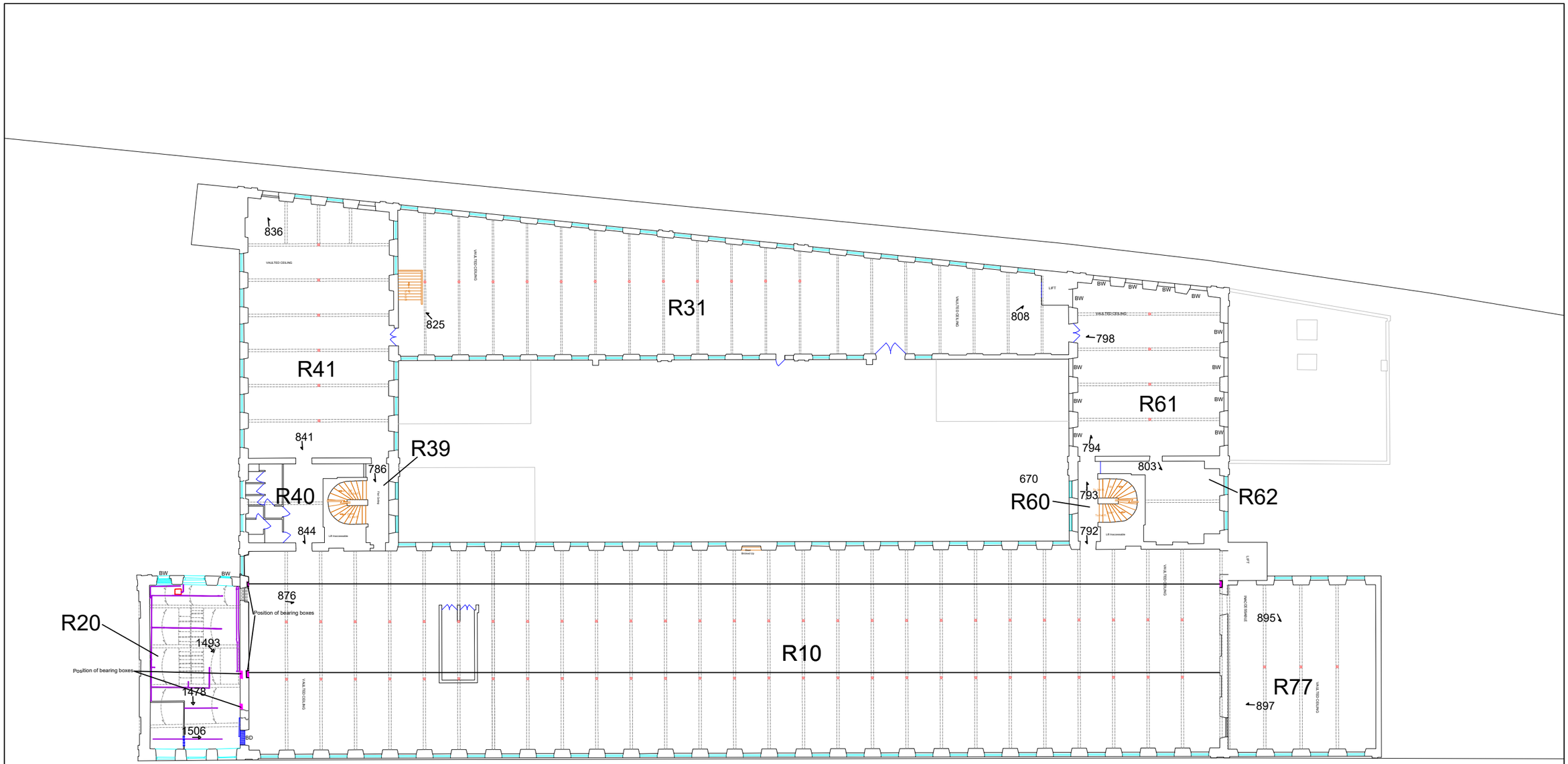


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0 20 m

Brunswick Mill, Manchester
Project Code: 61081
Figure 6: First floor plan

Key:
- Door
- Window
- Beam
- Column
- Fixture
- Bearing box location
- Steps
- Pipes
- Blocked window
- Blocked door
- Photograph Number and Direction

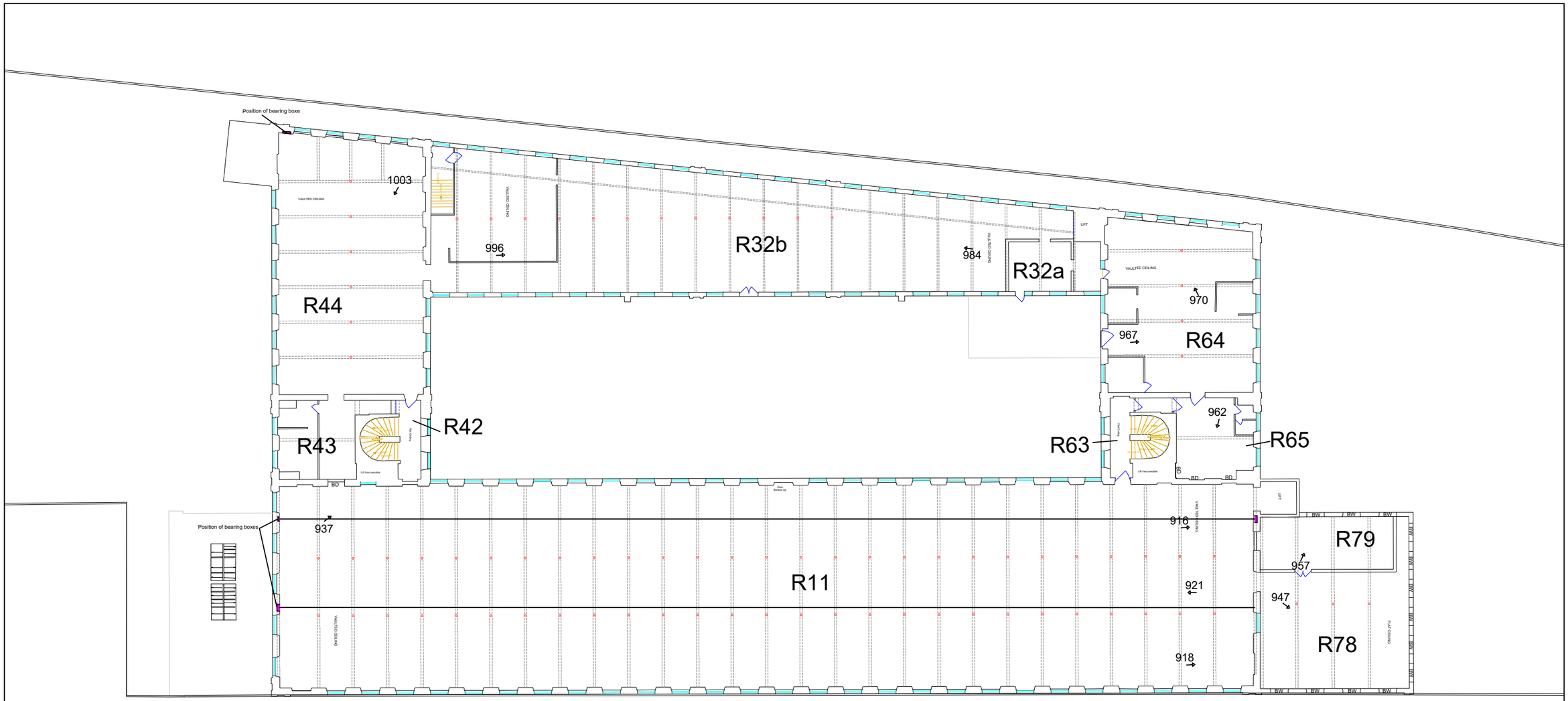


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0 20 m

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Project Code: 61081
Figure 7: Second floor plan

Key:
- Door
- Window
- Beam
- Column
- Fixture
- Bearing box location
- Steps
- Pipes
- Blocked window
- Blocked door
- Photograph Number and Direction

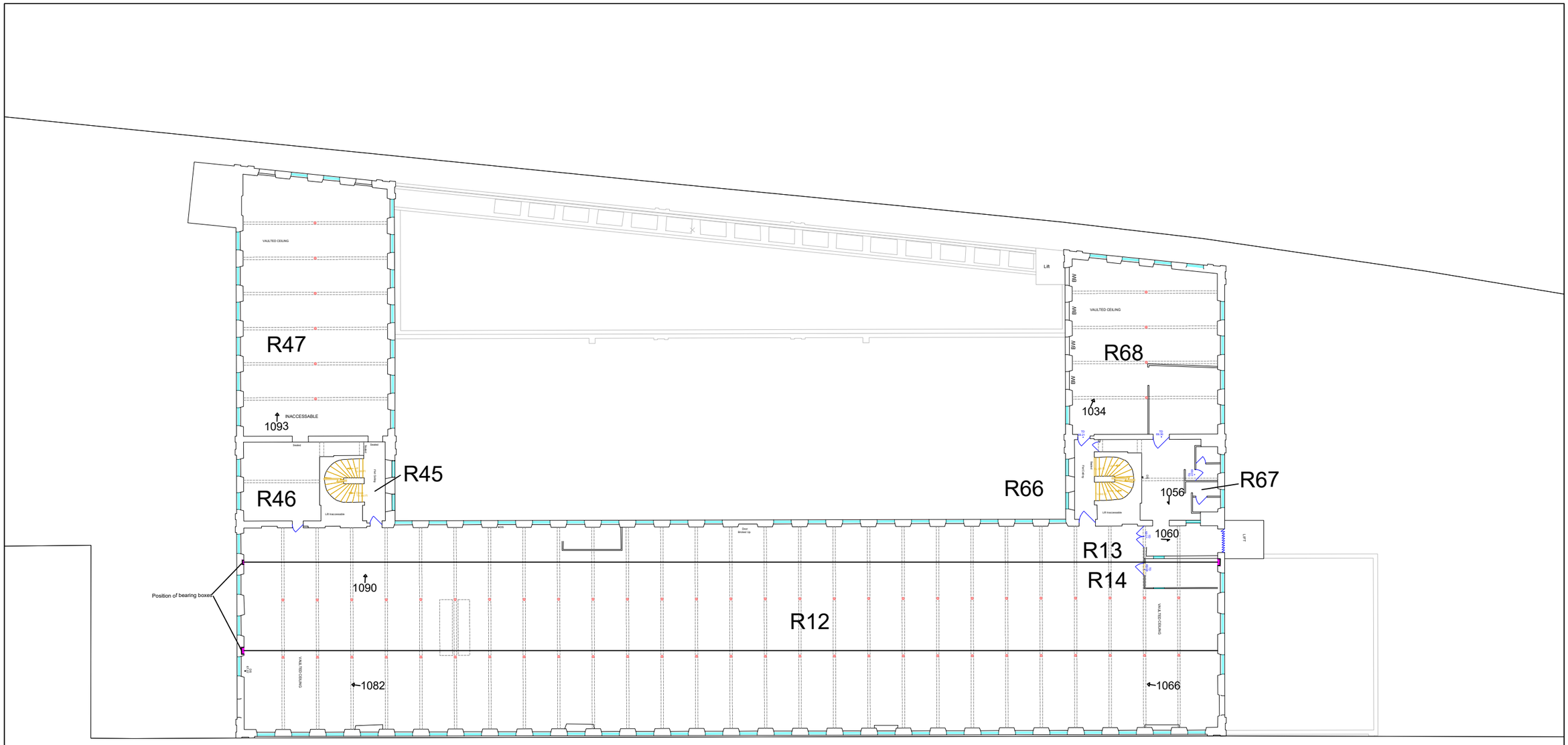


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0 20 m

Brunswick Mill, Manchester
Project Code: 61081
Figure 8: Third floor plan

Key:
- Door
- Window
- Beam
- Column
- Fixture
- Bearing box location
- Steps
- Pipes
- Blocked window
- Blocked door
- Photograph Number and Direction



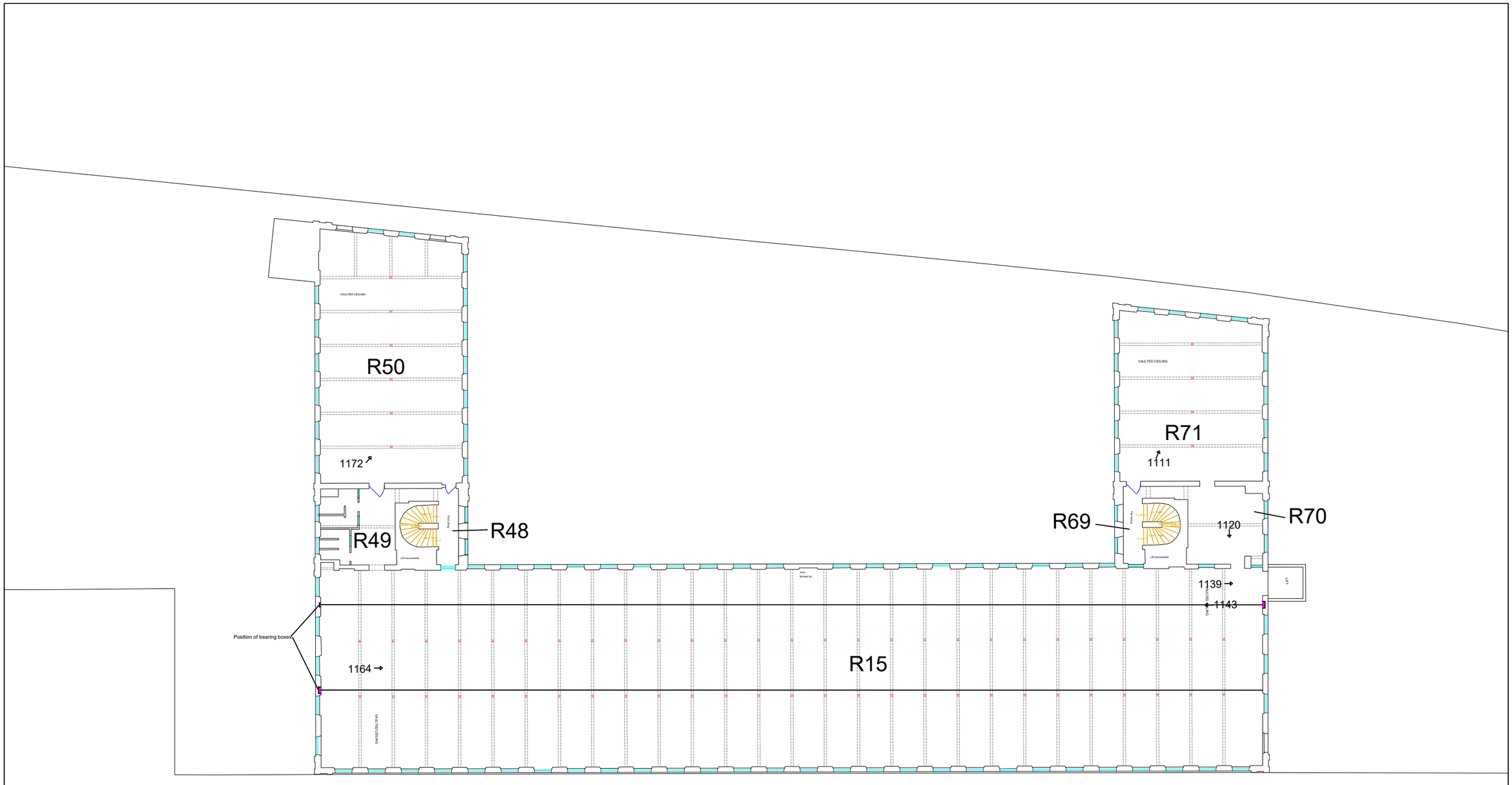
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0 20 m

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Figure 9: Fourth floor plan

Key:
- Door
- Window
- Beam
- Column
- Fixture
- Bearing box location
- Steps
- Pipes
- Blocked window
- Blocked door
- Photograph Number and Direction

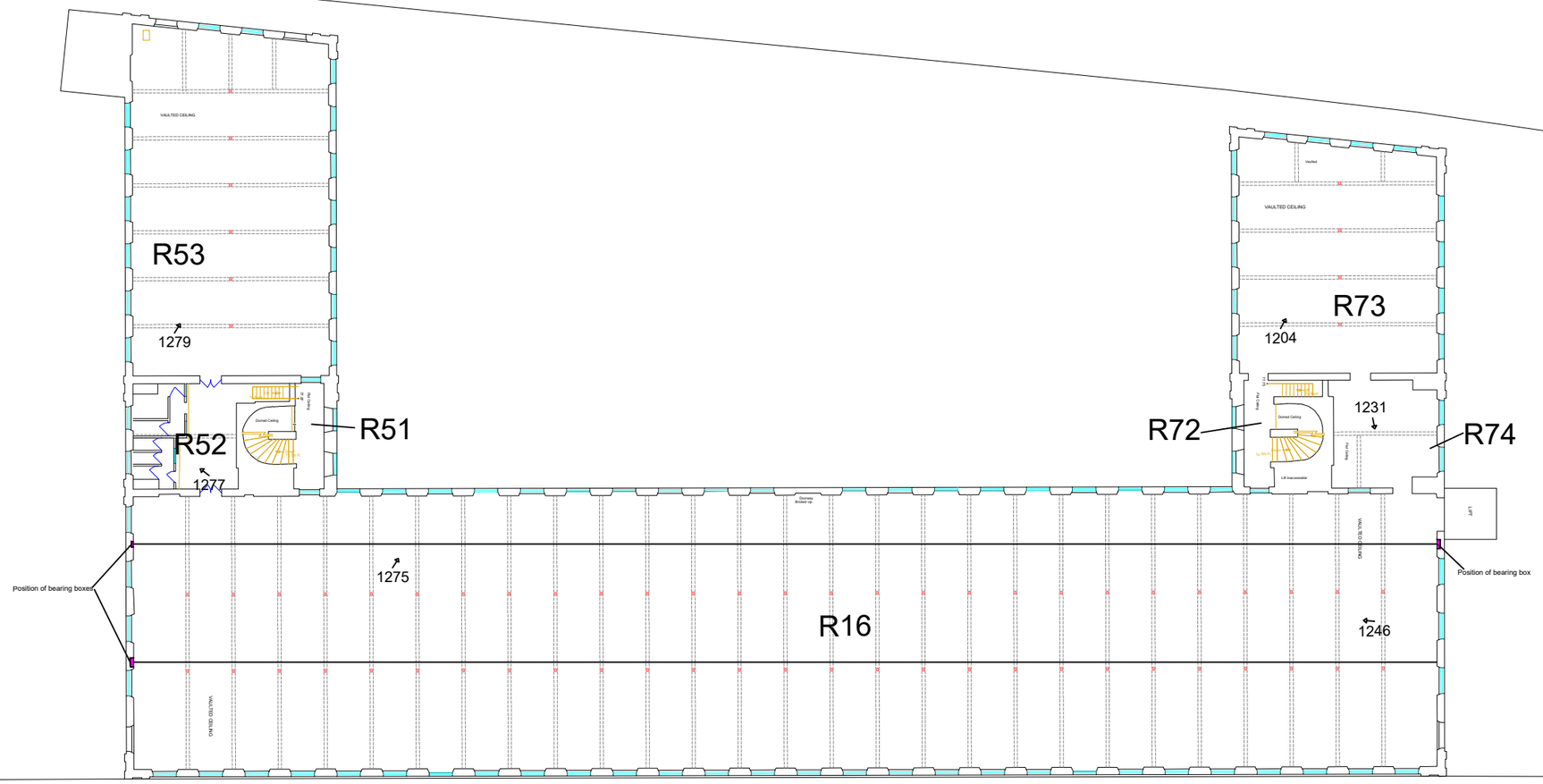


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0 20 m

Brunswick Mill, Manchester
Project Code: 61081
Figure 10: Fifth floor plan

Key:
- Door
- Window
- Beam
- Column
- Fixture
- Bearing box location
- Steps
- Pipes
- Blocked window
- Blocked door
- Photograph Number and Direction

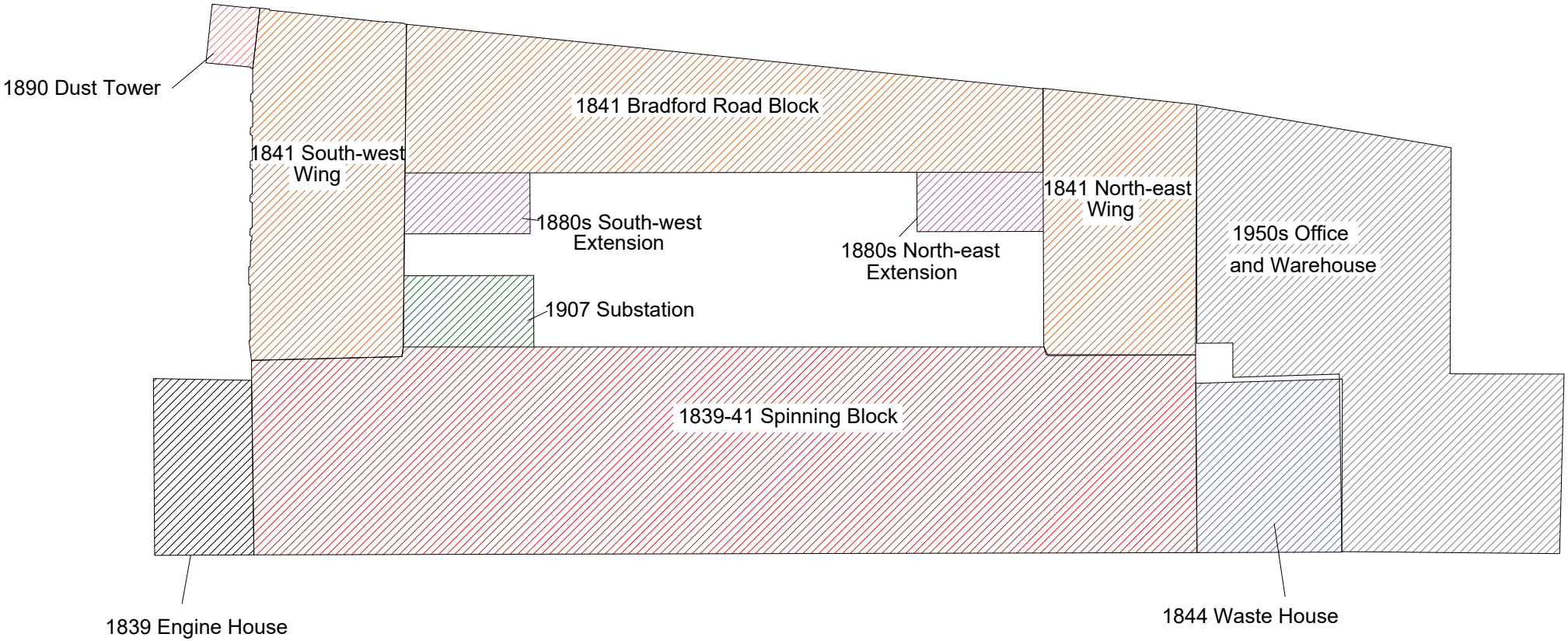


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0 20 m

Brunswick Mill, Manchester
Project Code: 61081
Figure 11: Sixth floor plan

Key:
- Door
- Window
- Beam
- Column
- Fixture
- Bearing box location
- Steps
- Pipes
- Blocked window
- Blocked door
- Photograph Number and Direction



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0 20 m

Scale at A4 1:400

Brunswick Mill, Manchester
Project Code: 61081
Figure 12: Phasing Plan

N

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