

Archaeological Excavation Report

Mayfield,
Manchester

Client:
Mayfield
Partnership

Technical Report:
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Location: The study area is bounded by Baring Street to the west, the A57 Mancunian Way to the south, Hoyle Street to the east and Fairfield Street to the north.

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Summary

The Mayfield Partnership are implementing a scheme of redevelopment at Mayfield, Manchester (centred on NGR 385084 397573; Figure 1). The consented scheme will see the transformation of an area of land situated to the south of Piccadilly Railway Station in the centre of Manchester. Forming part of the Mayfield Strategic Regeneration Framework (SRF) zone, the proposed work will transform a largely derelict area of former industrial buildings to a vibrant mixed-use community, comprising commercial and residential buildings, a multi-storey car park, and the creation of Manchester's largest urban park in over a century. The archaeological works at the site were paramount to the ethos of the scheme, imbuing the park and buildings with a sense of place and bringing to life the rich history of the site. The work was driven by the fulfilment of a planning condition (Condition 8) attached to the planning consent for the works; this ensured the archaeological resource within the site was adequately investigated and recorded prior to the site's redevelopment.

The site is located in the Adwick district of Manchester, to the southeast of Manchester Piccadilly Station with Baring Street to the west, the A57 Mancunian Way to the south, Hoyle Street to the east and Fairfield Street to the north. The River Medlock, now largely concealed by later developments, flows through the centre of the site and was a focal point for early industries, particularly those dependent on a ubiquitous supply of water. From the late-18th century onwards the site became an important hub of industrial activity within Manchester, containing an assortment of industrial premises, including several dye and print works, the Mayfield Dyeworks on the northern bank of the river and Chapelfield Dye Works to the south-west. Later additions to the townscape was the mid-19th century Ardwick Tannery and Mayfield Baths, which both stood on the southern bank of the river. Plots of available land in between the factories were developed during the 18th-19th century into rows of workers' housing. A large cluster was located in the eastern half of the site close to Hoyle Street and the now demolished Indigo Street. At the time of the archaeological fieldwork in few tangible signs of the site's rich industrial heritage were visible above-ground, although remnants of upstanding masonry from the dye works had survived alongside the river and was recorded prior to demolition. The site consisted of mostly open ground covered by hard-standing, some of which was utilised for carparking; it was occupied by a small number of 20th century industrial buildings.

In accordance with advice provided by Greater Manchester Archaeological Advisory Service (GMAAS), Manchester City Council attached a condition (Condition 8) to the planning consent that required a programme of archaeological investigation to be undertaken in advance of development. An archaeological desk-based assessment (DBA) that was carried out to support the planning application for the development concluded that the site had potential to contain below-ground remains of archaeological interest (See Brogan, 2019). Following the completion of the DBA and realisation of the importance of the site, it was decided in consultation with the Greater Manchester Archaeological Advisory Service (GMAAS) that further evaluation would be necessary to determine the significance and scope of the archaeological resource. The proposed methodology for the evaluation was laid out in a Written Scheme of Investigation (WSI), which allowed for the excavation of 15 trenches. These trenches were targeted upon various 18th-19th century remains across the site area and brought to light significant archaeological remains associated with the Mayfield Dyeworks, Chapelfield Dyeworks, the Ardwick Tannery, and the Mayfield Baths.

The results of the evaluation helped to establish the extent and condition of the archaeological resource within the site boundary, which was shown to be considerable. Further consultation with GMAAS established that a second series of intrusive archaeological work should take place: the excavation of four areas - the Mayfield Dyeworks, the Ardwick Tannery, the Mayfield Baths and Chapelfield Dyeworks. The aim of the excavation was to fully record as much as possible of the remains of the tannery, the dyeworks, and the baths, a process which would accord well with several of the initiatives for archaeological research of the industrial and modern periods stated in the current Archaeological Research Framework for North West England (NWRRF 2021), particularly those relating to the agendas of the environment, urban landscape, technology and production and leisure and recreation.

The excavation was undertaken in two phases, the first completed November - December 2020 and the second in February 2021. Both elements of the excavation uncovered significant remains associated with the 18th and 19th century development of the site. Area 1 was located across a portion of the mid-19th century Ardwick Tannery, uncovering a series of walls, floor surfaces, boiler beds, a chimney and flues, which formed a key part of the power-systems of within the complex. Area 2 uncovered considerable remains of the mid-19th-to-mid-20th century remains of the Mayfield Baths. It uncovered the remains of two swimming pools, two boilers, flues, engine-beds, and a chimney. Area 3 selectively targeted a range of buildings forming a small part of the extensive complex of Mayfield Dyeworks in the north of the site. This complex spanned the 18th to 19th centuries and included a suite of structural remains forming the boiler house, economising house, flues and a chimney, multiple engine- and machine beds, dye-vat bases and subfloor drainage. Area 4 investigated the Chapelfield and Ardwick Dye works, founded in the late 18th century and continuing until late 19th century when converted into an India Rubber factory.

1. Introduction

1.1 Planning Background

The Mayfield Partnership are implementing a transformative scheme of development in the centre of Manchester (centred on NGR 385084 397573; Figure 1). The scheme will comprise a mixed-use community including a 6.5-acre public park, office space, and shopping and leisure experiences. The proposed scheme lies to the southeast of Manchester Piccadilly Station with Baring Street to the west, the A57 Mancunian Way to the south, Hoyle Street to the east and Fairfield Street to the north. The first part of this scheme to be commenced was the western half of Phase A initiated in the winter of 2020, followed by the eastern half in 2021 (Plate 1). Both elements of the Mayfield development were subject to an archaeological evaluation and excavation, which are documented in this report.



Plate 1: Satellite image showing Phase A of the Mayfield site.

A desk-based assessment carried out by Salford Archaeology in June 2019 (*Mayfield, Manchester, Phase 1: Archaeological Desk-Based Assessment*) demonstrated that the site has the potential to contain buried remains of archaeological interest. These included a diverse range of buildings dating from the 18th and 19th centuries, including the former Chapelfield dye works, the Ardwick dye works, the Ardwick Tannery, the Britannia Brewery and the Mayfield Ice Factory. A dense patchwork of 19th century worker's housing once occupying much of the site also had potential to survive. The remains of a number of public buildings such as the Mayfield Baths and the Corporation Inn public house were similarly identified as having potential to survive.

The assessment recommended that further archaeological investigation should be carried out in advance of development. Subsequently, a planning condition (Condition 8) was attached to the planning consent for the development. Condition 8 is worded as follows:

‘*No 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 Manchester Planning Authority. The WSI shall cover the following:*

1. A phased programme and methodology of investigation and recording to include:

- an evaluation of below-ground archaeological remains

- targeted archaeological excavation (subject of a separate WSI)

- an archaeological and interpretive survey of the river walls

2. A programme for post investigation assessment to include:

- analysis of the site investigation records and finds

- production of a final report on the significance of the archaeological and historical interest represented.

3. A scheme to disseminate the results of the archaeological investigations for the benefit of the local and wider community (which could include interpretive material within the site, a Greater Manchester Past Revealed booklet and academic article).

4. Provision for archive deposition of the report and records of the site investigation.

5. Nomination of a competent person or persons/organisation to undertake the works set out within the approved WSI.

Reason: In accordance with NPPF Section 16, Paragraph 199 - To record and advance understanding of the significance of any heritage assets to be lost and to make this evidence publicly accessible. GMAAS recommend that a separate condition is attached to secure the display and interpretation of the site's rich industrial heritage within the landscape scheme. This should be worded as follows:

Prior to the first occupation of the development hereby approved, a scheme to commemorate the site's history and archaeology within the new park shall be submitted to, and agreed in writing by, Manchester Planning Authority. The approved scheme shall be implemented no later than 6 months after the first occupation of the development and retained thereafter.

Reason: In accordance with NPPF Section 16, Paragraph 199 - To make information about the heritage interest publicly accessible. GMAAS will monitor any archaeological works undertaken on behalf of Manchester Local Planning Authority.’

In December 2019 Salford Archaeology were commissioned to produce a Written Scheme of Investigation (Mayfield Phase A, Manchester: Written Scheme of Investigation for an Archaeological Evaluation) for Phase A of the development. This consisted of the excavation of 19 trenches within the Phase A development boundary (Figure 2). In September 2020, Salford Archaeology were commissioned to carry out the works. The first fifteen of these evaluation trenches were undertaken in November 2020 followed by four more in February 2021. Both stages of the evaluation uncovered significant remains across the site area which related to the Mayfield Baths, The Chapelfield Dyeworks, the Mayfield Dyeworks, workers’ housing, and the Ardwick Tannery.

In light of the results of this archaeological evaluation, GMAAS concluded that a more intensive archaeological excavation at the site was deemed necessary to further investigate

those buried remains within the site boundary. A new WSI was drawn up for the excavation of four discrete areas (Mayfield Phase A, Manchester: Written Scheme of Investigation for an Archaeological Excavation, Mottershead, 2020). This second phase of archaeological work planned for the excavation of: Area 1: The Ardwick Tannery; Area 2: The Mayfield Baths; and Area 3: The Mayfield Dyeworks and Area 4: The Chapelfield Dyeworks (Figure 2).

1.2 Academic Aims

The principal aims of the project were: to fully excavate and record all remains of archaeological significance within excavation areas 1, 2 and 3, to survey and interpret the river wall, to maintain a watching brief during intrusive groundworks in areas that could not be excavated due to their proximity to the river and to carry out full post-excavation analysis and produce a full report and archive. The location of the excavation areas has been informed by the results of the evaluation combined with the information presented in the desk-based assessment, in consultation with GMAAS. This approach to devising proposals to mitigate the impact of development on the archaeological resource of the development area is in accordance with national guidelines set out in the National Planning Policy Framework: Section 16 – *Conserving and enhancing the historic environment.*

1.3 Objectives

The principal objectives of the archaeological excavation were:

- to fully excavate and record all archaeologically significant remains within the three designated excavation areas;
- to survey and interpret the river wall;
- to maintain a watching brief during intrusive groundworks in areas that could not be excavated due to their proximity to the river;
- to carry out full and appropriate post-excavation analysis;
- to produce a full excavation report and archive; and
- to make available the results of the work.

It is anticipated that the archaeological investigation will address several of the initiatives for archaeological research of the industrial and modern periods stated in the current *North West Regional Research Framework* (NWRRF 2021). In particular:

- Ind04: How well do we understand the survival and significance of historic water management features for industrial purposes including power and textile processing?
- Ind23: What evidence do we have for the improvement of urban public health during this period?
- Ind34: What do we understand about the diversity, architecture and design of buildings associated with social welfare?
- Ind87: How did public and private sport, recreation and leisure spaces develop during this period?
- Ind88: How can the changing function of leisure buildings be captured?

2. Historical Background

2.1 Introduction

As stated above, a full DBA was previously carried for the Mayfield Site (Brogan, 2019). This DBA laid out a full historical and archaeological background to the site in detail and the potential buried remains, which may be present. This report draws upon the research of the DBA to give a general overview of the development of the site but also includes four sub-chapters providing more detailed background to the four areas of archaeological excavation: Area 1, The Ardwick Tannery; Area 2, The Mayfield Baths; and Area 3, The Mayfield Dyeworks.

2.2 Contextual Background

By the 1780s, the national demand for textiles, particularly cotton, had begun 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). The ebb and flow of business confidence powerfully influenced development, which was concentrated into short and intense bursts of investment (Williams with Farnie, 1992, 19). The high price of land influenced the location of fresh industrial ventures, and thus the new steam-powered mills were built on the outskirts of the established nucleus of Manchester.

By the census of 1773, the town's population had dramatically increased with approximately 24,937 people living in the township of Manchester, 23,032 of which were living in the town itself. A commercial boom in 1800-02 saw the number of cotton-spinning firms in the township of Manchester double from 51 in 1799 to 111 in 1802, setting Manchester on its path to becoming the most highly concentrated centre of cotton spinning in the world (Williams with Farnie, 1992, 19).

By the early 1880s, the number of cotton spindles operating in the city was in the process of absolute decline, exacerbated by the 'Great Depression' of 1873–96. This had a significant impact on many cotton-spinning firms. Some of Manchester's largest firms, such as McConnel & Kennedy and A & G Murray in Ancoats, specialised in the spinning of ultra-fine yarn, a branch of the industry that sustained less impact from the trade depression, whilst other firms were afforded some protection through diversification into the weaving and finishing branches.

2.3 Site Development

The development of the site may be traced reasonably well from the sequence of available historic mapping. The earliest reliable published maps that show the study area at a useful scale are Charles Laurent's *Map of Manchester & Salford*, published in 1793 and William Green's *Map of Manchester & Salford*, published 1787-94. Laurent's 1793 map of the Mayfield area shows that the site during this period was largely rural. Several structures occupied the Site during this period, including Hoyle's Mayfield Dyeworks, established in 1782, Chapelfield Works, Ardwick Dyeworks, Stove Street House, Travis Street Houses, Mayfield House and Tipping Street House.

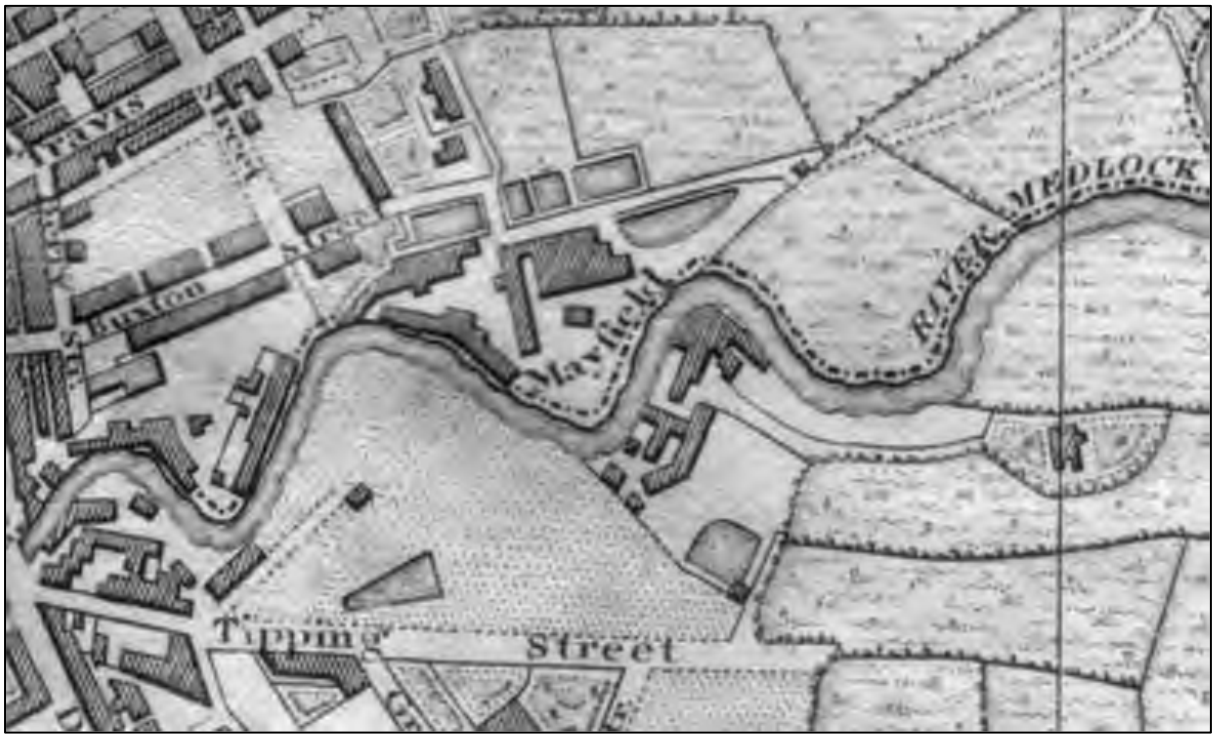


Plate 2: Extract of Swire's Map of 1824

The rural lands surrounding the structures appeared to be of agricultural and pastoral use. Swire's map shows the area of the Site in 1824 (Plate 2). The Ardwick, Chapelfield and Mayfield Dyeworks still dominated the Site, with additions to the areas including Victoria Street House, Tipping Street and Buxton Street. The Victoria Street House occupied a field owned by Thomas Tipping in the late 18th century, with the house being surrounded by gardens. By 1824, Buxton Street, Travis Street, Tipping Street (now the Mancunian Way), and parts of Boardman Street and Stove Street (now Baring Street) were constructed. Tipping Street House does not appear on the 1824 map, indicating the site had been demolished in the late 18th or early 19th century. The site remained largely rural during the early 19th century. Bancks and Co.'s 1831 map is not dissimilar to Swire's, showing development in the north-western extent of the site in the form of new streets and housing, with little development having taken place towards the east other than Victoria Street House.

The first edition ordnance survey map of 1851 shows that more housing had been established in the north-western extent of the site, with Neild Street, Station Street, Bailey Street and School Lane having been constructed off Buxton Street and Travis Street by this time. Blocks 2 and 5 of the Mayfield Printworks had been constructed on the banks of the River Medlock. The Ardwick Tannery appeared for the first time on this map to the south of the Mayfield Printworks. A brewery had been constructed on Stove Street, on the footprint of what would later become the Mayfield Ice Factory. By this time, many more houses had been constructed along new laid out streets. To the east, Broadie Street, New York Street (now Hoyle Street), Victoria Street, Mewett Street, Robert Street (now Rachel Street), River Street, Buck Street and Vernon Street had all been built by the mid-19th century, all lined with terraced houses, with back-to-back houses being constructed on Mewett Street. Victoria Street House was still standing at this point and was incorporated onto Victoria Street. Tipping Street Chapel was

situated in the south-eastern portion of the site. More houses had been constructed on Selby Street, Ashton Street and Egerton Street (or Egerton Place), all of which were situated off Tipping Street towards the south of the site. Houses had also been constructed at the east of the Mayfield Printworks, with names relating to the printworks, including Indigo Street, Madder

Street, Mayfield Street, Arthur Street, Gray Street, and Hoyle Street. Broadie Street had been constructed off Chapelfield Lane, where the Britannia Brewery was established.

The 1893 OS map shows further development had taken place, particularly in the south-eastern extent of the Site, where Howard Street, Nether Street and Bond Street were constructed. The Mayfield Baths had been built off Stove Street, directly south of the Mayfield Printworks and the Water Meter Works, which had been built off Tipping Street. The Mayfield Printworks had expanded again in the late 19th century, crossing the river and abutting the Mayfield Baths. The Corporation Inn first appeared on the 1851 OS map, located on Tipping Street, just west of the Tipping Street Chapel.

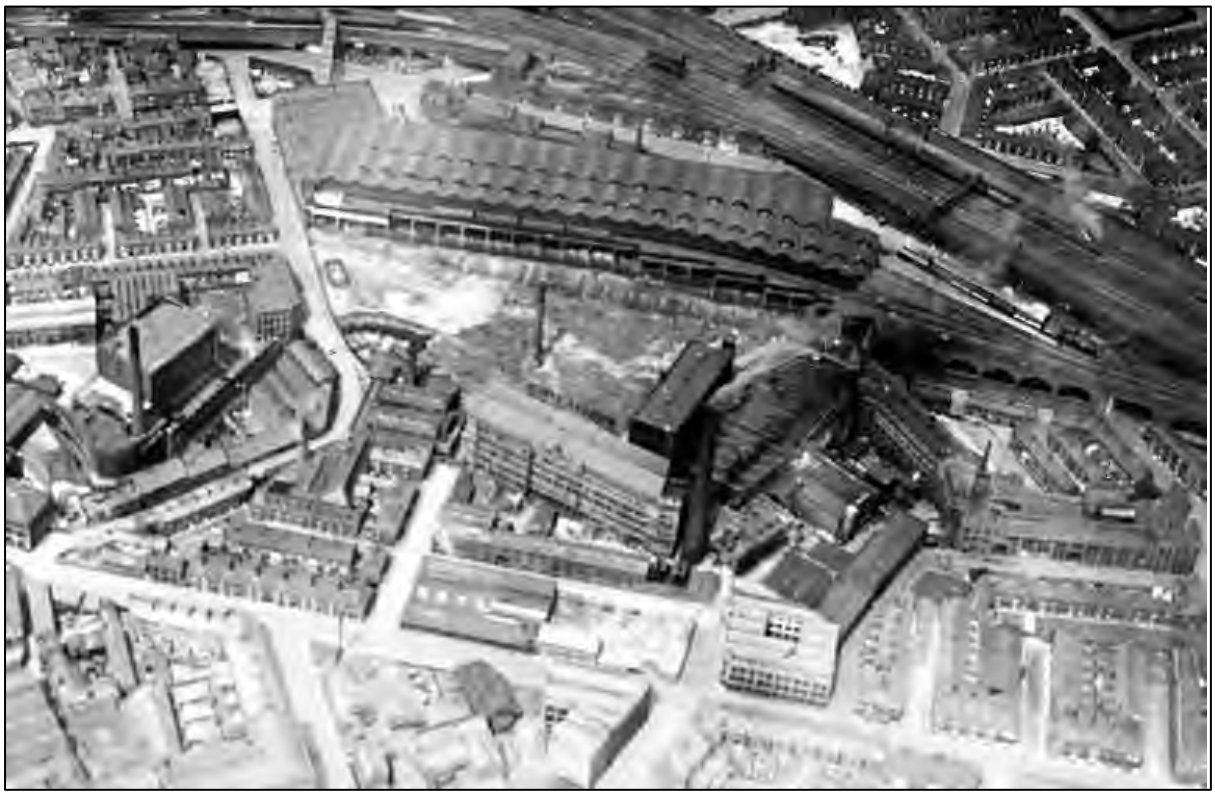


Plate 3: Aerial Photograph showing the site area, 1924.

By 1908, the Chapelfield Works had extended westwards, incorporating the Ardwick Tannery structures into the works. The 1908 OS map shows the Mayfield Ice Factory had also been established by the early 20th century on the site of a former brewery.

By 1910, the Mayfield Railway Station was constructed, vastly impacting the site north of the River Medlock. The Mayfield Printworks was mostly demolished, with a chimney and some structures remaining. The chimney can still be seen in a photograph taken of the site area in 1924 (Plate 3).

The changes to the site during the early 20th century can be seen on the 1922 OS map. The Mayfield Railway Station extends across the northern extent of the site, with the Mayfield Printworks no longer shown on the map. However, the chimney and structure, previously belonging to Block 2, appear on the 1924 aerial photograph and on the 1922 OS map,

indicating that the Mayfield Printworks had not been fully demolished. Streets north of Arthur Street were removed, along with any houses occupying the area cleared in advance of the railway's construction. The Britannia Brewery is labelled as 'disused' on this map, showing the building was still standing but was not in use.

The 1954 map shows the changes to the housing in the area of the site. By the mid-20th century, many of the houses within the area of the site had been demolished, leaving many areas open to redevelopment. The previous sites of Victoria Street and Mewett Street became the site of a mortuary. The majority of the houses that had occupied Selby Street, Ashton Street and Egerton Street (or Place) and the Tipping Street Chapel had been demolished, leaving the Corporation Inn standing alone. The sites of the Britannia Brewery and the Mayfield Baths are labelled as 'Ruins' on the 1954 OS map. The Mayfield Railway Station, Mayfield Ice Factory, Water Meter Works, Corporation Inn and the Chapelfield Works remained in use in 1954.

2.3.1 Housing

Likely due to the increasing importance of the industrial works around Ardwick, such as the Mayfield Printworks, a variety of houses were built across the site area during the first half of the 19th century. Buxton Street, Neild Street, Station Street appear in the north-west area of the Site and Selby Street, Ashton Place, Egerton Place, Broadie Street, Vernon Street, Robert Street, Victoria Street, Chapelfield Road, Gray Street and Arthur Street appear to the east of the site, all during the period between 1794 and 1850. The 1851 OS map shows that Mewett Street had back-to-back housing, indicating that living conditions on these streets were likely very overcrowded.

By the 1820s and 1830s, housing conditions deteriorated, with poor sanitation, no form of water supply and poor-quality bricks and mortar (Nevell 2008, 136; Pearlman 1956, 3). At best, an open drain from an ashpit privy might have been installed down the middle of the street or court (Parkinson-Bailey 2000, 35). Earlier, 18th-century houses were compromised during this period by the infilling of plots between these dwellings with cramped back-to-back and blind-back housing, and by the increasing use of these buildings, originally designed for occupation by one family, as tenements that were occupied by two or more families. As a result, houses became increasingly overcrowded and cellars were used as separate dwellings (Nevell 2008, 152)

A description of the housing conditions during the early 19th century was given by Dr J. Ferriar in the proceedings of the Board of Health in 1805:

"*The number of damp and very ill-ventilated cellars inhabited in many parts of the town is a most extensive and prominent evil. It may be necessary to explain to gentlemen who have not visited such places, that they each consist of two rooms underground, the front apartment of which is used as a kitchen, and though frequently noxious by its dampness, and closeness, is greatly preferable to the back-room: the latter has only one small window, which, though on a level with the outer ground, is near the roof of the cellar, it is often patched with boards or paper, and in its best state, is so much covered with mud, as to admit very little either of air or light. In this cell, the beds of the whole family, sometimes consisting of seven or eight, are placed. The floor of this room is often unpaved: the beds are fixed on the damp earth. But the floor, even when paved, is always damp. In such places, where a candle is required, even at noon-day, to examine a patient, I have seen the sick without bedsteads, lying on rags; they*

can seldom afford straw. This deplorable state of misery becomes frequently the origin, and certainly supports in a great degree the progress, of infectious fevers." (Board of Health 1805, 12-13).

Further acts were introduced during the 19th century in an attempt to improve living conditions in Manchester. The Manchester Police Act of 1844 stated that any new house should be provided with a toilet, with a door and covering, and all existing houses were to have one installed; significantly, this act also banned the building of new back-to-backs (Muthesius 1982, 126; Lloyd-Jones and Lewis 1993). The Public Health Act of 1848 further sought to improve conditions by giving 'local authorities powers to supply water, to pave and clean streets, to arrange the collection of refuse and the whitewashing and purifying of houses' (Parkinson-Bailey 2000, 40). Cellar dwellings also became illegal in 1853 through the Manchester New Streets Act, however, this took approximately three decades to take full effect, as many cellar dwellings remained occupied until 1872 (Hylton, 2003, 154).

Two significant advances in housing legislation were introduced in the late 1860s. The first was the Manchester Waterworks and Improvement Act of 1867, which led to the appointment of a Medical Officer of Health for the town, the first of which was Dr John Leigh (Parkinson-Bailey 2000, 41). Nationally, this act was the first of its kind that enabled houses unfit for habitation to be closed and demolished. Significantly, the 1867 act also specified the minimum requirements for room sizes and window areas in new dwellings, and also required that every new house had a yard at the rear. This act also required a minimum street width of 30ft (*ibid*.). This local act was then supplemented in 1868 by the passing of a national act.

This was the Artisans' and Labourers' Dwelling Act, also known as the Torren's Act after its author, which focused on the improvement, maintenance, or demolition of pre-existing houses and also new-build houses (*ibid*.). To bring houses up to the required standard, landlords might create a through-dwelling by knocking doors through the party wall between a pair of back-to-backs. Pairs of back-to-backs or individual one-up one-downs might be removed altogether to create the space for yards for the remaining property (Roberts 1993, 22-3). In 1875, the Artisans' and Labourers' Dwellings Improvement Act was introduced to provide the mechanism of slum clearance, the first act of its kind (Pearlman, 1956, 28). However, the Manchester authorities were initially resistant to this act, and it was not until 1890, with the amendment of this Act, that slum clearance and regeneration began in earnest (*op. cit.* 34).



Plate 4: Photograph of Indigo Street, 1901, looking northwest.

Despite regulations being introduced and in place throughout the 19th century, back-to-back houses were still present in the Site area until at least 1890. The houses on Mewett Street still seem to be back-to-backs on the 1908 OS map, however, the buildings seem to have undergone some modification. By 1922, the houses were finally developed into single dwellings.

2.3.2 Ardwick Tannery

The Ardwick Tannery was one of those important industrial structures which occupied the Mayfield site in the 19th century. It was a relatively late addition to the suite of industrial

buildings lining the riverside at Mayfield; it was preceded by both the adjacent Chapelfield Works, and the Mayfield dye works across the river. The historic record and cartographic sources indicated that the first tannery buildings were constructed sometime *c.* 1831-36. The tannery was not surveyed for Banck's map of 1831 but appears on Pigot's 1836 plan, and was expanded prior to the survey of the 1848 plan by Pigot and Slater's directory. On the OS 1851 Town Plan Map, it was labelled simply as 'Tannery' (Plate 5).

From directories the was clearly operational as a tannery in the early 1840s and appears in *Pigot & Slater's General and Classified Directory of Manchester and Salford,* 1841: 'Cunliffe Thomas & Co. dealers in hides and sizing, and buffalo skips, 21 Church Street; works Tipping St Ardwick'. The company was listed prior to this, in 1837, as a size and hide dealer at 21 Church Street, but no mention is made of the works in Ardwick (Pigot 1837 101). The partnership known by the name Thomas Cunliffe and Co. was dissolved in 1843, although Thomas Cunliffe and Sons appear to have continued business at the site under the direction of John and James Cunliffe, presumably Thomas' sons, who were listed in *Slater's General and Classified Directory of Manchester and Salford* for 1850 advertising their custom as 'tanners, buffalo hide and sizing dealers and makers of buffalo skips, laces, pickers, picking bands' etc.

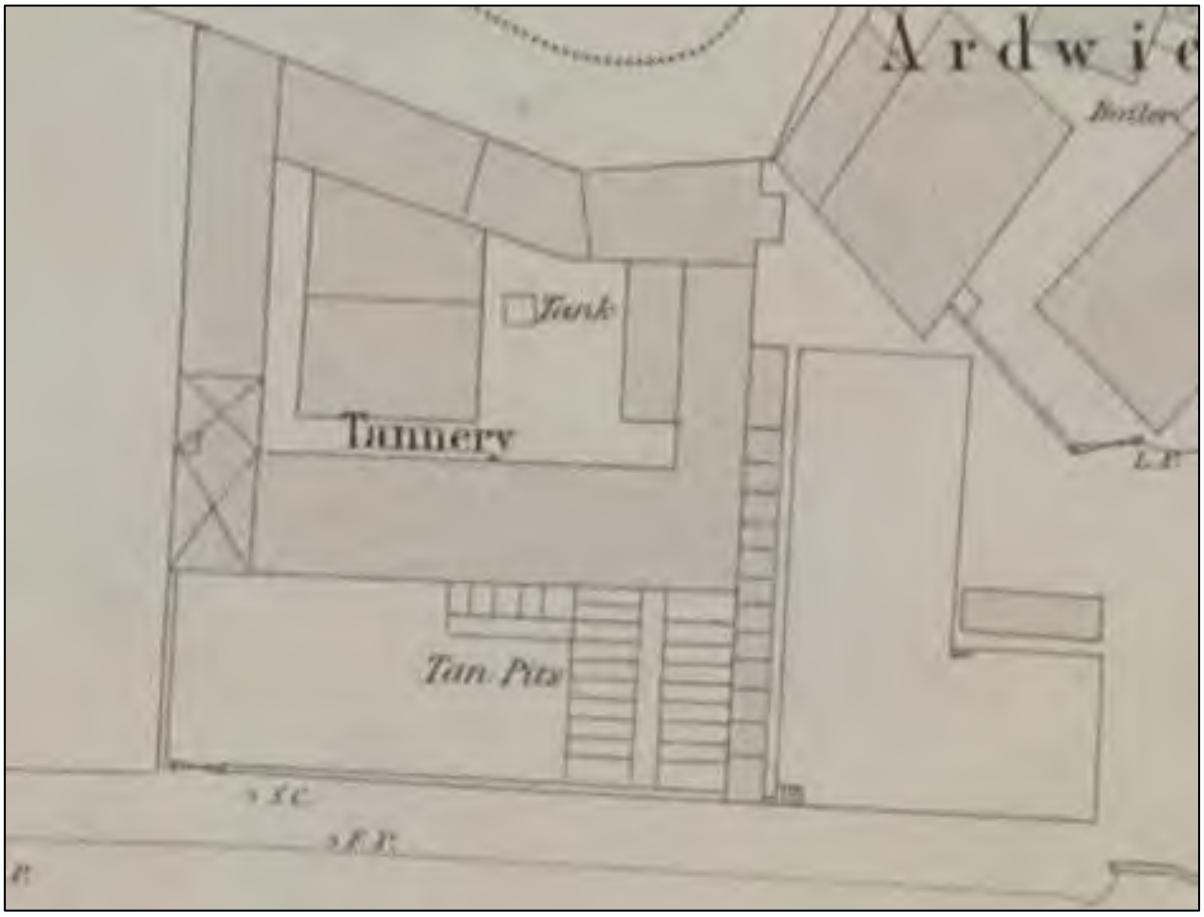


Plate 5: Extract from the 1851 Town Plan map showing the layout of the Ardwick Tannery.

Some further details of the tannery are apparent in an article concerning the effects of a flood in 1857, which devastated property along the river. According to this report, the tanners

suffered inconvenience with their lower warehouse being flooded completely and upper warehouse filled with 2ft. of water. A quantity of bark was wetted but the flood water did not reach the tan pits.

Three years later, the tannery suffered a second disaster when a fire broke out at the premises. Reported on in the *Leeds Intelligencer* on the 21st of April 1860, 'much valuable property was placed in considerable danger' but owing to swift action, the cost of the damage was estimated to be £2000, a sum likely covered by insurance.

In 1864, the company partners, John and James Cunliffe declared they were dissolving their partnership with the enterprise being carried on under James' leadership. Appearing in the London Gazette on the 5th of August 1864 the announcement read:

'NOTICE is hereby given, that the Partnership heretofore subsisting between us the undersigned, John Tattersall Cunliffe and James Henry Cunliffe, at Ardwick, in the city of Manchester, as Tanners, under the firm of Thomas Cunliffe and Sons, was dissolved on the 30th day of June last by mutual consent. All debts due to and owing by the said concern, will be received and paid by the said James Henry Cunliffe, by whom the said business will in future be carried on under the said firm of Thomas Cunliffe and Sons - As witness our hands this 3rd day of August 1864. John T. Cunliffe. James H. Cunliffe'

The tannery announced the sale of its premises and machinery in October 1892 (Anon 1893 12), following the death of Thomas Lawson Cunliffe, who died on the 4th of June 1892. Thomas likely oversaw the operations of Thomas Cunliffe (and Son) at Ardwick Tannery for most, if not all, its period of use.

The 1851 map showed that the site consisted of a series of buildings which formed a square courtyard along the southern bank of the River Medlock. A second building was located within that courtyard along with a smaller square feature which was labelled as 'tank'. A typical tannery complex would consist of an enclosed courtyard, where bark stores, the bark mill and drying lofts would be situated (Nevell & Bell, 2009, 10). To the south of the courtyard was a group of 30-40 rectangular features which were labelled as 'Tan Pits'. Immediately to the south of this was an unnamed street – which would later become Bond Street – which led to Tipping Street to the south.

By the time of the survey for the 1891 OS map, the Ardwick Tannery had further expanded. The courtyard building remained mostly unchanged. A new rectangular building had been built to the southwest adjacent to a new roadway, Nether Street. The 'Tan Pits' recorded on the 1851 Map were no longer visible and appeared to have been encompassed with a new building.

Tanning in 19th-century Britain is relatively well-understood based upon historical and archaeological evidence. In addition to the cartographic record, various historical documents helped to better understand the processes which were undertaken at the Ardwick Tannery. The most significant of these records consisted of two back-to-back auction notices which were listed when the tannery ceased production in the *Manchester Courier and Lancashire General Advertiser,* 8th October 1892:

'Ardwick Tannery, Tipping-Street, London-road, in the city of Manchester.

To be sold by auction, by Messrs. William Wilson & Son, at the Albion Hotel, Piccadilly, Manchester, on Tuesday, the 11th day of October, 1892, at five for six o'clock in the evening,

subject to the conditions of sale of the Manchester Incorporated Law Society, and such special conditions as shall be then produced.

All that important plot of freehold land containing, including street land, 4,779 6-9 square yards or thereabouts, situate in Ardwick in the city of Manchester, and in close proximity to the London-road Station, having extensive frontages to Bond-street, Nether-street, and the river Medlock, together with the buildings and premises erected thereon and known as the Ardwick Tannery, and now and for a long period in the occupation of Messrs. Thomas Cunliffe & Sons, tanners, curriers and leather factors, comprising tannery, beam shed, lime pits, tawing and scouring house, picker hide room, grease house, drying and hair stoves, sizing house, drying and machine rooms, hide sizing bark and other stores, grinding mill, warehouse, counting house and lodge, boiler and engine house, mechanics and joiners' shops, stables, coach house, and other premises, which are all conveniently arranged for the business; also the steam engine and boiler. The property is freehold of inheritance and free from chief rent. It enjoys excellent lights and an abundant supply of water from wells on the premises, and is convenient and advantageously situate near the centre of the city and the various railway stations. Plans and particulars of sake may be obtained from the auctioneers, 29, Fountain-street or Messrs. Janion & Hall, solicitors, 6, Essex-street, Manchester.'

'Messrs. William Wilson & Son respectfully announce that they have received instructions from Messrs. Thomas Cunliffe and Son (who are disposing of the business) to sell by auction, on Wednesday, the 12th of October 1892, commencing at 11 o'clock, at the Ardwick Tannery, the valuable machinery, tools, and effects, comprising single-flue steam boiler, 16ft by 6ft. diameter, with mounting; one double-flue ditto, 20ft. by 6ft. 6in. diameter, with ditto, by Heaton; high-pressure horizontal engine, 8in. cylinder, 16in. stroke; ditto vertical ditto, 8in. cylinder, 18in. stroke; donkey engine, 4in. cylinder, 7in. stroke; two of Jackson's self-contained scouring machines, with tables with universal movements; patent setting machines, with table with ditto, by J. Hall and Co., Leeds; bark breaking and grinding mills, double-geared offal rolling machine, offal striking machine, butt splitting frames, double set of wool stocks, for East Indian kips; leather belt callender, with two c.i. bowels, 21in. by 7in. diameter; belt splicing machines, hydraulic press, with 7in diameter ram; set of two-throw hydraulic pumps, ditto, with 3½in. ditto, with double hydraulic hand pump, by Tangye's, 11in centre back-geared sling and surfacing lathe, 9in. centre hand-turning ditto, stocks, taps, and dies, grindstones, 2-ton Pickering's pulley blocks and chain, liquor pumps, c.i. jacketed steam pans, single purchase jib, cranes, crabs with c.i. barrels, cast iron and stone unhairing and striking beams, platform weighing machines, scales and weights, large quantity of drying poles and rails, currier's and tanner's tools, oil cistern, hand rollers and beds, hand fire=pump, hose reel, &c.; finishing, dressing, stuffing, and other tables; slate and stone scouring slabs, belt coiling tables, cupboards, stillages, counters, ladders, joiner's bench, tools, quantity of timber, iron vices, scrap iron, brass and lead, lurry with patent arms and springs, by J. Townsend; box cart with ditto, by ditto; handcart, sack trucks, box and piece barrows, double set of harness, sundry cart gears, about 5cwt. white leather laces, quantity of dubbing, tallow, and grease; shafting, steam and water piping, contents of blacksmith's shop, office furniture and fixtures, Milner's fireproof safe, and other effects. – For catalogues and further information apply to the Auctioneers, 29, Fountain-street; or to Messrs. Janion and Hall, Solicitors, 8, Essex-street, Manchester.'

These documents, in addition to various others, helped to shed further light on the operations at the Ardwick Tannery. Though individual aspects of the tanning process were generally

undertaken by specialists in 19th Century Britain (*See* Nevell & Bell, 2009, 9-10), it appeared that the full suite of tanning activities from initial cleaning to final rolling were undertaken at the Ardwick Tannery. *Whellan's Directory of Manchester and Salford,* 1853, listed some of the products made and processes undertaken at the site: 'Cunliffe Thomas & Sons, tanners, curriers, buffalo hide curers, sizing dealers, and makers of buffalo skips, laces, pickers, picking bands, &c. 15 Church St; work Tipping St, Ardwick'.



Plate 6: Image illustrating the process of scouring in a late 19th century tannery (Courtesy of the Hagen History Centre)

Scouring was one of the first steps in tanning and based upon the historically recorded structures and equipment at the site was one of the processes undertaken at the Ardwick Tannery. This practise most likely took place in the 'tawing and scouring house' listed in the 1892 auction advertisement and was generally undertaken in conjunction with the initial cleaning of skins. Skins would be 'scoured' or scraped to remove and remaining excess fat or tissue which had not been removed during butchery (Plate 6). This process could be undertaken both by hand and machine, as indicated by the presence of 'Jackson's self-contained scouring machines' and 'scouring stone slabs' at the Ardwick site.

Liming was one of the most important processes in in the production of tanned skins. The skins would be 'limed' in pits to help remove further grease, hair, and fats from the skins. This was certainly undertaken at the Ardwick tannery based upon the historically recorded 'lime pits'. It was probable that some of those tanks or 'Tan Pits' surveyed on the OS 1851 Town Plan, which were used for this process.

The most significant process at the site was the 'tanning' itself. Based upon the known history of the site it was indicated that 'vegetable tanning' or 'bark tanning' was practised at Ardwick. Historical records from the 1850s-60s listed only oak bark as used at the site though various other barks were used in the industry, such as hemlock, tanoak, and mangrove. Based upon the listing of 'liquor pumps' and bark breaking and grinding equipment it was likely that bark processing and the production of 'tan liquor' was undertaken at the site. The skins would be processed in 'Tan Pits' such as those shown on the 1851 Town Plan map. The tan liquor was produced from the oak bark and the 'tannins' within helped to stop the skins from putrefying.

In addition to the final product of processed skins, various side products were also made. Based upon the presence of a 'sizing house' it was possible that 'size' – a glue-like product normally made from ground animal bone – was produced at the site. Size was used in the making of paper products and especially in 19th century Manchester, was an important product in the strengthening of cotton fibres. Excess fat removed during cleaning, scouring, and liming was made into grease and tallow, likely at the 'grease house'. A quantity of tallow was listed in the 1892 auction advertisement; tallow was used in medicine, as lubricant and as soap, amongst other things. Hair was also a significant commodity at the Ardwick Tannery and various newspaper notices listed it for sale. A note in the *Wakefield Free Press*, 30th November 1867, stated: 'To dealers in hair, plasterers, &c. Thomas Cunliffe & Sons are willing to dispose of (in a wet state, suitable for manufacturing and other purposes) the hair made at their Tannery, Ardwick, Manchester. To be taken weekly. Apply as above.' Plasterer's hair was used in lime plastering as a strengthening agent and was most popularly produced from ox and horse.

In addition to the by-products produced at the tannery, such as fat and hair, other products and agents used in the manufacturing of leather were also reused and sold on. This included used lime and the oak bark, which had been used to produce the tanning liquor. An advertisement in the *Manchester Courier and Lancashire General Advertiser*, 28th March 1857, stated 'To farmers, gardeners, and other. Spent Oak Bark on sale, 2s. per load; also Lime pit Bottoms, an excellent manure, at 2s. 6d. per load, at Thomas Cunliffe and Sons' Tannery, Tipping-street, Ardwick.

Further historical records helped to shed further light on the finished goods, which were made at the Ardwick Tannery. This indicated that the site mainly produced straps and belts for industry, agriculture, and machinery. A note in the *Lincolnshire Chronicle,* 23 March 1867, stated 'To agricultural implement makers, manufacturers, and all users of driving belts. Thos. Cunliffe and Sons, Ardwick Tannery, Manchester, make and supply Oak Bark Tanned Strapping, of all widths, single and double, well cemented and stitched, of the very best quality, at low prices. Also First-class Strap Butts, for those who prefer to cut their own straps, and the best white leather, and horny laces, for sewing. – Shipping supplied.' Various directory listings also stated specifically that Cunliffe produced 'leather picking bands' used in looms, an important commodity for Manchester's cotton industry.

By the time of the survey for the 1908 OS map the whole of the buildings of the Ardwick Tannery had been subsumed into the near Chapelfield India Rubber Works. It was possible that the tannery had been purchased by the Chapelfield Works as early as 1892, at the time of the above-described auction when the tannery ceased production. The 1908 OS map indicated that all of the buildings related to the 19th-century tannery had been cleared or heavily redeveloped and replaced with structures forming the India Rubber works. Despite this

process of redevelopment at the turn of the century, some elements of the Chapelfield Works structures survived and were still standing in 2020.



Plate 7: 1912 photograph of the frontage of the bathhouse along Boardman Street (later Baring Street) with urchin.

2.3.3 Mayfield Baths

Mayfield baths opened to the public in 1857 and remained operational until it sustained damage during bombing raids in 1941. It was originally operated by The Manchester and Salford Baths and Laundries Company and later purchased by the Manchester Corporation. The building was designed by well-known architect, Thomas Worthington (1826-1909), whose other works included the Memorial Hall (1866) and other bathhouses, such as Leaf Street (1860). A considerable amount of evidence related to the bathhouse was available including original plans, photographs, prints, articles, maps, and other items.

Public Bathhouses in the 19th Century

The construction of the Mayfield Baths was part of a wider social movement to increase the sanitation of particularly the working classes. This was in part the result of writers such as Kay-Shuttleworth (1832) and Engels (1845) who had raised issues related to the living conditions of the working classes in Manchester through the previous decades. Attitudes

towards public bathing changed through the early-to-mid 19th Century and the first public baths was opened in Liverpool in 1828 while the first in Manchester opened in the 1840s.

The Baths and Washhouse Act of 1846 gave local governments greater powers to establish such facilities and importantly allowed loans to be taken to fund such endeavours. In Manchester this led to a suit of new public bathing sites being constructed, although in the case of the early examples these were constructed as a result of private enterprise rather than municipal funding. In many cases the baths and washhouses were constructed by the Manchester and Salford Baths and Laundries Company, including the Mayfield Baths. The earliest premises to be erected included Miller Street, Shudehill (1846); Miles Platting (1849); Greengate, Salford (1856); Mayfield, Ardwick (1856); Leaf Street, Hulme (1860); and Penny Bath, Ardwick (1860). This trend continued into the early 20th century with the construction of further bathhouses such as at Withington, Moss Side, and Victoria.

Many of these mid-19th century premises followed similar layouts, perhaps unsurprisingly as many had been designed by the same architect: Thomas Worthington, whose works included the baths at Mayfield, Leaf Street, and Greengate. These bathhouses often included multiple swimming pools – 1st class men, 2nd class men, and women, in addition to Turkish baths, wash-baths, and facilities for the washing and drying of clothes and sheets.



Plate 8: 'Mayfield Baths and Laundries' as print in The Builder, 14th August 1858.

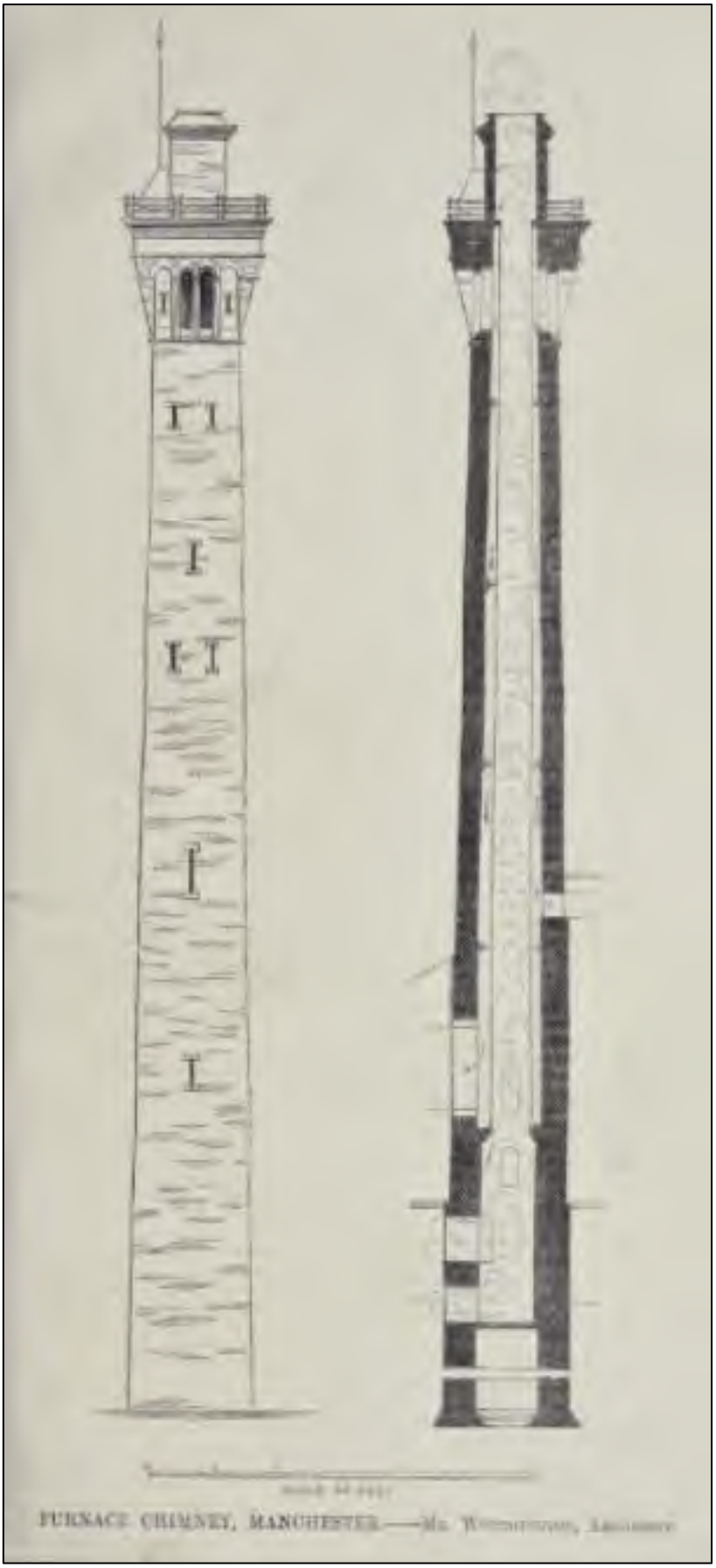


Plate 9: The Mayfield Baths 'Florentine' Chimney, influenced by the Torre del Mangia, Sienna. The Builder, 1858.

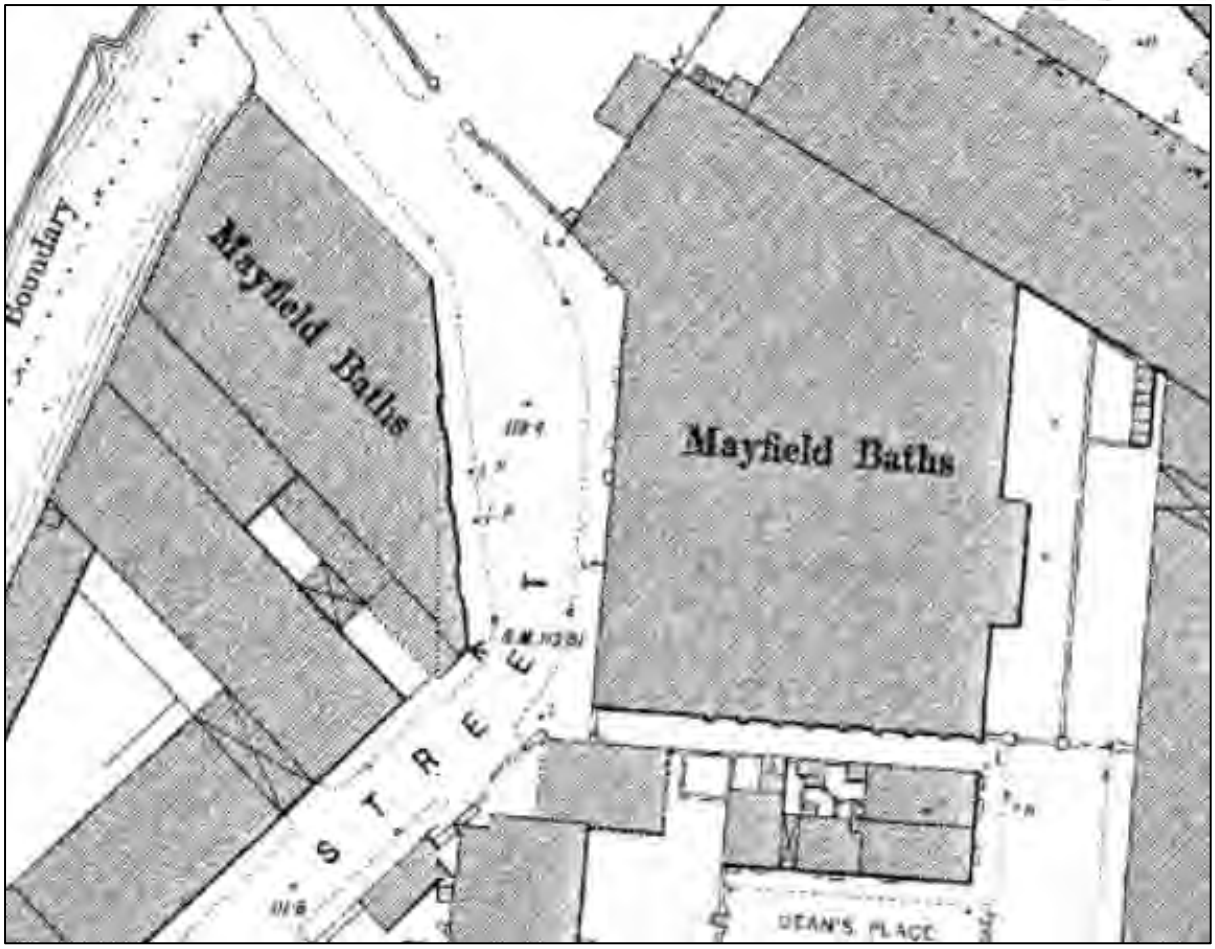


Plate 10: Extract from the 1891 OS Map showing the Mayfield Baths. Note the building to the west which contained the larger 'subscription'-only pool, later used as the female-only pool.

However, despite these similarities, there were contemporary accounts which labelled the Mayfield Baths and it's like as considerable improvements on simpler and earlier designs, some of which had pools which were made of wood. An early print of the bathhouse appeared in the magazine *The Builder,* 18th August 1858 (Plate 8), along with a detailed description of the Mayfield site and favourable comparisons with other bathhouses, some of which is quoted below:

'The baths and wash-houses now in operation in Manchester and Salford, appear to be successful works of the kind. The first establishment with the improved arrangements and modified charges, was opened in Miller-street in 1845. In 1850, a small building was opened at Miles Platting, a poor quarter of the town, — the site being presented, with 2,000l by Sir Benjamin Haywood, bart. The fittings here are of inexpensive character, and were it not for the interest taken by the superintendent, and tact in management, the place could hardly be kept open. In this particular case, wood for the private baths (the bottom of red deal and the sides of pine), has answered as a material. Slate has been found to crack. Zinc is deemed objectionable. The best material is the glazed or enamelled fire-clay; but many baths of that kind are cracked when delivered, though still fit for use.'

Specifics of the Mayfield Bathhouse

As stated above, a considerable amount historical evidence is associated with the Mayfield Bathhouse. Much of this information described the building itself along with its contents such as the pools, baths, and the ironwork. Briefly, the site contained several tiled swimming pools lined with changing rooms, a series of washing baths which were located on the upper floor, and which were supplied with hot and cold water, and a laundry. When the Mayfield Bathhouse opened to the public an article in the *Manchester Times,* 15th August 1857 described the site in some detail:

'This extensive establishment situate near the Mayfield Print Works, off Buxton-street, London-road, and the second erected by the Manchester and Salford Baths and Laundress Company, is now completed in all its departments and in full operation the receipts during the prevailing hot weather being we believe, something like £50 per week. The first and the second class baths occupy two large compartments of the buildings, having each a swimming bath in the lower portion. The private baths are formed around an upper gallery, supported by pillars, above which is an arched roof of ample elevation. In the first-class department, to which the admission is sixpence, there are 18 bathrooms. The baths are of white glazed earthenware; and supplied with hot and cold water, and the rooms furnished with looking glass, comb, brush, flesh-brush, soap, two towels, footboard, and bootjack, and the floor laid with oilcloth and carpet. The dimensions of each are 7 feet 7 inches by 7 feet. There are five superior baths of a larger kind, with mahogany fittings, at one shilling each. Also a family bathroom, containing two baths; and a shower bath can be had for an additional half price of the bath.

In the lower storey, surrounding the swimming bath (sixpence), there are 32 small rooms, similarly furnished. The swimming bath is 22 yards long, and of proportionate breadth. It is lined with blue and white tiles, the bottom being flagged. The depth of water is 3ft. at one end, and 6ft. at the other. Although the water is supplied direct from the corporation water works, and is clear when taken into a glass, and may be seen through to the depth of three feet or more, yet it has a deep brown appearance, as if muddy. This was the case when we inspected the bath yesterday, and the water had been let fresh into one of them the same morning. We have no doubt this arises, partly from the light being admitted not at the top of the roof, but at the sides, and partly from the roof being painted a buff colour, instead of a light blue. The green hue of the sea is believed to arise from commingling in the water of the reflection of the blue sky and the yellow colour of the sandy bed, the blue and the yellow thus producing green. We think experiment might be tried, with advantage, when repainting becomes necessary.

The second-class baths, twopence each, 18 in number are similarly arranged around an upper gallery; they are also supplied with warm as well as cold water, have a looking-glass, one towel, and oil cloth upon the floor. To this class there is also a family bath.

The swimming bath (twopence) has 14 small rooms, and a series of numbered seats, with pegs for clothes and hats.

The women's baths have, of course, a separate entrance. They also consist of first and second class, the charges being respectively sixpence and twopence, and the furnishing pretty nearly corresponds. There are waiting rooms to both the men and women's baths, the first-class of the former being supplied with newspapers.

The laundry is a very complete and useful branch of the establishment, and a considerable number of women avail themselves of its advantages. Here, also, there are two classifications, six compartments at a slightly higher charge, being more spacious, and 30 of a more ordinary kind. All have three troughs, supplied with cold water, hot water, and steam, so as to boil the linen, they think proper.

The numerous towels for the baths are washed by one of Messrs. Stott, Belward, and Findlow's washing machines and there is an extensive stove, in which to dry the linen washed by the women in the laundry. The hot water to the baths, and the steam to the laundry, are supplied from three boilers, at the rear of the washhouse. The building has a neat appearance in front, being of brick, with stone dressings. On a stone panel, having on one side the arms of Manchester and on the other those of Salford, is inscribed "Manchester and Salford Baths and Laundries Company, incorporated 1855".'



Plate 11: The female swimming pool at Mayfield 1902. This pool was likely located in the western of the bathhouse buildings, on the western side of Baring Street.

An article in *The Builder,* 14th August expanded further on the contents of the bathhouse:

'The ordinary and ornamental ironwork at Mayfield was executed by Messrs. E. T. Bellhouse and Co. and that at Greengate by Mr. Kitchen. The light at Mayfield is admitted through sloping sides occupying the space above, in the transverse section, corresponding with the overhanging of the bracket and girder beyond the line of columns, and 6 or 7 feet in height up to the slope of the ordinary roof covering. In the Greengate Baths, skylights in the roof are used. Opinions vary as to the relative advantages of the methods. The private baths are on the upper level, reached from the gallery; the dressing boxes for the bathers in the plunge hath, being below. For ventilation there are four small louvres in the roof, and an opening ill the wall at each end. These are not found sufficient. The sides of the bath are covered with

blue and white tiles, finished with an ornamental border. The bottom is laid with Yorkshire flags, an arrangement which appears to be the best that has been suggested, tiles there being liable to get loose and cut the feet; and glared bricks, if cheap enough, it is thought would be too white for water which, as at present supplied, is said to deposit a small amount of vegetable matter. The appearance of discoloration in the water which there is now — from whatever cause arising — is to be regretted. Some little difficulty, we believe, is found in the action of the water on the ironwork. The drying apparatus in the washing department, appears to act efficiently. Small articles are dried in fifteen minutes, and half an hour serves for almost anything.

The length of the plunge-bath at Mayfield is 63 feet, and that of the that at Greengate is 53 feet; and in each case the width is 25 feet.'



Plate 12: Men's first-class pool at Mayfield Baths, 1920.

As described in the above articles, the Mayfield Bathhouse was constructed in red brick and stood at three stories in height. Multiple photographs of the façade exist from the early 20th century (Plate 7) and it was likely that it underwent minimal changes throughout its period of use. An article in *The Builder,* 18th August 1858, described the style of architecture as 'Florentine' while an earlier article of the same publication, 18th April 1857, even suggested the design of the chimney had been influenced by the Torre del Mangia, in Sienna (Plate 9). While it might seem ridiculous to compare a mid-19th Century smokestack at a swimming pool in Manchester to a medieval Italian belltower, there genuinely were some similarities and influences. Thomas Worthington was strongly associated with Neo-gothic architecture in Britain and used Italian or Venetian-style gothic in other buildings such as the Memorial Hall (1866) which drew influences from the Palazzo Ducal and the Palazzo Santa Sofia. At the

Mayfield baths this style was most visible in the windows and the overhanging cornice (Plate 7).



Plate 13: Men's second-class pool at Mayfield Baths, 1902.

The second article in *The Builder,* 18th August 1858, described the chimney in some detail. Notably, the chimney served two purposes; it was used to remove the smoke produced by the boilers – used to heat the baths and power machinery – as well as extracting 'vapour' – an important process in such a wet environment which would have helped to reduce the spread of mould. It stated:

'It serves the double purpose of a smoke-flue and a vapour-shaft, the smoke being discharged at the top, and the vapour through the openings at the sies. The smoke from the boilers and drying-furnaces passes into a chamber at the bottom, whence it is carried up a circular flue of boiler-plate, fixed in the centre of a brick shaft 5 feet square, which latter carries off the vapour from the several parts of the building. The boiler-plate becoming heated, rarifies the surrounding air, and extracts the vapour very effectually.

Our readers acquainted with Italy will perhaps recognise in the design somewhat of the character of the celebrated tower at Sienna, which sketched by every travelling architect.

The builder was Mr. Neill. The height of the shaft is 90 feet. The outside measurement at base is 8 feet square, with a slight batten up to the projecting top, where the vapour is discharged. The materials used are the ordinary seconds red stocks of the district, set and pointed in black mortar, with dressings of coarse grit, from Yorkshire, roughly hewn and boated on the face.

The boiler-plate central smoke-flue is, in five lengths, rivetted together like an ordinary boiler, the plates being at the bottom 3-8ths thick, and diminishing to 5-16ths at the top. This flue is supported on a cast-iron base-plate, built in on corbels, as indicated on section, the base-plate being 1½-inch thick, with sixteen radiating ribs to strengthen it.'

Redevelopment at the Mayfield Bathhouse

As the Mayfield baths was in use for close to 90 years it is perhaps unsurprising that there was some historical evidence that suggested that site had undergone changes. These changes and redevelopments were due to various pressures and needs which included: necessity of repairs; new ownership; technological advances; and significantly, increased knowledge of hygiene.

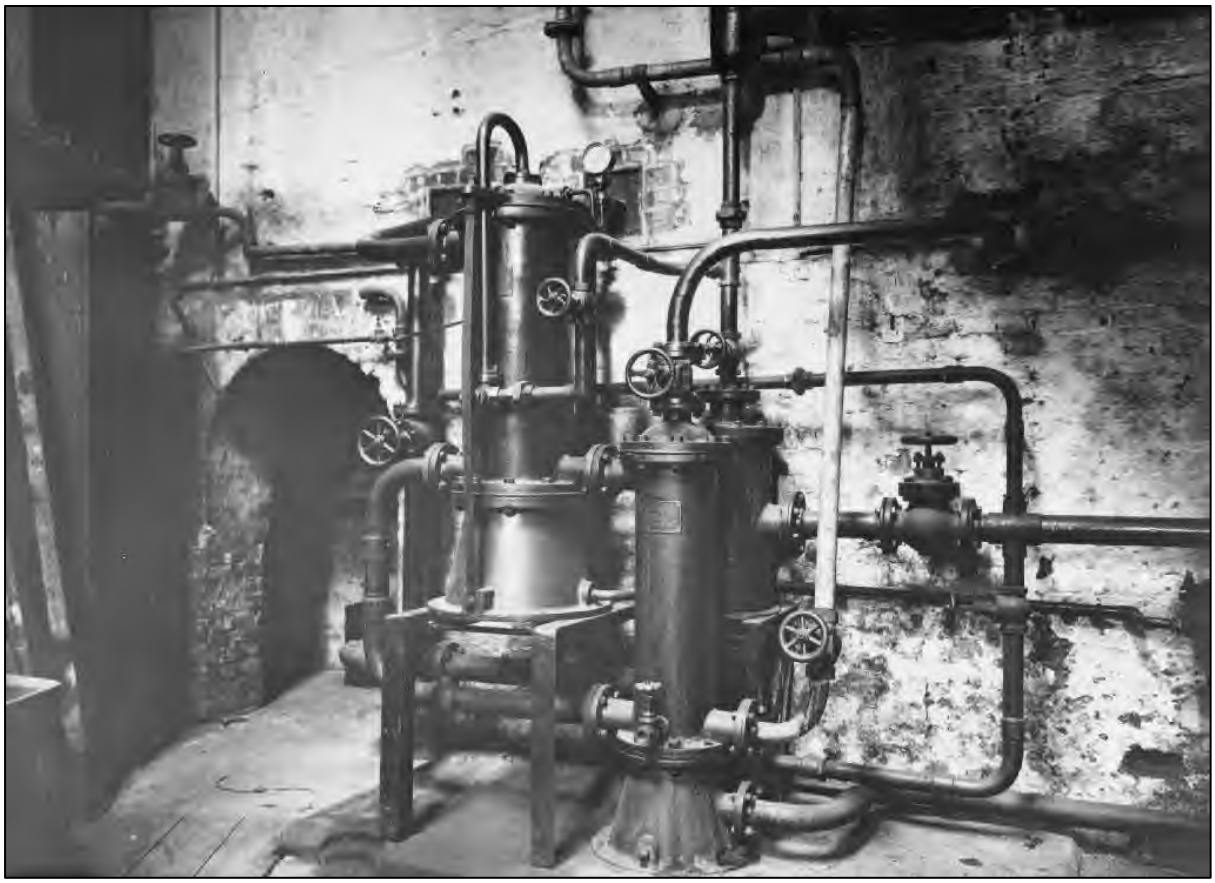


Plate 14: The Royle Calorifier at Mayfield Baths, 1902.

As was stated previously, Mayfield Baths along with several other bathhouses in Manchester, were constructed in the mid-19th Century by The Manchester and Salford Baths and Laundries Company. In 1877 the Mayfield Baths was acquired by the Corporation of Manchester and was soon closed 'in order that the extensive alterations and improvements contemplated may be carried out', as was described in the *Manchester Courier and Lancashire General Advertiser*, 3rd October 1877. An assessment in *the Manchester Evening News,* 19th October 1881, gave some indication to the scale of redevelopment that took place at the baths at that time:

'The Mayfield Baths Company were paid £8,528. 12sd 8d. for the buildings, &c.; £8,927. 4s. 5d. had since been expended on alterations and improvements, and £2,263. 6s. 9d. on restoring the foundation, making the total cost to the Corporation, £19,376. 5s. 11d.'

It additionally stated that the baths 'were in a most unsatisfactory state when the Corporation took them over'. This state of disrepair was likely primarily related to two known issues at the Mayfield baths – flooding and problems with the foundations. The River Medlock was notorious for flooding in the 19th Century and had been described by Engels some time before (1845). Severe floods occurred in 1857, 1866, and 1872. 'Great injury was inflicted' on the area around Mayfield Baths in the 'most disastrous flood which has ever visited Manchester' in 1872 (Timperley, 1876, 186). This flooding likely exacerbated problems with the foundations of the site, particularly related to the pools, and it was suggested at the time that the underlying ground at the bathhouse was unsuited for the construction of pools. It was noted across various sites that the mid-19th Century pools tended to crack and leak.

An important update on the redevelopment works appeared in the *Manchester Times*, 7th June 1879, and stated that:

'The two plunge baths, each capable of holding 40,000 gallons of water, have been re-laid with concrete, and the sides reset with tiles.

Another part of the building is devoted to the baths for females, there being of these six first-class and a similar number of second-class. It is intended also to set apart one of the plunge baths for the use of females during certain hours of the week. In a detached building is another plunge bath, which was formerly exclusively used by those who paid an annual subscription towards its maintenance. This bath, which will hold 73,000 gallons of water, will, when ready for use, be open to the public.'

In addition to describing the refurbishing at the site the article also described the 3rd pool which had previously not been open to the public. That pool was located in the 'detached building' on the west of Boardman Street/Baring Street. It was close to twice the size of the two public pools and at some point, probably at the time of refurbishment, became the female-only pool. Both the east and the west building were shown on the 1891 OS Map. The western building and pool are located approximately under the contemporary carpark at the west of the site, on the west of Baring Street.

A comparison between the 1858 engraving (Plate 8) and the various photographs of the early 20th century (Plates 11-13) showed that the swimming pools were of a similar design but with some notable differences. The 1858 print and historical records suggests that the first phase of the pools at Mayfield were covered with flagstones and the walls were lined with tile. Noticeably, the tiles were also changed, the pre-1877 tiles appeared to be decorated with geometric designs which were supposedly removed when the pools were relined and retiled. The 20th century photography also showed that some if the ironwork had changed, including the addition of 'spit troughs' and a railing around the edge of the pools. Probably the most significant visual difference was the steps. In the 1858 print it appeared that the stairs were probably constructed of wood while the photographs showed that the stairs in the rebuilt pool were constructed of sandstone and tiles. Likely the most important development of the pools had been the relining of the pools in concrete, though this was not visible on any photograph.

A near contemporary account from the early-20th century gives some indication as to how swimming pools may have been rebuilt:

'The swimming basin is built of brick or Portland cement masonry. The walls must be constructed with due regard to stability and to water tightness. The outer shell of smaller pools sometimes consists of iron, lined on the inside with asbestos paper or other waterproof material. Asphalt is much used for this purpose, and the lining should be about one inch thick.' [...] 'The bottom of the basin is built in concrete and carefully covered with layers of asphalt. After being waterproofed, the pool should be tested for tightness before applying the finishing lining. The side walls may be finished with a course of white enamelled brick, with glazed tiles, with slabs of marble or with white glass.' (Gerhard, 1908, 68-9).

Further development at the bathhouse likely took place in the late-19th and into the 20th Century. A photograph of the Mayfield baths showed the 'engine house' as described – it consisted of a windowless room with what appeared to be two cylindrical boilers and a series of steam pipes.

A chlorine gas leak at the site in 1937 poisoned 10 bathers (*Reynolds's Newspaper*, 30th May 1937). The site was bomb-damaged during the Second World War, likely during the Christmas Blitz of 1940 which damaged the nearby Mayfield Train Station. The bathhouse was not repaired and did not open after 1940. The site was cleared after the war while some OS mapping labelled the area as 'Ruins'.

2.3.4 Mayfield Dyeworks

Thomas Hoyle was born on 6th June 1739 in Rossendale, Lancashire, and established the Mayfield Printworks in 1782 on the River Medlock on what was at that time a mostly rural area close to Manchester. It is unclear where the name 'Mayfield' derived from, however, it is possible that the name was chosen to reflect his wife's maiden name, Mary Fielden, whom Hoyle had married in 1764. Their son, Thomas, born in 1765, was to inherit the printworks after his father's death in 1821 (Wright, 2013). The address of the company was listed as 'Thomas Hoyle & Sons, dyers, Mayfield' in 1797, showing the company was established as a dyers. Only in 1808, the company became known as a calico printers and dyers. After 1845, the company was listed as a calico printers only (Wright 2013, 3). Thomas Hoyle junior passed the printworks on to his three sons-in-law, William Neild, Joseph Compton and Alfred Binyon. Neild Street, the sign for which can still be seen today, was named after William Neild, who married Thomas Hoyle's daughter, Mary Hoyle, in 1816, and who had taken over the Mayfield Printworks by 1830. In 1833, Bonyon took on William Pattinson as a partner, and later John Butterworth and the chemist John Graham. After Pattinson's death in 1844, Richard Shillingford, who owned a large bleach and dye works in Sandywater, became a partner.

Some of the earliest references to the Mayfield Printworks can be found in newspaper articles from the 18th century. On 21st June 1785, a job advertisement appeared in the Manchester Mercury from '3 or 4 Journeymen Velveret Printers Who are perfect masters of their business'.

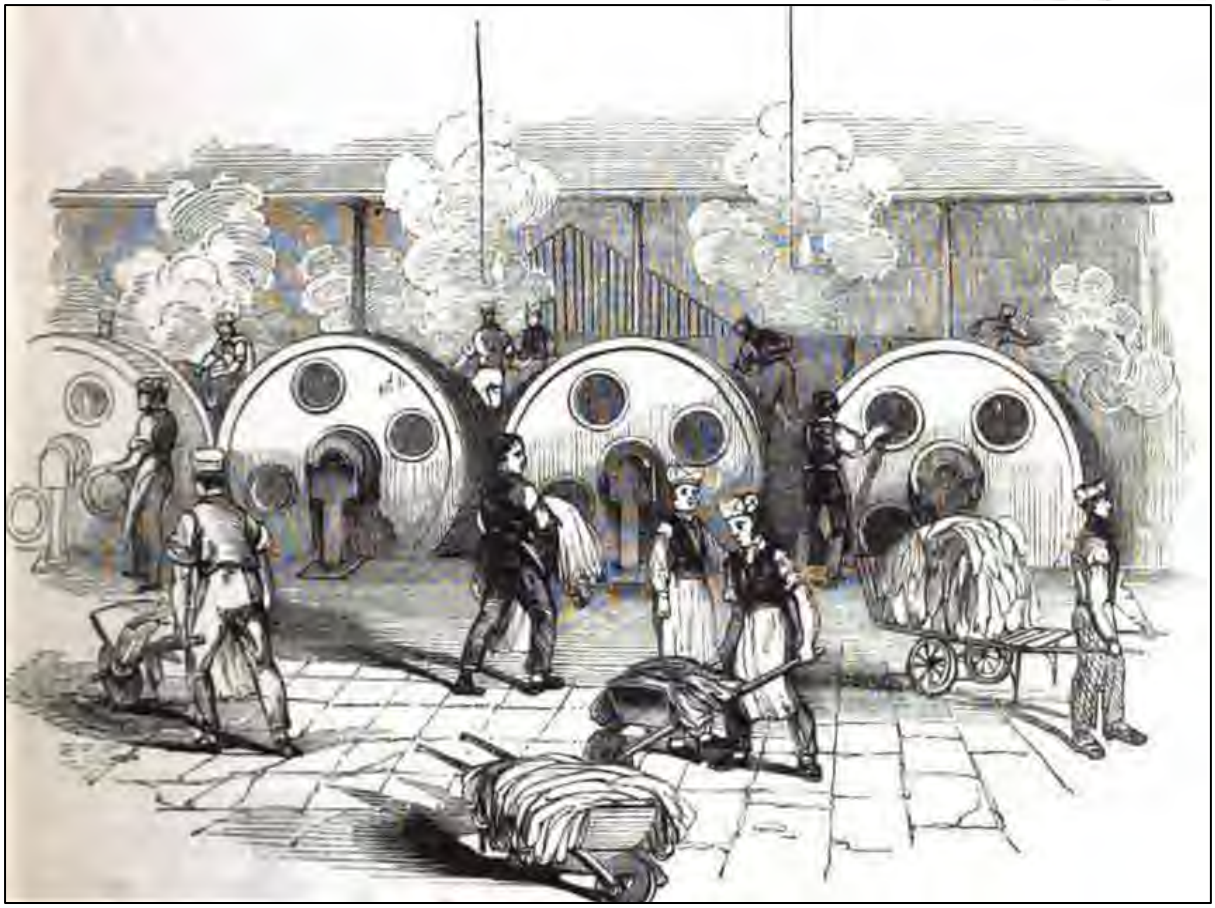


Plate 15: The dash wheels of the Dukinfield Works, Thomas Hoyle & Sons

Another article in the Manchester Mercury on 3rd November 1795 mentioned the printworks, which advertised the sale of a water wheel and a pit wheel. It is possible that the water wheel was being sold due to the growing use of steam engines during this period. An account given by Alfred Neild, the grandson of Thomas Hoyle Jnr. and son of William Neild gives an insight into the Mayfield Printworks during the 1820s and 1830s. Alfred Neild was born in 1822 and reports on his memories of the printworks during this period:

'My earliest remembrances are when my father (William Neild) lived in the precincts of the Mayfield Print Works; close to the house of Thomas Hoyle, the founder of the printing business; whose eldest daughter, Mary he had married. At this time Mayfield was almost in the country, and the works themselves were of small dimensions. Neither the new Ashton Road [Fairfield Street], nor the London and North Western Railway, were in existence. To the north and east there was a large extent of fields, running along the banks of the River Medlock; which was then sufficiently attractive for boys to bathe in. Hay was made where now there are only streets and houses; and we had a good view of the Derbyshire hills. There was an extensive range of reservoirs abounding in aquatic plants and minute freshwater shells. My grandfather had a garden of fair size, where fruit and vegetables grew. He had also a greenhouse and hot-houses where grapes and pines flourished' (Neild 1898, 1-2).

'When I was about eight years old my grandfather removed to a country-house, Spring Cottage, at Marsden nearby Burnley and my father removed into his house at Mayfield. We, his grandchildren, spent many a happy holidays at Spring Cottage' (*op cit*, 7).

‘My grandfather died in 1834, and the business was carried on by my father and two uncles. Soon after this a chemist was engaged to assist in the business, who afterwards became a partner. From him I learned something of chemistry, at which I read and worked pretty diligently, in a fairly appointed laboratory which was in the works’ (*op cit*, 8).

‘I left the College at the close of the session in the summer of 1839. I had a desire at this time to take up the study of medicine, but my father did not approve of it, and it was eventually settled that I should enter his business of calico printing’ (*op cit*, 14).

‘At the beginning of 1840 I entered the works at Mayfield. My father then lived at Mayfield. I used to be in the works at six o’clock in the morning, and sometimes at five. There was a short interval for breakfast; and at twelve o’clock I mounted my horse and rode for an hour. At that time I could get in a few minutes into lanes with turf borders where I could gallop. At half past one I dined, and at six o’clock I was free’ (*op cit,* 15-16).

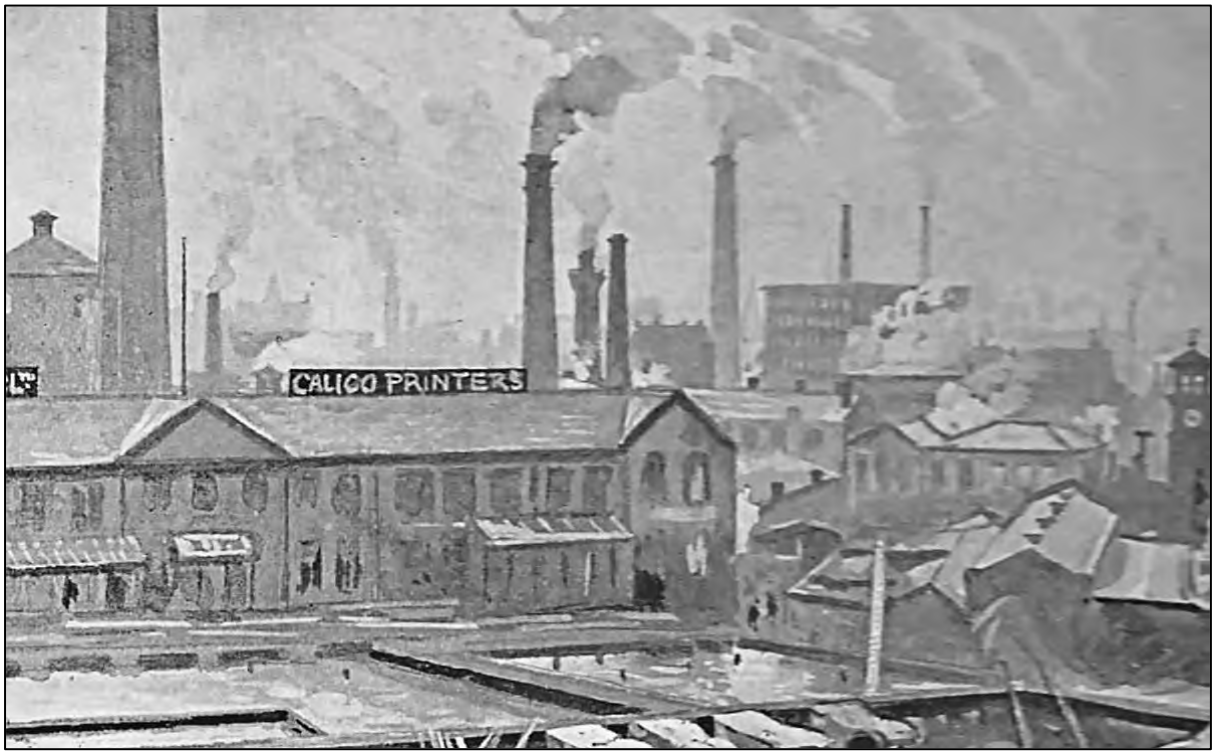


Plate 16: Mayfield Printworks, 19th century

‘Among the characters in the works was a man named John Hutton, who lived until more than a hundred. Another notable man was George Maxwell, a store keeper. He was a plain man with no pretensions to much education; but a man of remarkable powers of thought’ (op cit, 16).

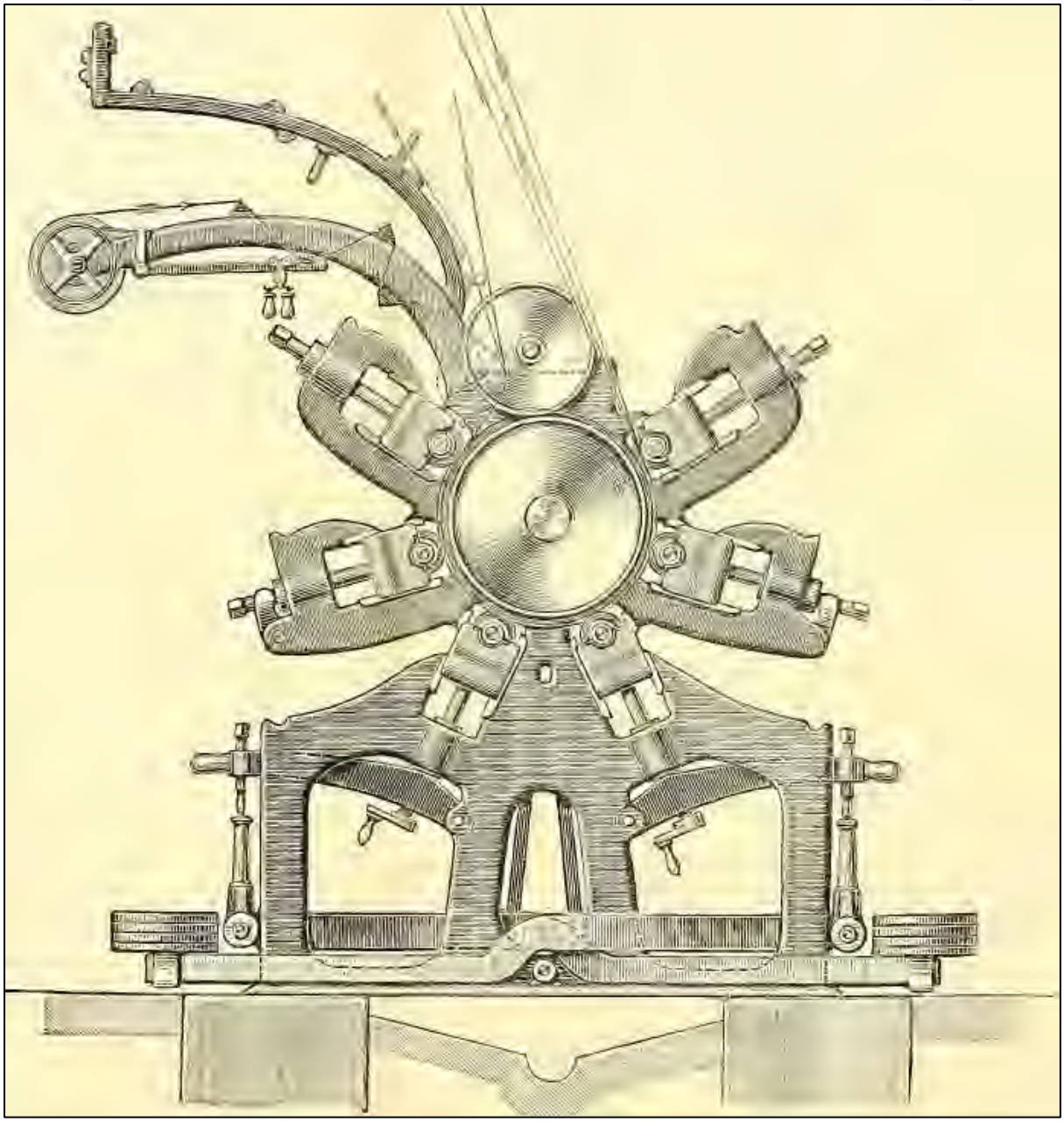


Plate 17: A six colour printing machine depicted in 'The Printing of Cotton Fabrics' (Sansone 1887) similar to those mentioned in the 1897 auction

In 1843, an article appeared in the Penny Magazine titled 'A Day at a Lancashire Print-Work', which described in depth a visit to Thomas Hoyle and Sons finishing works, including the Mayfield Printworks in Manchester and another finishing works owned by Hoyle in Dukinfield (Penny Magazine, 1843, 289). Printworks are described in the article as odd places that "combine taste, chemistry and mechanism, three agencies that are often associated with manufacture however only found working together within finishing works" (Penny Magazine, 1843, 289). The article gives a detailed description of the finishing works. The Dukinfield Works was mainly used for the bleaching and dyeing whereas the Mayfield Printworks focused on dyeing and printing (*ibid*). The Dukinfield Works was located on a large area by the banks of the River Tame, approximately six miles from Manchester. The complex included the croft or bleach-house, dye house, reservoirs and water filtering ponds and subsidiary buildings. The

croft was a large area of stone flooring occupied by vessels filled with water. The croft was described as being 'not often free from clouds of steam' (Penny Magazine 1843, 290). According to the Penny Magazine article, approximately 5000 miles of cloth was bleached each year at Dukinfield. The dye house was considered to be 'one of the finest in the kingdom', measuring at more than 100 feet square with a complete drainage system. The building had a low roof with plenty of skylights and contained several dash wheels, becks and cisterns (Penny Magazine 1843, 291).

The bleached cloth from Dukinfield was often sent to Mayfield Printworks for the process of printing. The Penny Magazine gives the following description of the Mayfield Printworks:

'The works at Mayfield have been gradually increasing in extent for sixty years, and now appear more like a small town than a single establishment, for there are so many open courts and small lanes and passages, so many distinct and isolated buildings, and the whole cover so large an area of ground that a visitor is apt to lose sight of the connection between them, and to forget that they form, in fact, but one great workshop.'

The Penny Magazine article also identified several distinct departments within the Mayfield Printworks, including the mechanical department, the chemical department, the dye house and the finishing department. The establishment also had areas such as smiths' workshops and millwrights' workshops to manage the upkeep of the various pieces of mechanism incidental to dyeing and drying (Penny Magazine 1843, 291). The knowledge of chemistry needed in the printing and dyeing process was profound, as the effects of chemicals used in the process had to be fully understood. The effect of the drug used on the vegetable fibres of the cloth also needed to be understood in order to consider how the cloth would retain the colour of the dye. Matching the dye on the cloth to the colour of the design on paper was also a necessary area of expertise. At the Mayfield Printworks, a laboratory was fitted with the apparatus, sand-baths, furnaces and other equipment needed for conducting chemical experiments. Calico-printers needed to stay up-to-date with the latest chemistry of colours and therefore they would have spent much time studying new sources of information. The dyes were prepared at Mayfield in the colour house, which was located near the laboratory in a large and lofty workshop (Penny Magazine, 1843, 292).

The chemist John Graham, who became a partner of Mayfield Printworks in 1839, wrote detailed works about the history and chemistry of calico printing. His works include 'The Chemistry of Calico Printing from 1790-1835' and 'History of Print Works in the Manchester District 1760-1846'. John Graham's interest in the chemistry of the print works might have been influenced by his brother, Thomas Graham, a famous chemist. In January 1851, Graham wrote a letter to the Manchester Guardian regarding the chemistry of calico printing. This letter was published on the 25th January 1851 and demonstrates his expertise on the subject. Some of his works give details into the Mayfield Printworks, for example, that the printworks had 156 block printers' tables (Wright, 2013).

An example of the complexities involved in creating designs is given in the Penny Magazine, one of the designs produced at the Mayfield Printworks consisted of purple squares separated by white lines. To produce this design, the cloth would have arrived at Mayfield from Dukinfield after having been bleached. The squares were printed on the cloth using a cylinder with a mordant of acetate of iron. The cloth was stoved and then passed though a hot emulsion of cow dung before being washed again. The cloth was then placed in phosphate of soda and dyed with madder, which gave a purple tint where the cloth had been printed with mordant but

left the rest of the cloth white. The cloth was then soaped and 'chemicked' to clear the unmordanted parts (Penny Magazine 1843, 296).

The Mayfield Printworks employed its own designers to create new patterns and styles for printing. To calico printers, the term 'pattern' was used to describe the form of the design, whereas the term 'style' referred to the colour of the design. Each design was drawn no longer than four inches square and fully coloured. The limited size of these drawings was due to the low success rate of many of the designs, as only 1 in 100 were selected for working into a final result, with as many as 80 of every 100 designs being rejected whilst still on paper. After a design was chosen, it was transferred on to either wood or metal as an engraving, depending on the mode of printing (op cit, 293).



Plate 18: Extract from Adshead's map of 1851 showing Mayfield Print Works

The success of the Mayfield Printworks made the factory complex a 'must-see' for many important foreign visitors during the 19th century. The site had become famous for its purple dyes, which had been patented in 1831, and the business was recognised as being a perfect example of Manchester's impressive industrialisation. In July 1844, the King of Saxony visited the printworks and was reportedly impressed by the newly patented block-printing machine, 'with which he was much pleased' (Wright 2013). In July 1847, the Arch-Duke Constantine of Russia received a tour of the Mayfield Printworks by Neild, who showed the Arch-Duke various rooms and processes taking place at the printworks, including the roller room, which contained 5000 engraved copper cylinders, the machine printing room with 20 machines in operation, high pressure engines, and the drying room, where freshly dyed fabrics were spread out to dry (Manchester Times, 9th July 1847) The Manchester Guardian also reported visits from

Feroukh Khan, a Persian ambassador in December 1857, an ambassador from Madagascar in June 1864 and the Sultan or Zanzibar in 1875 (Manchester Evening News 9th July 1875). The Manchester Evening News reported that the Emperor and Empress of Brazil visited the Mayfield Printworks during July 1871. Many printworks during the 19th century were known for their poor working conditions, including long shifts and child workers. However, during Lord Ashley's speech, the Mayfield Printworks is mentioned as being in agreement to ending night work. In 1849, a spacious reading room and a smoking room were added for the workers, where tobacco and drinks could be bought at cost price. On 10th November 1849, an article appeared in the Northern Star and Leeds General Advertiser concerning these additional rooms:

'Long will it be remembered and fondly recorded upon the tablets of many hearts of the workpeople of Mayfield, that on the 13th of October 1849, for the especial use, advantage, and amusement of the employed, were opened the news and reading rooms, furnished with a well-chosen assortment of newspapers, and miscellaneous useful and instructive periodicals. At a great expense to the firm, part of a very spacious dwelling-house, lately occupied by one of the partners, has been, by their particular wish, converted into two beautifully decorated and commodious rooms, replenished with magnificent maps, and all that is desired to make it convenient, attractive and comfortable. To attend to these rooms, a person has been appointed by the hands themselves, who is to furnish them at cost price with hot coffee before six in the morning, or during the day; and he has permission also to sell ginger-beer, tobacco, and cigars. The smaller, or smoking room, besides being used for that purpose, is also intended for various kinds of amusements, so that such of the hands as are votaries of the scientific game of draughts, or the more ancient game of chess, have now an opportunity of innocently amusing themselves until the retiring hour of ten o'clock.'

The article continues and gives details of the high-quality furniture and the range of newspapers present in the reading room. It also stresses that, in allowing the 'working man' time to read, he will become 'acquainted with the events passing in the world'. The article suggests that, 'the more he [the workman] knows, the less hasty, the less violent, and the more correct will be his judgement and opinions'. The employees at the Mayfield Printworks were clearly given more respect and care than the workers at other printworks during this period.

On the 21st of October 1896, the Manchester Guardian published winding-up notices from companies that were closing down, with the Mayfield Printworks being included on the list. On Saturday 6th February 1897, the Mayfield Printworks appears in the Manchester Guardian as up for auction due to voluntary liquidation. The auction was for the contents of the Mayfield Printworks and was due to begin the following Monday and continue throughout the week. The advertisement gives a summary of some of the items that would be sold at auction at the printworks:

'The catalogue will include 28 printing machines as follows: - Four one-colour, six three-colour, one four-colour, one five colour, ten six-colour, three eight colour, one ten-colour and two twelve-colour machines, with blanket framing, drying apparatus, and grey racks, complete (the machines are mostly by Gadd and Hill, T. Gadd, and Houston and Co.); four mandril forcing presses, two doctor planning machines, open soaping machines, by Furnival and Co. and Hawthorn and Co.; blue dyeing machine, with four cast-iron becks and pair of diagonal engines; dunging, soaping and washing becks; dye becks, squeezing rolls, starching and finishing mangles, washing padding, and ageing machines; ten horizontal drying machines,

mostly with copper cylinders; two three-bowl and one five-bowl calendars, two stretching machines 42in. and 44in. wide; five plaiting-down machines, by Hacking and Co.; two shearing machines, and four canroys, six Rayer and Lincoln and numerous Birch sewing machines, two hydro-extractors, three Blackman air propellers, two steam cots, brick-built continuous steaming chamber, with gearing, by Mather and Platt; wrought and cast iron soap pans, wood liquor vats, 62 copper colour pans, from six to 80 gallons capacity; contents of mechanics' shop and smithy, comprising two slide and screw cutting lathes, planing machine, radial drill. Massey steam hammer, fitters', turners' and smiths' tools and appliances, band saw, saw bench, engraving plant, wood counters, benches, racks, stillaging, trucks, office furniture and fittings; horses, vans, lurry [lorry], carts and harness. The motive power comprises one Galloway boiler, 30ft by 7ft. 6in., working at 60lb. pressure; two ditto, 26ft. by 7ft. working at 60lb/ pressure; one ditto. 26ft. by 6ft. 6in., working at 60lb. pressure; one ditto, 26ft. by 7ft., working at 50lb. pressure: one Lancashire boiler, 28ft. by 7ft., working at 60lb. pressure, by Tetlow; two ditto, 30ft. by 7ft. 6in., working at 60lb. pressure, by Tetlow; Green's economiser, 192 pipes; horizontal condensing machine, 22in. cylinder; numerous vertical, diagonal, and horizontal steam engine; shafting and gearing throughout the work, donkey, Worthington, and deep-well pumps, wrought and cast iron piping, gas fittings'

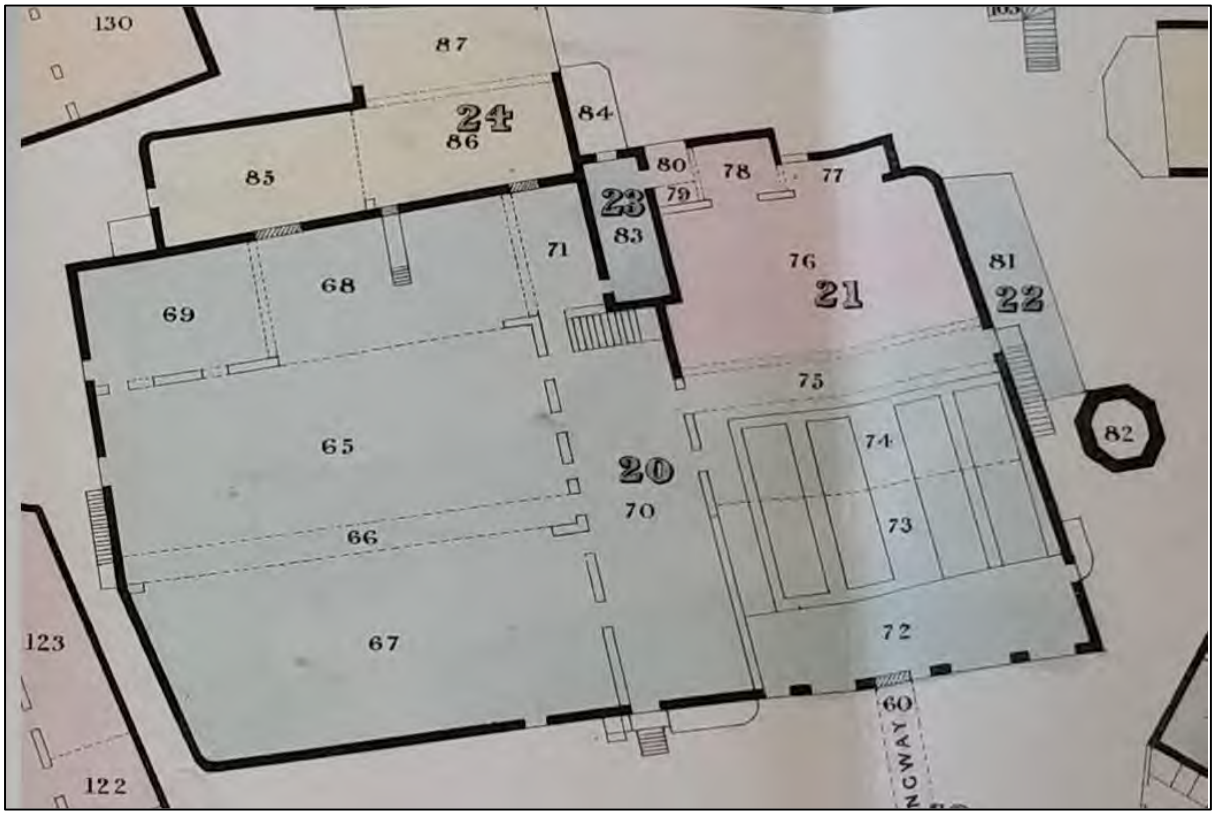


Plate 19: Extract from the 1872 Insurance Plan

Alfred Neild reflected on seeing the growth and decline of the Mayfield Printworks throughout his lifetime:

'My life in the Works, where I was learning the business, does not call for much remark. I put my hand to nearly every department. I witnessed a large extension of it and great prosperity; and it has been my lot, in old age, to witness its decline and fall.' (Neild, 1898, 18).

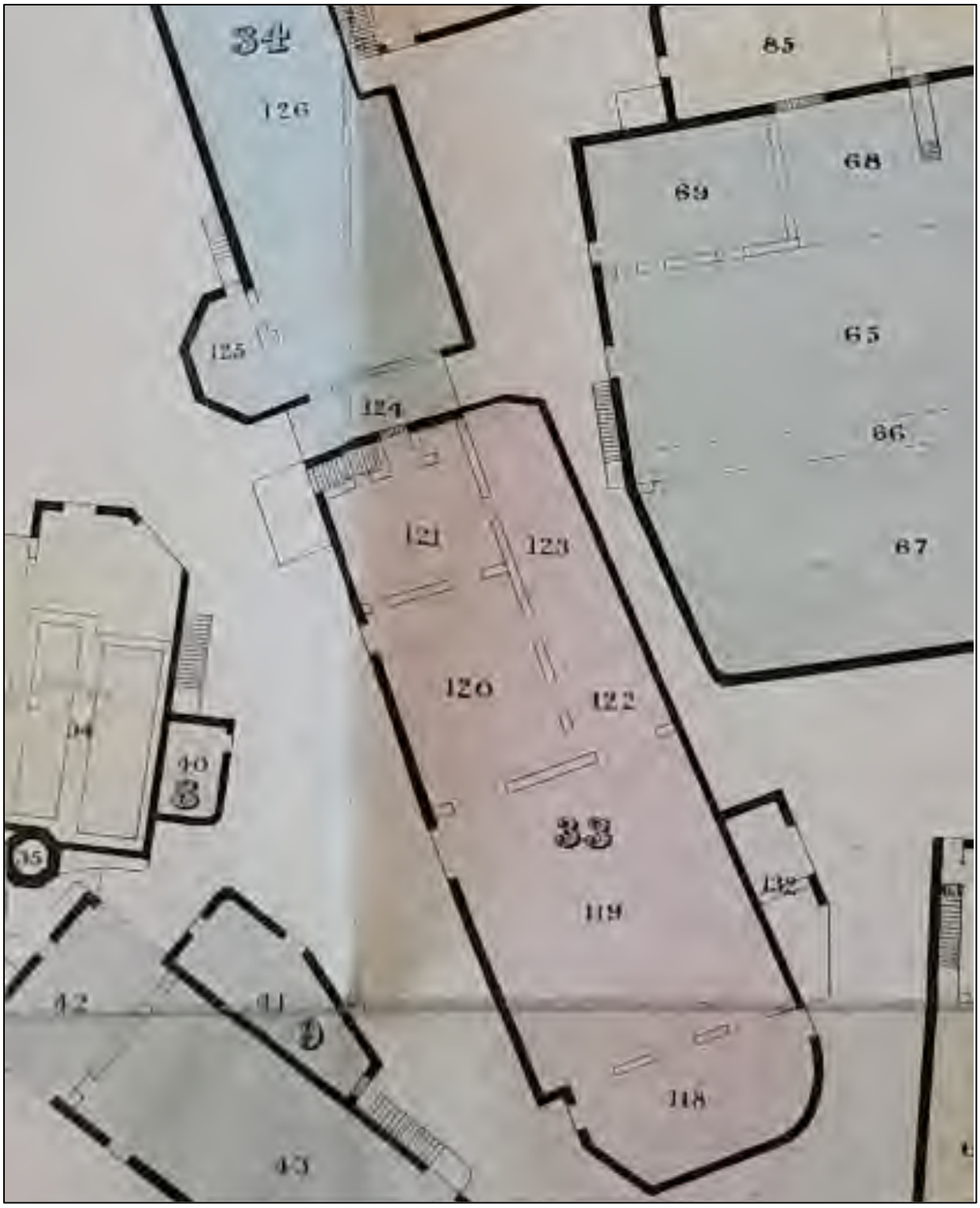


Plate 20: Extract from the 1872 Insurance Plan showing Buildings A and B

2.3.5 The Ardwick and Chapelfield Dyeworks

The dyeworks situated to the south-west of Hoyle and Son's Mayfield dye and print works were run as a single enterprise under the direction of Thomas and John Beswick, until the plot was sub-divided following the termination of the Beswick and Holt partnership in 1810. The

southern part of the premises was then run as Ardwick Dye Works and its history can be traced through a variety of sources until it was eventually absorbed by the Chapel Field India Rubber Works in the late 19th century. In the early 19th century, the northern range of buildings, known as the Chapelfield Works were used for a variety of purposes before being returned to their original function as a dyeworks in the mid-19th century.

Components of both later dyeworks are shown on Laurent's map of 1793 (Plate 21), and Green's map of 1794 (Plate 22). The northernmost range of buildings clung tightly to a bend in the River Medlock, situated on its southern bank. The plan of this element of the dyeworks is irregular and seemingly looks to have been made up of several parts, perhaps developing in an unplanned, organic manner. To the south was a large rectangular building, seemingly subdivided in two. To the south of the buildings was a large reservoir.

Both maps indicate that the much of the surrounding land was owned by Thomas Tipping Esq. Fields around the dyeworks were however already being bought up by industrial dyeworks, such Messrs Hoyle and Son and Messrs Edge and Beswick no doubt driven by the need for large amounts of land for hanging out fabric to dry. Tenterfields are shown surrounding the both premises on these maps indicated by dashed lines.

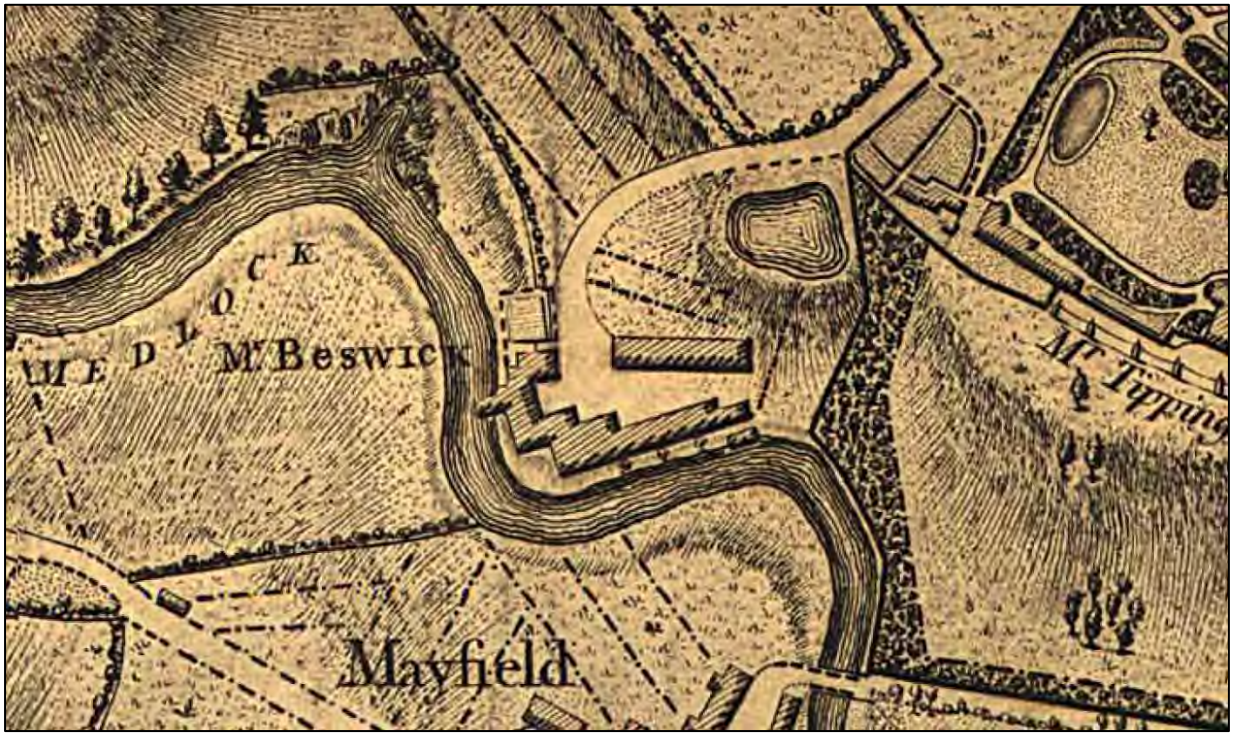


Plate 21: Extract from Laurent's map of 1793 showing the buildings established to the south of Mayfield, then owned by Mr Beswick. Note the top of the map is not oriented north

Laurent's 1793 map usefully labels the buildings making up the early dyeworks as the property of 'Mr Beswick'. Green's map shows that two fields to the south-west of the works were owned by Messrs Edge and Beswick, who likely operated the site. The earliest references to the dyers of this name are found in the *Manchester Directory* for 1781, produced by Elizabeth Raffald: 'Edge and Beswick, fustian dressers and dyers, Ardwick and Back King Street' (Appleton 2017 538). The joint enterprise was evidently quite long-lived as the name Thomas Beswick appears

in Scholes Directory of 1794 listed as a kerseymere-printer, in Ardwick; Edge and Beswick, dyers (op cit. 41) appear alongside contemporaries Hoyle and Sons and P. Statham as dyers as operating in this area. A partnership was also recorded between Thomas Beswick and George Lomas, styled dyers and printers in Strangeways (Fitton and Fitton 1989 222, fn140). Thomas died in 1795 and his name absent from the 1797 directory – his will and testament dating from 13th April 1795 refer to him as a printer from Ardwick (554A/45). The Edge and Beswick partnership (Scholes 1797 39) continued until at least 1797 and likely under the leadership of John Beswick, possibly his son, who resided in the area (op cit. 14).

In the years following Thomas Beswick's death, a new partnership was formed between two parties: Beswick and Holt. The joint enterprise first appears in the historical records in 1808 (Manchester Mercury 01 March 1808). The company is also mentioned an account in 1809, which details the celebrations held in Ardwick for George III's 49th Jubilee celebrations: "Messrs Beswick and Holt feasted their workers in a truly hospitable and liberal manner" (Anon 1887 96). John lived until 1812 and his obituary appearing in the *Manchester Mercury* read: "[died] after a lingering illness, Mr John Beswick of Ardwick, dyer; much respected".

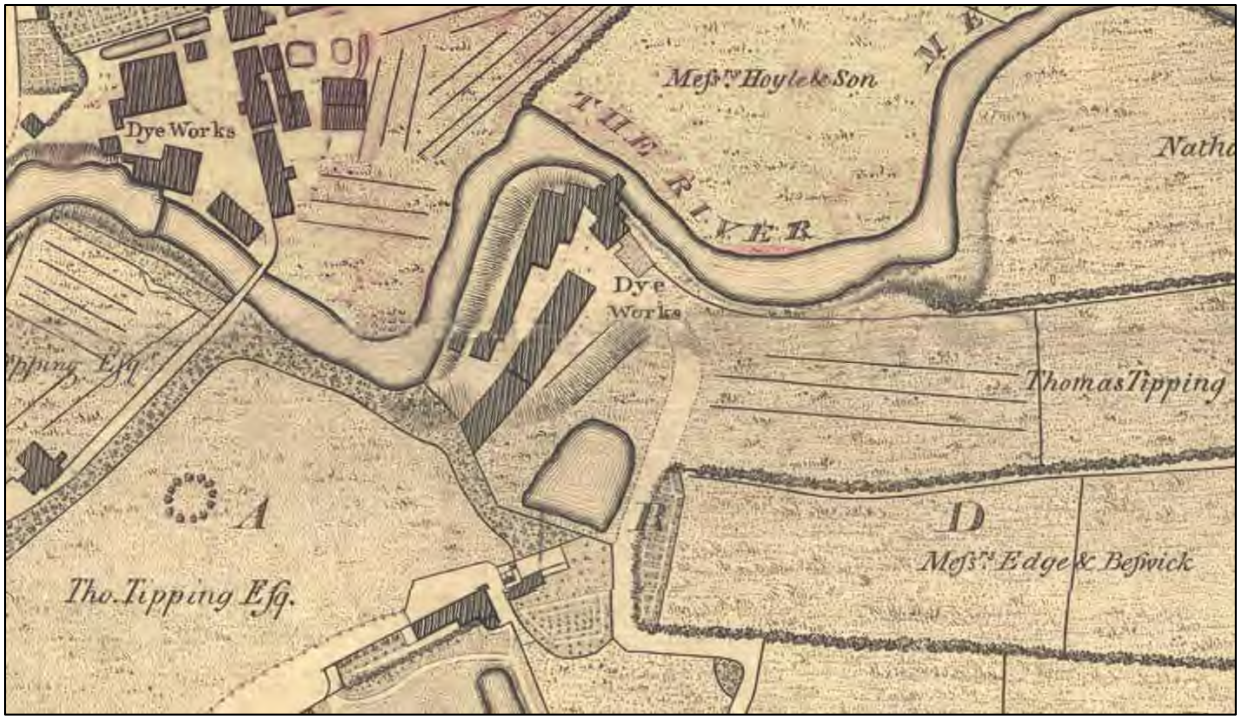


Plate 22: Extract from Green's map of 1794 showing the same group of buildings, labelled as a dye works

In the following year, 1810, the partners announced they were closing their business, a decision possibly driven by John Beswick's declining health. An auction was advertised in the Manchester Mercury on the 10th of July for the all the company's dyeing equipment:

'*very extensive and valuable dying utensils, stock in trade, &c comprising large copper, lead and iron pans, lead vats and pipes, with large brass cocks, about 100 blackvats a chymic apparatus, two large stoves pots and pipes, several firing stoves, dressing machines, tables, tubs winces &c &c Also a quantity of oak bark, shumac, copperas fustic and other effects*.'

Between 1810 and 1812 part of the premises formerly used as a dyeworks were sold to a one Mr Dockray. An auction in 1812 implies the premises were divided into two plots, the northern

plot being retained by Mr Dockray and the southern being sold in auction (Manchester Mercury 15 December 1812). As a result of this division, the southern part of the complex continued as a dyeworks, then known as Ardwick Dyeworks, whilst the northern collection of buildings then occupied by Mr Dockray were repurposed by a range of businesses and factories. The northern buildings were known collectively as the Chapel Field Works.

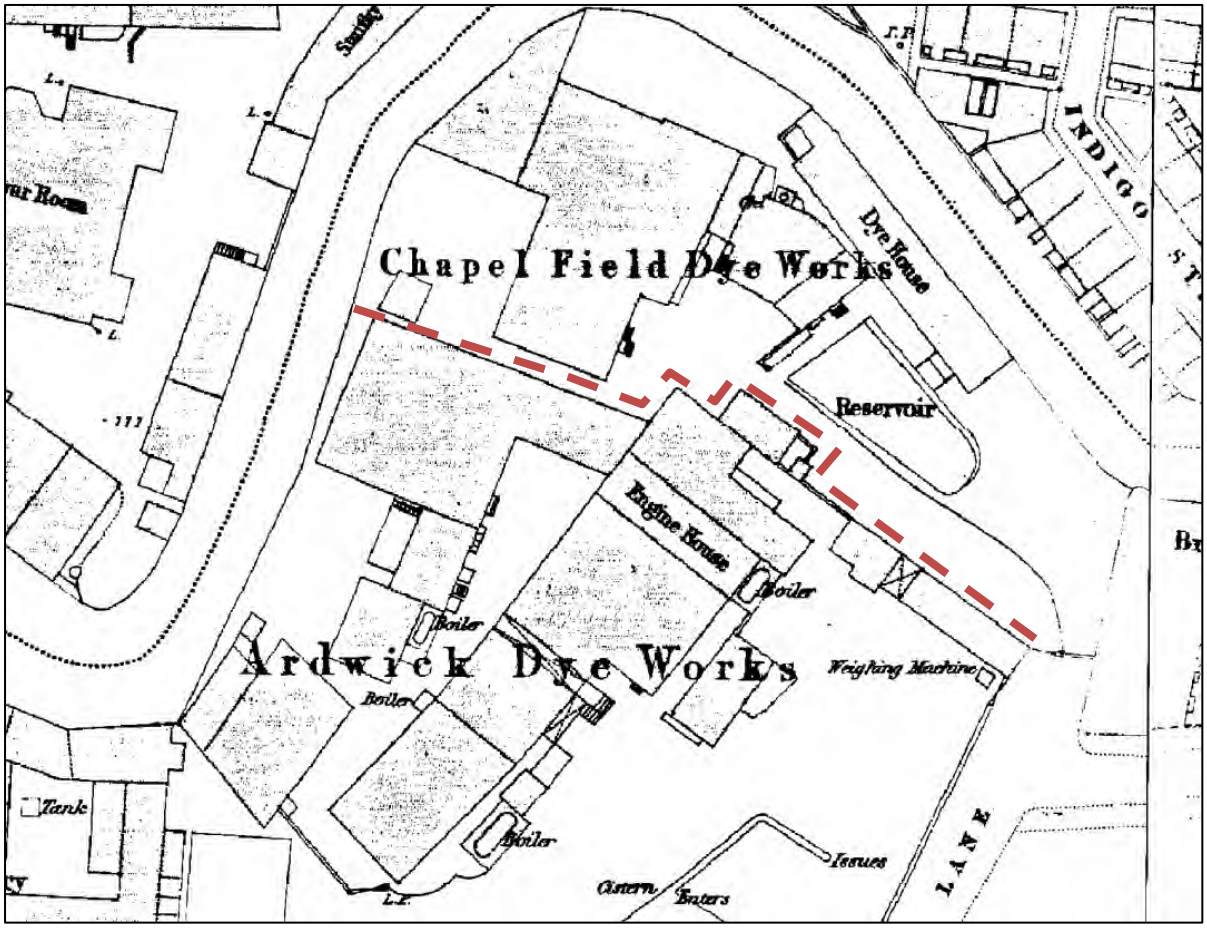


Plate 23: 1851 OS indicating the supposed division between the Chapel Field Dye Works and Ardwick Dye Works

2.3.5.1 The Ardwick Dyeworks

Trade directories provide clues to who first ran the Ardwick Dyeworks following the division of the original premises. Peter Longsdon is listed in an 1818-19 directory as a dyer near Ardwick Chapel. Pigot and Dean's directory for 1821-2 lists the company P & J Longsdon, Ardwick Dye Works (Pigot and Dean 1822 102). Peter and James Longsdon similarly occur in Pigots 1825-6 Directory for Scotland (Pigot 1826 206) and a national directory for England for 1828-9 (Pigot 1829 378). In 1837, the company Longsdon Booth and Co. was listed as dyers at Tipping Street, Ardwick (Pigot 1837 98).

On the 14th of July 1838 an announcement was made in the *Manchester & Salford Advertiser* that a plot of land in Tipping Street 'lately in occupation of Messrs Lonsdgen' was for sale by private contract. This contained:

'*6,281 square yards; together with the extensive dyehouses, with good stone vats, dryhouses, excellent steam engine of 14 horses' power, boiler &c. ; large reservoir, with a plentiful supply of water; and all other the extensive buildings requisite for dyers, printers, makers-up, skinners or any other business requiring room'*.

The Ardwick Dyeworks were later operated by Messrs W. Andrews and Co., whose premises are listed at Tipping Street. The company was well established by the mid-19th century with 'specimens of their dye and Mellowdew's patent cotton velvet' featuring in the Great Exhibition (of the Works of Industry of All Nations) in 1851 (Anon 2011 96). In the same year, Messrs W. Andrews and Co. were also involved in the dyeing and finishing of a well-received, patented cotton velvet, which met with royal approval from Queen Victoria (Morning Post *03 November 1851*).

The 1851 OS map provides an indication of the layout of both dyeworks, around the time that Messrs. W Andrew and Co. were in operation (Plate 23). The Ardwick Dyeworks featured an engine, boilers, cistern, weighing machine and a reservoir.

Following a devasting flood in 1857 the premises of Messrs. W. Andrew and Co were "left in a pitiable condition". According to contemporary sources the flood water reached a height of 14ft. The force of the water within the buildings caused "drying cylinders in one of the stove rooms [to be] lifted out of their sockets". Bags of expensive imported dyeing agent, sumac, worth £300 had been piled to height of 7ft. 6in. and nearly all were saturated with water. Much of the ground floor buildings, including "the fustic bins, indigo vats" etc. were "left nearly 1ft. deep in mud and things were upset and smashed in most strange manner".

The apparent owner *c.*1865-72 was Mr Richard Jones Esq. His name appears in connection with Messrs W. Andrew and Co. in 1867, suggesting he may have acquired ownership of the works. Richard Jones represented the company as a subscriber to the Manchester School for the Deaf and Dumb in a report from 1865 (Gibson 1867 20). The company R. Jones and Son, Ardwick Dye Works later appears in an entry for June 19th 1871 within a memorandum book currently held in the Cheetham Archives (418/F.4.4.4.i).

The company appear to have continued at the premises until at least the following year, when having suffered previously as a result of flooding, the buildings were nearly lost to fire. A fire broke out at the dyeworks Messrs R Jones and Son on Tipping Street and was reported on in the Manchester Times in 1872*:*

'Shortly before 11 o'clock on Tuesday morning, fire broke out in the drying house of Messrs. Richard Jones and Son, dressers, dyers and finishers, Bond-Street, Tipping Street, Ardwick. The stove had just been filled with calico which was ready for dyeing, and some 50 pieces, varying in value from £4 to £13 each, have been destroyed or damaged. Immediately on the fire being discovered, the private hose of the firm was attached to the water mains, and with assistance which shortly afterwards arrived from the Fairfield Station, and afterwards from central station, under Mr Tozer's direction, the flames were entirely subdued. A man who went into the premises when the fire was discovered was overpowered by the smoke, but he was dragged from the building by his comrades in time to prevent his serious injury. Messrs. Jones and Son sustained some present loss by the recent flood of the Medlock. The present damage is covered by insurance'. (Manchester Times *24 August 1872)*

By the time of the 1891 OS map, the Ardwick Dyeworks had been incorporated into Chapelfield India Rubber Works.

2.3.5.2 The Chapelfield Works

Various owners and occupiers are listed for the Chapelfield Works, following the division of the original premises.

According to Pigot's 1837 national directory Joseph Wells and Co., styling themselves as stiffeners were occupants of the Chapel field works, Ardwick (Pigot 1837 115).

An article in the *Manchester Courier and Lancashire General Advertiser* from the 9th February 1839, advertises the sale of the Chapelfield Works. Within the article, the former owner is stated as being a William Wells, who used the Chapelfield Works 'for the general business of machine making'. The works is described as having 'engine power, a plentiful supply of water and good lights'. It states that the works 'are fitted up with a 17-horse power steam engine, mill gearing, steam pipes, gas piping and lights'. During the late 1830s, the site occupied 3075 square yards of land, covering 132 yards of river frontage.

By 1846, the Chapelfield Works changed hands again. The works had been used for cotton manufacturing and were owned by Hordern and Riding. After Riding's death, Hordern sold the works to Mr Thomas Barlow, who, as stated in the *Manchester Courier and Lancashire General Advertiser* on the 13th June 1846, as having the intentions to continue the business under the same name.

In 1849, the contents of the Chapelfield works, recently occupied by the fustian dyer Mr Ebenezer Heap, were sold in auction; these included:

'a quantity of dyeing utensils and effects, consisting of waggon-shaped wrought-iron steam boiler, 15ft. 6in by 5ft with furnace doors and bays: capital wrought-iron welling pan; with ten copper and one iron rollers; two pairs of most excellent lever squeezers, with gearing…; three large wood cisterns; sundry dye tubs, large quantity of 3, 4, 5 and 6-inch iron pipes, with double service raps; 1, 2 and 3-inch lead pipes, with service taps; about 50 wood reels, of various sizes; large quantity of bobbins, stove and pipe, and other effects' (Manchester Courier and Lancashire General Advertiser 15 September 1849).

The 1851 OS map (Plate 23) confirms that the Chapelfield Works had been returned to a dyeworks, with the dye house shown on the banks of the river.

In the early 1850s, the works had been acquired by David Moseley, who was advertising rooms for let. By 1859, the Chapelfield Works was being run by David Moseley, of David Mosely & Sons for the production of India rubber. David Moseley & Sons manufactured rubber items at the Chapelfield Works until the company was bought by the Avon Rubber Company in 1964, who continued business on the site until 1981.

2.3.6 The origins of calico-printing in Britain

The boom of the textile industry in the North-West of England during the late 18th century was based to a large extent on the area's established calico printing trade, which had first been introduced to England in the 1670s with the arrival of chintz, a fine cotton cloth imported from India. The bright and exotic patterns of Indian chintz quickly made the cloth fashionable and by 1676 English printers began to copy the designs onto calico cloth on the banks of the River Thames near Richmond. During this period, London was the centre of the textile industry as it was the point where the imported calico arrived in England. These London printers were

seen as a distinct group of highly skilled artisans who, according to one observer, wore 'rather curious costumes' with 'cocked hats, scarlet coats and top boots' and were 'very aristocratic in their way' (Miller, 2012, 8).

The first master printer was probably William Sherwin who in 1676 took out a patent for 'printing broad Calico and Scots cloth with a double necked rolling press' and set up a factory at West Ham, which became the chief early centre of calico printing in England (Clayton & Oakes, 1954, 136). Towards the end of the 17th century, woollen manufacturers felt under threat by the rise of the calico industry, which in 1701 was estimated to employ 800 men, women and children (*ibid*). By 1701, these manufacturers had influenced parliament to prohibit Indian chintz by law in order to protect their trade, and by 1721, all printed, painted or dyed calicos had been banned. This gave rise to the use of fustian, which was used to copy chintz and was exempt from the 1721 ban as it was a mixed fabric.

Fustian was made by Lancashire weavers with the result that, after the ban of 1721, the centre of the calico-printing trade shifted to Lancashire, where copies of chintz could be produced. The textile finishing industry flourished in Lancashire due to the local supply of cloth, the inexpensive value of the land for bleach crofts, the convenience of an abundant supply of fresh running water from the rivers and the lower rates of wages (Miller 2012, 8; Phelps *et al* 2018, 2). By 1774, the ban against calicos was lifted, allowing printers to produce chintz from cotton.

One of the earliest printworks in Lancashire was set up in 1764 by Edmund Clayton at Bamber Bridge near Preston. This printworks was vastly successful and within a few years others appeared along the River Darwen near Blackburn. Early printworks required skilled workers who were highly paid, and in the early years the Lancashire printworks had to pay for the services of skilled artisans from London who were brought up to teach the trade to the Lancashire men, who were held "in great contempt" by the London artisans (Graham, 1846, 345). Clayton's printworks produced a local fabric known as 'Blackburn grey', which was suitable for printing. According to John Graham, writing in 1846, printing was "at that time very slow in all its processes, chemistry not being understood as at present" (Graham 1846, 345). Graham also noted that "bleaching out the Grey Cloth required a great breadth of land, cloth for printing was linen, cotton and strong velvet for the Russian market". Another early printworks is reported as being under construction in Crumpsall in the *Manchester Mercury* in January 1762 (Wadsworth, 1931, 308).

Robert Peel also began printing cotton around 1764 at Brookside Mill in Oswaldtwistle. Peel was a pioneer in printing as he discovered that a roller with a carved decoration could be used to print a pattern onto a cloth. This was the beginning of the textile industry changing from a skilled craftsman's trade to a factory-based industry, as Peel was the first to begin mechanised calico printing on an industrial scale and brought many innovations into the cotton industry (Miller 2012, 9). Howarth, Peel and Yates became partners and established several printworks sites across Bury. In 1773, they bought a ruined corn mill at Bury Ground.

This was the first (of many) factory-based printworks and quickly became famous for the designs and colours of the cloth. The early printworks in the North West were often located by rivers as a constant supply of water was needed for the washing of cloth as it passed through the different printing processes and for the driving of machinery using waterwheels (Miller 2012, 6-7; Phelps *et al* 2018, 2). The water would have been pumped from the river by a steam engine at the rate of approximately 50,000 gallons per hour. This water would have entered a reservoir bedded with gravel before being conveyed to the croft and the dye house (Penny Magazine 1843, 290). A Parliamentary Commission in 1868 calculated the amount of water

used on average by a printworks was approximately 400,000,000 gallons *per annum*, which was then redeposited into the river polluted with the chemicals from the printing process. During the late 19th century, filter beds were implemented to limit the amount of pollution entering the rivers (Miller 2012, 7).

2.3.6.1 The development of finishing-works factories

Finishing works factories often had several different processes taking place in designated areas. These can be divided into printing, bleaching and dyeing processes.

Block Printing – The earliest form of printing required skilled craftsmen to use wooden printing blocks. These blocks were made up of carefully engraved layers of wood sandwiched together. Within block printing, three different types of blocks could be used – line blocks, blotch blocks and ground blocks. Line blocks were used for printing small details and outlines. Blotch blocks had felted surfaces and were used for large areas of colour, whereas ground blocks were used for small areas of colour. Each colour on a textile was applied with a different block, with some pattern sets including over 100 blocks (*op cit.*, 10).

Several hundred block printers would be employed by each large printworks. These workers would each have a table with a heavy flagstone placed over a framework of wood or iron. The cloth would be stretched over the flagstone, providing a surface on which to print. As the block printer printed the cloth, guide rollers would suspend the printed cloth from the ceiling, allowing the textile to dry. A child would often work alongside each block printer, pushing a tub of paint along the table and cleaning the blocks. Though this work was not necessarily physically exhausting, working in the printworks factories often included long shifts. An examination of the working conditions within printworks in 1842 by a Parliamentary Commission found that children were working 12 hours a day on average and often fell asleep at their tubs (*ibid*).

Block printing was a slow process and required a high skill level. Carving the blocks in preparation for the printing was also a difficult task and the designs on these blocks deteriorated quickly as the wooden blocks wore down during use. By 1783, printing machines accompanied block printing.

Machine Printing *(Plate 17)* – Early attempts were made by Scottish inventor Thomas Bell to create a roller-printing machine. In 1770, Bell began printing textiles using engraved copper plates, a technique borrowed from copper plate printing. This worked in reverse to wood block printing in that the designs were engraved into the copper at a deeper level, so the colour would be added to the smooth surface, which would then be printed onto the cloth, leaving the designs themselves unpainted. Bell revolutionised the industry in 1783 with his patented continuous roller-printing machine which was fitted with six rollers. In theory, in roller would have had a different colour and as the cloth passed through each roller, a different part of the pattern would be added in a different colour. However, Bell struggled to keep the six rollers working in unison. Despite some technical issues, Bell had demonstrated the concept of using rollers in a more efficient way of printing cloth and, with the help of Adam Parkinson, by 1785 the instrument was successfully applied at the Livesey, Hargreaves, Hall Company near Preston (Nieto-Galan 2001, 56). By the early 19th century, roller-printer, or cylinder machines could produce up to three quarters of a mile of cloth within an hour (Penny Magazine 1843, 295).

Each roller-printing machine was tended to by three employees. The machine printer stood in front of the machine to check that the colour being added to the cloth was flawless; a young person, known as a 'back-tenter' would stand at the back of the machine and ensure the cloth was passing through the roller evenly and free of creases; the third employee, often a child known as the 'plaiter-down', would fold the cloth as it came out of the machine allowing the newly printed cloth to dry (Miller 2012, 11-12).

The use of block printing within printworks declined in the 1860s as a result of the advancing technology of the machine printers. However, block printing was still seen as an artisan trade and was kept alive due to the influence of William Morris, who believed that the skill of block printing was being lost due to the industrialisation of printing. Morris' work brought block printing into a renaissance during the 1870s. However, during the late 1880s the printing trade entered a depression due to inefficiency, price cutting and long credit. Within three years of this depression, 25 printing firms went out of business. As a result of the difficulties, the remaining printing businesses amalgamated, forming into three groups of associations.

The largest association was the Calico Printers' Association (CPA), which was formed by the merging of 46 printworks, representing 85% of the British textile-printing capacity. Despite amalgamation, many dye and print works closed over the following decades, by 1939, only 11 printworks were operated by the CPA (*op cit*, 13).

Bleaching – Bleaching removed impurities from cloth prior to dyeing and printing and turned the cloth completely white. Traditionally, this process was a lengthy one, taking several months to complete. The first stage of this process was called 'bucking', which referred to boiling the cloth in alkaline lye made from wood ashes. During the 18th century, this took place in what was known as a 'kier'. The cloth was then washed thoroughly in troughs of water and steeped in buttermilk. The final stage of the process to suspend the cloth in open air, exposing it to sunlight over a long period of time, which whitened the cloth.

Much land was needed to expose the cloth to sunlight, giving a commercial purpose to the infertile moorland in much of Lancashire (Miller, 2012, 11-12). Towards the end of the 18th century, it was becoming clear that a new, more efficient, approach was needed for bleaching cloth. In 1798, Charles Tennant introduced a bleach powder to the textile industry. The powder was made by impregnating dry-slaked lime with chlorine gas, which was said to be powerful enough for 7lb. of the powder to bleach 500 pieces of cloth (one piece being 28 yards long and 40 inches wide) (Penny Magazine 1843, 291). Industrialisation encouraged the mechanisation of the bleaching process, with steam and water power being used to drive machines such as dash wheels (Plate 15) and washing machines. These innovations in the bleaching allowed the process to be brought indoors during the 19th century, leading many printworks to develop their own bleaching departments.

By 1828, the dash wheels, which had been used to wash cloth, were replaced with washing machines invented by David Bentley, which washed lengthy pieces of cloth after the bleaching process. The cotton cloth was brought for bleaching in a grey state and several pieces of cloth were sewn together in preparation for bleaching, each 'piece' of cloth often being around 28 yards long and 40 inches wide (Penny Magazine 1843, 290). After the cloth had been bleached, the pieces were again sewn together with more pieces, creating a single piece of cloth reaching approximately 14,000 yards long (*ibid*). The lengthy cloth would then be placed in a washing machine or 'wash engine', which wound the cloth in a spiral, with the water in the machines being renewed throughout the process. Washing machines were used in various

stages of the process to keep the cloth clean and prepared for the next stages (Miller, 2012, 15-16).

Singe house – Once the cloth had arrived at the printworks, the first step would be to create a smooth surface on the grey cloth by removing any stray fibres or any fraying which may have occurred during weaving. This took place in a singe house by running the cloth over red-hot plates.

Grey sour cisterns – The next step was the 'grey-wash'. The cloth would be transferred to the bleach croft for this process and then mixed with souring liquor to break down any oils or grease.

Boiling kier – Not all of the waxy coating of the fibres of the cloth could be removed using just a washing machine. The cloth would be placed into a kier with boiling water and a lime solution. This would be stirred for several hours at a temperature of at least 100ºC. After the cloth had been soaked in the grey sour cistern, the cloth would go to another kier for boiling in soda ash.

Chemic cisterns – The cloth was then saturated in a clear solution of chloride of lime, or bleaching powder, which bleached the cloth.

White sour cisterns – The cloth was then passed through a dilute solution of sulphuric acid, known as 'white sour'. This was followed immediately by a final washing in clean water, which rendered the cloth perfectly pure.

Squeezing rollers - The cloth was then washed and squeezed dry through rollers.

White pile cisterns – After drying, the cloth was stored in 'white pile' cisterns, ready for printing or dyeing.

Dyeing – Two agents were needed for the dyeing process: the colouring matter and the mordant. Mordant is an alum, occurring naturally as sulphate mineral alunite. Traditionally, the alum was imported then used to 'fix' the dye within the cloth. However, during the 17th century, it was discovered that alum could be manufactured chemically using certain type of shale. This brought a boost to the industry in northeast Yorkshire, where shale occurred naturally alongside aluminium salts and pyrites, which were required to create alum (*ibid.*, 18).

The colouring matter used to dye the cloth prior to the 19th century was often sourced from plants. The plants most commonly used included indigo, madder and logwood, however, colourants were also derived from cochineal insects and tropical sea snails (Nieto-Galan 2001, 23-25). The process of converting the natural colouring matter into dyes was complex and often the dyes did not adhere to the cloth easily. This prompted the use of chemically produced dyes, which brought added benefits, including lower costs and a new, more varied, range of colours (Miller 2012, 18).

The first synthetic dye was invented, accidentally, by William Henry Perkins in 1856. Reacting aniline with potassium dichromate produced a rich purple dye that could be extracted by adding alcohol. Perkins started his own company producing the dye, known as 'mauve aniline', which further boosted the textile industry. By 1859, synthetic dyes had become incredibly fashionable, demonstrated by Queen Victoria's mauve dress worn at the International Exhibition of 1862 (*ibid.*, 18).

As the textile industry advanced, chemical engineering found new techniques of applying dye to cloth. One particularly popular technique was to print mordants onto the cloth before the dye was added, allowing the dye to adhere to the printed area. A technique known as 'resist

dyeing' involved printing a wax onto the cloth before immersing it in dye. The dye would not adhere to the waxy areas, creating plain patterns on the coloured cloth. In 1802, Peel revolutionised this process by introducing a way of printing the wax using mechanical rollers. Discharge printing was similar in that it included printing a bleaching agent onto an already dyed fabric, which removed the colour, again, creating a plain pattern on a coloured cloth (*ibid.*, 19).

The machinery used in the dyeing process included a large cistern, or beck, below a large roller. The cloth would be attached to the roller and rotated in and out of the beck, which contained hot water and the dye. Once the cloth had been dyed, it was washed again to remove any colourant residues (*ibid.*).

Together, bleaching, dyeing and printing had a profound impact on the textile industry in the North West. This boom in Lancashire's textile industry impacted Manchester's economy, social structure, and architecture (Phelps *et al* 2018, 11). The printworks companies lasted over a century, being a common sight on many rivers across the region. By the mid-20th century, the cotton industry's demise led to the closure of many printworks sites. The buildings that make up the printworks were difficult to adapt for other uses, and subsequently many sites were demolished.

2.3.6.2 Working conditions at printworks

The first Factory Act was introduced by Robert Peel in 1802, a factory owner himself. This act was called the 'Health and Morals of Apprentices Act' and limited the numbers of hours apprentices could work to 12 hours a day and after 1804, apprentices could not be kept after 9pm. Despite Peel's efforts to improve conditions in factories, employers found a way of evading this act, by employing wage-earning children, rather than apprentices (Hopwood 1969, 63-64). In 1831, and again in 1833, the Factory Act was passed with the purpose of improving working conditions, particularly for children. The aim was to stop children under the age of nine from working, to reduce working hours for children over the age of nine and to encourage children to attend school for at least two hours a day. Throughout the 19th century, several subsequent Factory Acts were passed, seeking to reduce the numbers of hours worked in the factories, increase the age limit of child workers and prohibit nightwork, however, many employers would continue to ignore these Acts, and would even pay fines using money deducted from worker's wages (Hopwood, 1969, 64).

Conditions at printworks factories are reported in Lord Ashley's 1845 speech (Cooper, 1845, 13) on the regulating of the labour of children working in calico print works across Britain. It is clear from the evidence given in his speech that the Factory Act was not being enforced in many print works across Britain over a decade after the Factory Act had been passed. In his speech, Lord Ashley states that one child worked such long hours they resorted to taking 'snuff' to keep themselves awake. Another child, Ellen Radcliffe, aged 10, reported her experience of working in a printworks: *"I was once a teerer, but I could not stand the work. Once worked three nights teering blue colour, but it made me sick and giddy in the head."*

Margaret Morris also recalled her experiences working in a printworks: *"Many times, I worked all day and all night too. Sometimes I have gone at 8 o'clock the next morning."* Lord Ashley also reported on a block printer's observation of a child named Hellin, aged just seven years old: *"[Hellin would] work from 6 o'clock in the morning until 11 o'clock at night for a week together on an average; he teered for his father, who worked him quite beyond his strength."*

Another account given by William Archer, a foreman, portrayed in Lord Ashley's speech stated: *"I have known a man work three days and three nights, without ever going home, and he had the same teerer all the time."*

The speech also includes Mr Emery' comments, a master of a school at Disley, on the education of children working in the printworks during the 1830s and 1840s. He claimed that: *"When I first came into this district, which is now many years since, my scholars stayed much longer with me; and I then had a chance of making something of them. On looking at numbers of scholars it appeared that they had diminished one half since 1832, notwithstanding the remarkable increase of population in this district within the last ten years."*

Lord Ashley's speech includes the reasons given by Mr. Emery for the changes in numbers of children attending schools: *"[Mr Emery explains the fall in number of children attending school] the facility of getting employment at high wages for very young children, and to the indifference of the parents about the education of their children."*

Further impacts on the children working in the printworks is discussed in Lord Ashley's speech: *"Of many of the children in the print grounds of Lancashire, and especially of those who have been the least educated, it is stated that they appear to have no sense of moral obligation: they are generally not trust-worthy, and are given to pilfering, lying and fighting."*

The long unsociable hours working in the printworks prevented children from developing social skills and gaining an education. Lord Ashley's speech provides an insight into the social complications caused by the working hours expected of the children working in the printworks during the first half of the 19th century. Furthermore, the dyeworks during this time had a negative impact on the health of those employed to work there, with children reporting feeling ill whilst working with some of the dyes (Cooper 1845, 13).

The Mayfield Printworks was mentioned Lord Ashley's 1845 speech. Referred to by Lord Ashley as a respectable and intelligent person, Mr John Graham, superintendent of the Mayfield Printworks. wrote to Lord Ashley regarding children and working hours at the Mayfield Printworks: *'So far as we are concerned at Mayfield, it would be advisable to give up night-work for women, young persons, and children, night-work being understood as those hours between 10pm and 6am'.*

3. Methodology

3.1 Archaeological Evaluation and Excavation

The principal aim of the archaeological evaluation was to establish the presence or absence of any buried remains of archaeological interest within the proposed development area and, if present, characterise the level of preservation and significance, and provide a good understanding of their potential. This was achieved by the excavation of three evaluation trenches. It was anticipated that this approach would represent an appropriate sample of the archaeological resource at the 'West site'.

General Methodology: all archaeological work was conducted following the CIfA Standards and Guidance for archaeological field evaluation (CIfA 2014). Prior to the commencement of any excavation works, the location of the trench targeted for archaeological investigation was laid out accurately with respect to the Ordnance Survey national grid. The position of this area was then scanned for any live services using a cable avoidance tool.

Archaeological Excavation: machine excavation was used to define carefully the extent of any structural remains. This was carried out using a mechanical excavator of appropriate power under close archaeological supervision. Thereafter, remains were cleaned manually to define their extent, nature, form and, where possible, date. Once the extent of buried archaeological remains was established, they were subject to detailed archaeological excavation and recording. Hand excavation was undertaken by trained professional archaeologists. All information identified in the course of the site works was recorded stratigraphically, utilising *pro-forma* context sheets, and was accompanied with sufficient pictorial record (plans, sections and photographs) to identify and illustrate individual features.

Context Recording: all contexts will be recorded using pro-forma sheets, and details will be incorporated into a Harris matrix. All written recording of survey data, contexts, photographs, artefacts and ecofacts will be cross-referenced from record sheets using sequential numbering.

Photography: a full and detailed photographic record of individual contexts was maintained and similarly general views from standard viewpoints of the overall site at all stages of the archaeological investigation was generated. Photography was undertaken in accordance with HE guidance, Digital Image Capture and File Storage Guidelines for Best Practice (July 2015). All frames included a visible, graduated metric scale. Photographs records were maintained on photographic *pro-forma* sheets.

Planning: the precise location of all archaeological structures encountered was surveyed using a total station linked to a pen computer data logger. This process generated scaled plans within AutoCAD, which were then be subject to manual survey enhancement. The drawings were generated at an accuracy appropriate for 1:20 scale, and all information was tied in to Ordnance Datum.

Finds policy: finds recovery and sampling programmes was in accordance with best practice (following current Chartered Institute for Archaeologists' guidelines, Standard and guidance for the collection, documentation, conservation and research of archaeological materials.

4. Evaluation Results

4.1 Introduction

Two stages of archaeological evaluation were undertaken of the Phase A site in November 2020 and January 2021. All the trenches were targeted on the remains of 18th-19th century buildings as depicted on historic maps.

One of the trenches, Trench 13, was not excavated due to safety concerns related to a large modern basement at the southeast of the site area. Most of the trenches that were excavated contained significant remains were not backfilled, becoming part of the later excavation areas. Those areas and trenches will be fully described in the following chapter; this chapter primarily describes those trenches which were not expanded in the excavation.



Plate 24: A post-excavation shot of Trench 1, illustrating the level of remediation that was uncovered. Looking southeast.

4.2 Results

4.2.1 Trench 1

Trench 1 was located at the northwest of the site. The trench was excavated to an extent of 2 x 2m with a maximum excavated depth of approximately 3m. Immediately below the overburden layer, which consisted of 0.4m of tarmac, stone, and concrete, was a loose layer,

0100, which was made up of mortar and brick rubble consistent with demolition material (Plate 24). A single small brick feature was located at the base of the trench, ***0101***, which appeared to be a vertically laid drain. Due to the depth, location, and fill of the trench, it was not investigated further.



Plate 25: Trench 2, looking northeast



Plate 26: Structure 0202. Note the brick base to the flue and the sharp eastwards curve into the southern limit of the excavation.

4.2.2 Trench 2

Trench 2 was located in the western area of the site and was targeted over buildings that abutted directly onto the River Medlock that were associated with the Mayfield Dyeworks. The trench measured 10 x 1.8m and a maximum depth of 1.2m was reached during the excavations (Plate 25).

The archaeology lay beneath a layer of overburden, a concrete surface up to 0.3m thick, and a general demolition material, ***0201***, up to 0.7m thick, which comprised of brick mortar and frequent brick rubble consistent with demolition material. To the western end of the trench two linear brick structures were found, ***0201*** and ***0202***. Structure ***0201*** was constructed of hand-made brick and bonded with a dark-grey lime mortar. It was capped with stone flags measuring 0.5 x 0.5m x 0.1m thick. Structure ***0202*** had a width of 0.55m and an internal depth of 0.35m. It continued beyond the limit of excavation. It was made solely of firebrick, including the capping which consisted of refractory tiles, stamped 'Ingraham Wortley' and measured 0.32 x 0.4 x 0.07m. Both were aligned northwest-southeast, with the flue positioned furthest to the east curving eastwards into the southern limit of the excavation (Plate 26).



Plate 27: Trench 3, looking southeast.

4.2.3 Trench 3

Trench 3 was located at the west of the site in what would become Excavation Area 3. It measured 30 x 1.8m and was excavated to a maximum depth of 1.85m (Plate 27). It uncovered various remains associated with the 18th-19th century dyeworks. This trench, and the areas immediately surrounding it, were fully investigated and recorded in the following Chapter.



Plate 28: Trench 4, looking east.

4.2.4 Trench 4

Trench 4 was located at the north of the site and measured 20 x 1.8m and was excavated to a maximum depth of 1.55m. It exposed part of the engine house associated with the Mayfield Dyeworks. This trench, and the areas immediately surrounding it, was fully investigated and recorded in in the excavation of Area 3 which is described below.



Plate 29: Trench 5, looking southwest.

4.2.5 Trench 5

Trench 5 was located at the north of the site and measured 30 x 1.8m with a maximum excavated depth of 1.45m. The trench uncovered significant remains associated with the boiler house of the Mayfield Dyeworks. This trench, and the areas immediately surrounding it, was fully investigated and recorded in the excavation of Area 3 and is described below.



Plate 30: Trench 6, looking south.

4.2.6 Trench 6

Trench 6 was moved approximately 5m northeast of its original planned location, which was originally located over buildings associated with the Mayfield Dyeworks, due to restrictions associated with site access. The trench measured 10 x 1.8m, with a maximum excavated

depth of 2.31m. Below the overburden layer of tarmac and stone was a layer of brick rubble and made-ground, approximately 1.1m thick, ***600***.

Below this in the south-eastern section of the trench a linear brick wall was uncovered, ***601***, at a depth of 1.36m, which was aligned broadly north to south. This linear brick wall was abutted by a C-shaped brick structure, ***602***, which contained a light grey ash and clinker fill ***603***. The structure (Plate 30) was steeply sloped on three sides to a brick floor which continued through an opening in the brick wall, ***601***. Structure ***602*** measured 0.9 x 0.75m and had an internal depth of 1.05m.

4.2.7 Trench 7

Trench 7 was located at the northeast of the site and measured 7 x 1.8m. It was excavated to a maximum depth of 1.3m. The trench was shorter than had been laid out in the WSI due to the presence of the foundations for nearby pedestrian bridge which crossed the Medlock. Most of the fill consisted of modern rubble material associated with a modern brick basement structure at the north of the trench, ***700***. This structure measured 1.75 x 0.5m, was aligned northeast-southwest and truncated the other brick structure, ***701***.

Structure ***701*** consisted of a large brick flue (Plate 31) which was aligned northeast-southwest. It continued beyond the limit of excavation. It had a maximum surviving height of 0.45m, a maximum width of 0.9m, an internal width of 0.28m, and an exposed length of 2.25m. It was constructed of handmade bricks and bonded with a yellow, sandy, lime mortar.

4.2.8 Trench 8

Trench 8 was located at the west of the site area. The trench was later expanded into the Excavation Area 2. It measured 30 x 1.8m and was excavated to a maximum depth of 2.25m. It contained significant remains of the mid-19th century Mayfield Bathhouse, including two tiled swimming pools (Plate 32). This trench, and the areas immediately surrounding it, were fully investigated, and recorded in the full excavation (for results, see Area 2).

4.2.9 Trench 9

Trench 9 was located at the southwest of the site. It was targeted over a former ice factory that abutted onto Stove Street (as illustrated on the Ordnance Survey 1:500 Town Plan of 1891). The trench measured 15 x 1.8m and was excavated to a maximum depth of 3.5m. The trench was heavily remediated with material that was primarily formed of mortar and brick rubble consistent with demolition rubble (Plate 33). Such heavy remediation indicated that any surviving articles of archaeological interest had been destroyed during a later use of the site, with no archaeological features or finds of interest being uncovered from Trench 9.



Plate 31: Trench 7, looking southwest.



Plate 32: Trench 8, looking north.



Plate 33: A mid-excavation shot of Trench 9, illustrating that the entirety of the trench had been heavily remediated. Looking south.



Plate 34: Trench 10, looking east.

4.1.10 Trench 10

Trench 10 was located at the south of the site and measured 35 x 1.8m. It was excavated to a maximum depth of 0.65m. It produced structural remains associated with the mid-19th century Ardwick Tannery (Plate 34). This trench, and the areas immediately surrounding it, were fully investigated and recorded in the subsequent excavation.



Plate 35: A post-excavation view of Trench 11. Looking east.

4.2.11 Trench 11

Trench 11 was located to the east of Area 3 of the site and was targeted on the footprint of houses fronting Indigo and Madder Street. The trench measured 15 x 1.8m and was excavated to a maximum depth of 1.4m (*Plate 35*).

No archaeological features associated with the houses were uncovered during the excavation of the trench, however a series of clay bands were uncovered.

4.2.12 Trench 12:

Trench 12 was located at the east of the site and measured 6 x 1.8m and was excavated to a maximum depth of 0.84m. This trench uncovered remains of those 19th century dwellings which had fronted Hoyle Street. The overburden at the east of the site consisted of a concrete pad associated with a recent yard which had previously occupied the site. The overburden had a maximum thickness of 0.35m. Immediately below this was a demolition layer associated with the archaeological remains, ***124***. Layer ***124*** had a maximum thickness of 0.45m and consisted of crushed brick, stone, and mortar.

The small trench uncovered two areas of flagstone floor and two brick walls (Plate 36). Wall ***123*** was found at the western edge of the trench and was -a northeast-southwest aligned single-course brick wall which continued beyond the limit of excavation. The exposed length measured 0.85m at a depth of 0.7m.

Wall ***122*** was located in the centre of the trench and was aligned northwest-southeast. It was a single-course and continued beyond the limit of excavation. It was constructed of handmade bricks and was bonded with a sandy lime mortar. It had an exposed length of 3.1m. At the north-western end a flagstone step was built into the wall; the doorway had an exposed width of at least 0.85m.

A neat flagstone surface, ***121*** was found at the west of the trench and was enclosed by walls ***122*** and ***123***. It had a maximum exposed area of 2 x 4.5m and continued beyond the limit of excavation. The floor stepped down through wall ***122*** to the flagstone floor, ***120***. Floor ***120*** was found at a depth of 0.84m and lay to the northeast of wall ***122***. It had a maximum exposed area of 4 x 2m and continued beyond the limit of excavation.

4.2.13 Trench 13

Due to issues surrounding accessibility on site, Trench 13, targeted over the former Britannia Brewery, was not excavated during the evaluation excavations.

4.2.14 Trench 14

Trench 14 was located at the east-centre of the site and measured 20 x 1.8m. It was excavated to a maximum depth of 2.5m. Below the immediate overburden lay, which consisted of 0.4m of tarmac and concrete, was a loose layer of demolition material, ***140,*** which was made up of degraded mortar, and fragmented bricks and flagstones. Much of the trench was covered by a brick structure, ***141***, which was found at a depth of 2.1m (Plate 37). However, due to the depth and fill the trench was not further investigated.



Plate 36: Trench 12, looking east.



Plate 37: Trench 14, looking southeast.

4.2.15 Trench 15

Trench 15 was located at the southeast of the site and measured 10 x 1.8m. No finds of any archaeological interest were recovered from Trench 15 (Plate 38). A large concrete pad and modern brick-walled basement, ***151***, were found at the south of the trench. Most of the trench was covered by a missed layer of loose bricks and topsoil, which had a maximum thickness of 1.2m. The natural clay, ***01***, was found at a depth of 1.2m at the south of the trench.



Plate 38: Trench 15, looking south.

5. Excavation Results

5.1 Introduction

The archaeological excavation at Mayfield consisted of four discrete areas: Area 1: the Ardwick Tannery; Area 2: the Mayfield Baths; Area 3; the Mayfield Dyeworks and Area 4; the Chapel Field Dye works and later India Rubber factory. Area 1 was located at the south of the site, on the southern bank of the River Medlock. It uncovered remains of the boilers and chimney associated with the mid-19th century tannery. Area 2 was located at the west of the site adjacent to Baring Street. It uncovered significant remains associated with the Mayfield Baths, including plunge pools and boilers. Area 3 was located at the north of the site, close to the railway line. It consisted of a large portion of the 18th-19th century Mayfield Dyeworks and included a boiler-house and dye-house. Area 4 was located to the south east of the site adjacent to the river Medlock and was target over the remains of factory buildings identified on 19th century OS maps relating to the Chapel Field and Ardwick dye works.

5.3 Phasing

Clear phasing was apparent within the archaeological remains recorded at Mayfield. This was established through the relationships of structures, morphology and typology of structures, and the building materials used. This was heavily supported by the historical and especially the cartographic record. A detailed map regression for the Mayfield Dyeworks (Area 3), which included factory insurance plans from 1872, which illustrated the interior layout of the buildings. The most significant phasing was exhibited in the remains of the three dyeworks, unsurprising given as it was in use for a considerably longer period than either the Mayfield Baths or the Ardwick Tannery. Each of the individual structures encountered during the fieldwork was ascribed to one of seven phases:

- ***Phase 1*** dated to the late-18th century c. 1782 – 1800 included the early buildings of the Mayfield Dyeworks in the north of the site and parts of the Ardwick and Chapelfield Dyeworks to the south of the River Medlock;
- ***Phase 2*** dated *c.* 1800-31 included some of the newer structures at the dyeworks, partly based upon Banck's Map of 1831 and plans produced in the intervening period;
- ***Phase 3*** dated *c.* 1831-49 and included the earliest remains of the Ardwick Tannery and further development at the Mayfield Dyeworks;
- ***Phase 4*** dated *c.* 1849-72 and included developments at the Dyeworks and the earliest remains of the Mayfield Bathhouse.
- ***Phase 5*** dated *c.* 1872-91 and included developments at the Dyeworks, the Baths, and the Tannery.
- ***Phase 6*** dated *c.* 1891-1908 and included developments at the Baths and the demolition of the Tannery and its replacement with the India rubber works.
- ***Phase 7*** dated *c.* 1908 to the mid-20th century, and mostly consisted of remains outside of archaeological interest, although several elements of the Mayfield Baths probably derived from this period.



Plate 39: Excavation Area 1, looking north



Plate 40: Feature 101, looking northwest 1m scale

5.3 Excavation Area 1 Results: Ardwick Tannery (Andrew Radford)

The archaeological excavation of the Ardwick Tannery at Mayfield was the first of three excavation areas carried out at the Mayfield site (Figure 3). The excavation followed the archaeological evaluation, Trench 10 of which demonstrated that some remains associated with the Ardwick Tannery survived *in situ*. Based upon the results it was decided with GMAAS that further intrusive archaeological work would be worthwhile in the area of the tannery. Little phasing was detected at the tannery; almost all the remains were associated with the mid-19th century while a set of brick stanchions were associated with the post-tannery rubber works and dated to the late-19th-to-early-20th century (Plate 39).

The entirety of Excavation Area 1 (the tannery) was covered by concrete hard-standing associated with the 20th industrial buildings which had occupied the site. In some areas a layer of stone MOT was also present. These layers were considered the overburden and were removed mechanically.

Few remains associated with the Tannery survived at the east of the site, in the area which had been exposed by the earlier Trench 10. The natural bedrock, ***01*** was found a depth of only 0.35m below the contemporary ground level. In the centre of that exposed bedrock area was a single linear feature, ***101,*** cut into the natural bedrock. It was aligned northwest/southeast and had a maximum width of 0.55m and a minimum length of 2m though it continued beyond the limit of excavation to the northwest and southeast. The drain cut had a maximum depth of 0.32m. The cut contained a disturbed drain, ***102***, which was constructed of bricks and flagstones (Plate 40).



Plate 41: Wall 114, looking south (1m scale)



Plate 42: Chimney structure 110, looking west.



Plate 43: Boiler beds 111 and 112, looking north (2 x 1m scales)

Adjacent to the linear *101* on the western side was a square brick stanchion, of the type found across the site which post-dated the tannery. It measured 1.1 x 0.9m and continued beyond the limit of excavation towards the south.



Plate 44: Boiler 111, looking north (1m scale)

Most of the remains were found at the western end of the excavation area, where the more substantial structures were located. The centre of the excavation area consisted of two flagstone floor surfaces, ***104*** and ***106***. The eastern of these two surfaces, ***104***, was found at a depth of 0.4m and measured 4.75 x 2.2m. The eastern edge of the surface *104* had been truncated by later concrete foundations. Immediately below the flagstones was the sandstone bedrock, *01*.

To the west, the flagstone surface *104* abutted a 0.25m-wide brick wall, ***105***, which was aligned northwest-southeast. It was bonded with a sandy lime mortar and had a neat visible cut 0.05m wide into the bedrock, *01*.

To the west of the brick wall, ***105*** was a second flagstone-floored room, covered by surface ***106***. Floor *106* measured a maximum area of 7 x 4.5m. It was enclosed by the brick walls *105* to the east, *115* to the north, *108* to the west, and *114* to the south. At the southeast it had been truncated by the post-tannery brick wall and concrete foundation, *116* and had been truncated by a square brick stanchion, *107*, in the centre. The stanchion was one of the group of stanchions across the site; it measured 1.2 x 1.2m and survived to a height of 0.45m.

Wall ***114*** was a curved 0.37m-wide brick wall which ran along the southern limit of excavation (Plate 41). It survived to a maximum height of 0.4m, and had a maximum length of 4.75m, though it was truncated at both the west and east. It was aligned northeast-southwest and was white-washed on the interior face – the north face.

Wall ***108*** was located in the centre of the tannery area and was aligned north / south. It was double-coursed, had a maximum width of 0.25m survived to a height of 0.32m, and had a maximum length of 4.1m and was keyed-in to wall *115* to the north and wall *117* to the south.

Wall ***117*** was a double coursed brick wall which was aligned east / west and was truncated by a modern concrete feature to the west. It had a maximum thickness of 0.25m and a maximum length of 1.5m.

Wall ***115*** was aligned east / west along the northern limit of excavation close to the River Medlock. It was three-courses wide with maximum thickness of 0.3m and a maximum exposed length of 4.5m.

Keyed-in to wall *108* on the western side was a brick structure, ***113***, which also approximately rectangular and had likely formed the foundations of a series of steps or raised floor from the nearby flagstone floor *106*. It measured 1.15 x 2.25m. At the western side it had been truncated by a 20th century concrete foundation.

Immediately to the west of the brick structure, *108*, and that concrete stanchion were the partial remains of the brick and stone chimney, ***110*** (Plate 42). The surviving remains suggested that the chimney had been octagonal in shape with a diameter of 1.45m. It was three courses wide and was keyed-in to the brick structure *111*. The internal height of the chimney was 0.4m. The internal faces of the chimney were heat damaged. The base of the chimney consisted of somewhat roughly hewn sandstone blocks which were blackened with soot.

The two boiler-beds, ***111*** and ***112*** *w*ere located to the southwest of the chimney at the west of the excavation area (Plate 43). Both boilers were truncated by later activity. This included a further brick stanchion, *109*, which truncated the southeast of boiler-bed *111* and measured 1.2 x 1.1m.



Plate 45: Boiler 112, looking north (1m scale)

Structure ***111*** (Plate 44), a boiler bed, consisted of a rectangular brick structure with a central recess. The central recess was constructed directly onto the sandstone bedrock, *01,* and had a height – or depth – of 0.65m. Most surfaces which could have been exposed to heat were constructed of yellow firebricks while the rest of the structure was composed of regular hand-made bricks. It had a total length of 5.8m. The eastern part of the of boiler *111* consisted of a

large brick wall which had a maximum width of 0.95m. At the top of this wall was the firebrick base of a linear flue which ran along the wall, north-south. It had a maximum width of 0.4m. The west of boiler *111* consisted of a second brick wall which was shared with boiler *112*. It had a width of 1.75m and had a second linear flue base which was associated with boiler *111*.

Boiler bed ***112*** (Plate 45) was slightly more disturbed. It lay adjacent to structure *111* which was to the east. It had a length of 6.2m. an internal width of 0.83m and an internal height or depth of 0.78m. It was similarly constructed of bricks and firebricks with some notable differences. The interior was mostly covered by a brick floor while boiler *111* contained no evidence of ever having contained such a surface. Boiler *111* was clearly furnished with two side-flues while boiler *112* was too disturbed to establish their presence, though based upon a group of firebricks, a flue had likely existed on its eastern side where it met boiler *111*. The northern-most wall of boiler *112* was curved while that of boiler *111* was straight, forming a neat rectangle. At the southwest of structure *112* was a 45° sloped wall which led to the internal recess. It had a minimum width of 0.4m and continued beyond the limit of excavation.

5.4 Excavation Area 2 Results: Mayfield Baths (Andrew Radford and Oliver Cook)

The Excavation Area 2 expanded upon the results of the earlier evaluation Trench 8. It uncovered significant remains of the Mayfield Baths, which was in use at the site *c.* 1857-1941 (Plate 46; Figure 7). It uncovered well-preserved remains of two plunge pools, steam boilers, associated flues, and chimney. The entire Area 2 was covered by a tarmac and MOT layer, reflecting the site's contemporary use as a carpark. Various mid-to-late-20th century foundational remains were also found across the site, the most substantial of which consisted of concrete wall foundations and concrete stanchions. In some floored areas of the baths, such as the swimming pools and boilers, material associated with the 1940s demolition of the site was found, which included architectural stone and brick fragments.

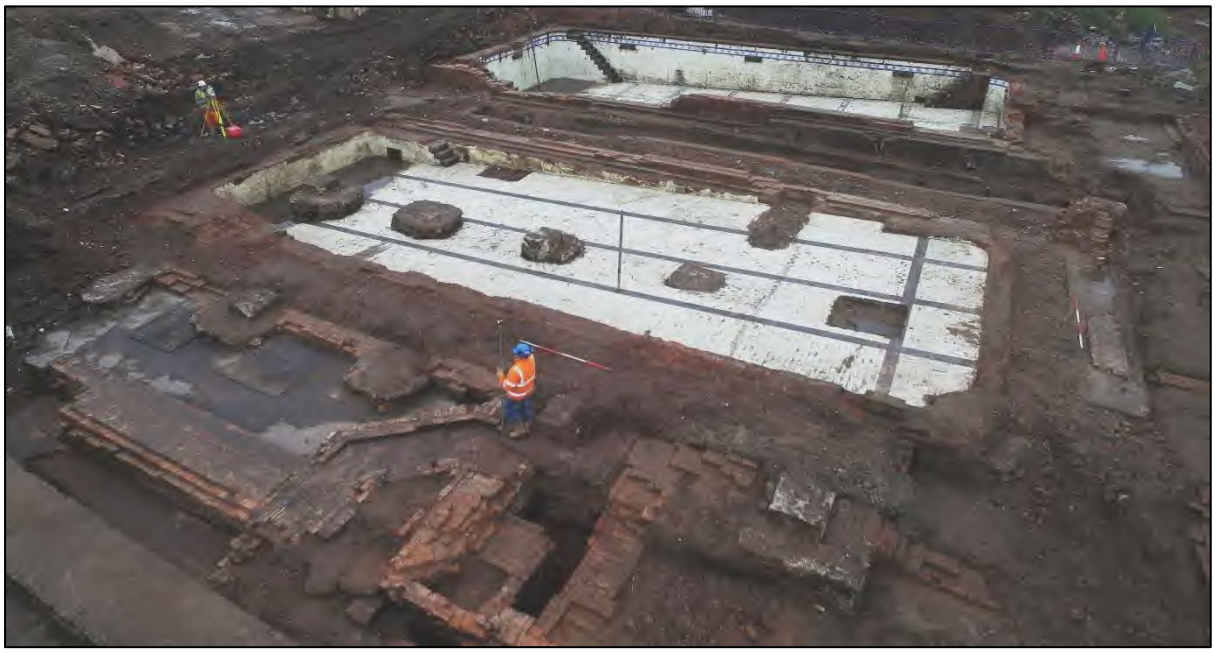


Plate 46: The excavated remains of Mayfield Baths looking south-east

5.4.1 Mayfield Baths Phase 4: 1849-1872

As stated above, the Mayfield Baths opened to the public in 1857 and construction likely began in the mid-1850s. Though this was the earliest phase of activity at the bathhouse it falls within *Phase 4* of the wider site chronology; the construction phases were assigned through cross-examination of the historic mapping and documentary evidence and recorded building materials, and stratigraphic relationships. Although the timeframe for *Phase 4* spans the period *c.* 1849-75, the original elements of Mayfield Baths were constructed *c.*1855-7.

This phase of construction was represented archaeologically by the remains of two plunge pools, an adjoining boiler house and foundation walls of the rooms, presumably the foyers and offices, which fronted onto Baring Street.



Plate 47: Aerial view of Mayfield Baths looking north-east

Plunge Pools

The most visually compelling elements exposed during the works were the two plunge pools situated in the eastern half of the excavation (Plates 46 and 47). Pool *225* was located in the southeast corner of the area and was identified as the men's first-class pool. Pool *226* was located to the north and was identified as the men's second-class pool. The pools were divided by and east / west aligned brick wall, *227*. The pools measured 19.20m by 7.32m. They had a rectangular shape in plan with rounded corners. The outer walls of the pools ranged in thickness from 0.65 to 0.85m, and comprised handmade red brick bonded with hard, grey cementitious mortar. The bases of the pools were constructed in concrete, brick and stone and sloped from east to west to create the shallow and deep ends of each structure.

Pool ***225*** was the most complete example. At the western end of the pool, it had a maximum depth of 1.63m and at the eastern end it had a maximum depth of 2.32m. At the southwest corner of the pool, set into the brick wall, was a large sandstone block which measured 0.24

x 0.95m, perhaps a remnant of the original steps into the pool. These were evidently replaced in *Phase 5 or 6*.

As the most complete example, it retained numerous fixtures and fittings and presented evidence of various instances of alteration and modernisation. The walls and floors had been relined and retiled, the pools' drainage and filtration systems were overhauled and consequently the steps into the pools were rebuilt. In spite of this, a number of original elements were also evident. Stone coping survived around the southern and eastern edges of the first-class pool. The coping was formed from sandstone slabs measuring 1.12m x 0.33m and was laid with a slight overhang over the pool edge. Circular openings cut into the slabs were spaced at 2.35m intervals along the pool side; these acted as the foundation pads for the cast-iron columns that had supported the galleries above. Hollow iron collars with a diameter of 0.18m survived *in-situ*

Pool ***226*** was broadly similar to Pool *225*. It was less well-preserved and survived to a maximum depth of 0.93m. The pool walls and floors were finished with tiles and enamelled bricks, respectively. These materials are consistent with the pool being relined during *Phases 5* or *6.* The original stone surface at the base of the pool was therefore obscured. The floor and underlying foundations were however revealed in a sondage excavated through the base of the pool (Plate 49). It became clear the foundations of the pool were very substantial and consisted of a layer of crushed and chipped limestone fragments (300mm thick), above which was a concrete raft containing frequent rounded stone aggregate inclusions (250mm thick). Sealing the raft was a single layer of handmade bricks bonded with a light bluish-grey cement (75mm thick). The original surface of the pool was finished with a series of light yellowish-grey flagstones.



Plate 48: Wall 227 looking east

Two drains positioned at the lowest point of each pool beneath the pool steps. The position of the drains relates well to plans produced in 1856 revealing these were indeed original

elements of the bathhouse design. The plan shows the water from the pools fed into a chamber situated between the pools (Plate 48) and flowed westwards towards Baring Street, where it emptied into a sewer.

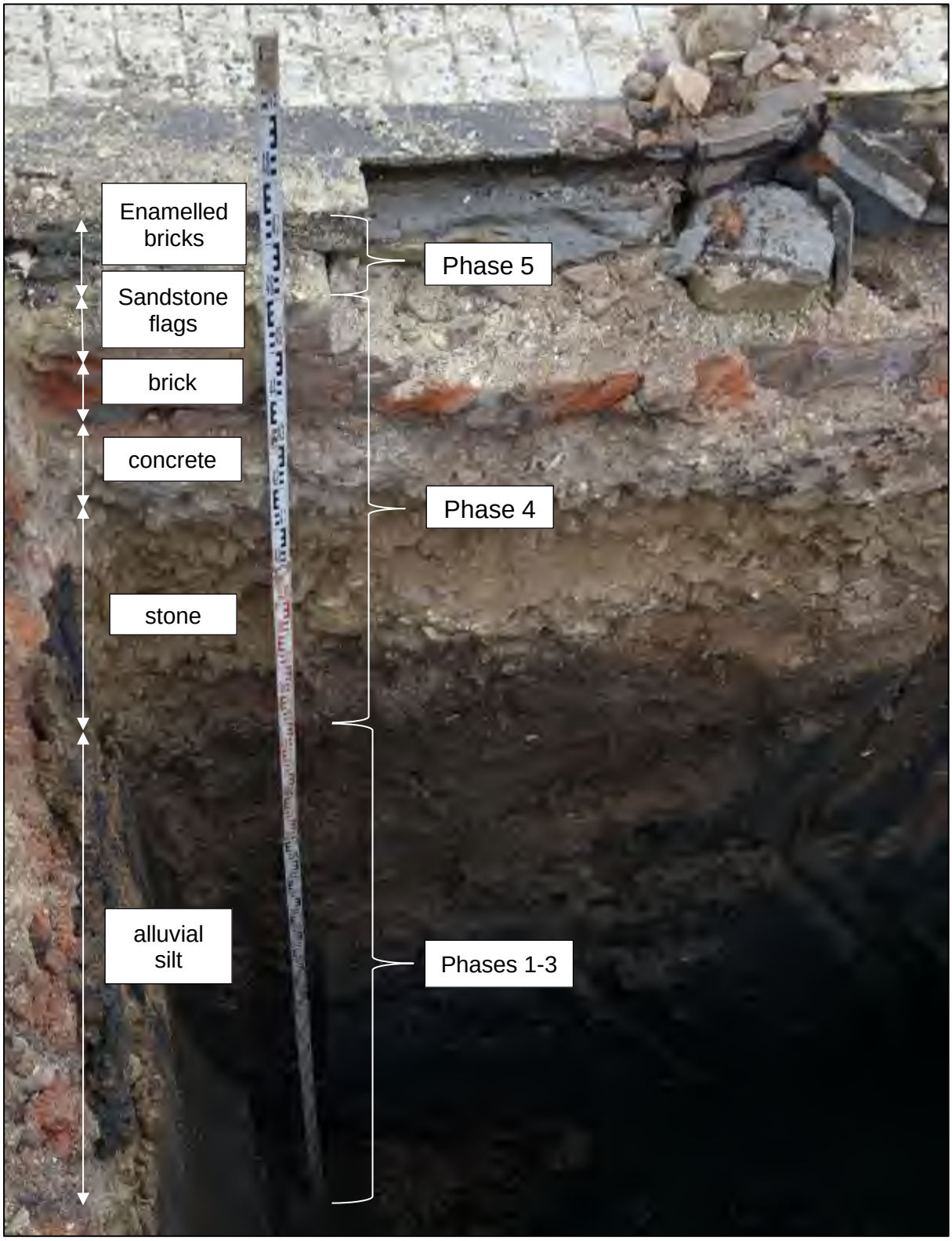


Plate 49: Sondage through the base of Pool 226 showing the composition of the foundations above earlier layers of alluvial silt



Plate 50: Walls 204, 200 and 201 looking south, 0.50m scale



Plate 51: Walls 207, 200, and 210, forming one of the rooms at the west of the site, looking northwest



Plate 52: The curved section of Wall 200

The Baring Street façade

Parallel to Baring Street, along the western edge of the excavation was brick wall ***200***, which was aligned north / south. It had a maximum exposed length of 8.72, a width of 0.35m, and survived to a maximum height of 1.13m. At the northern end, it curved for 1.8m towards the northwest before a second angular dog-led towards the northeast for 1.1m, where it met wall *204* (Plates 50 and 52). Wall *200* formed the eastern edge of a cellar, recognised from the white-washed western face of Wall *200*. The cellar continued beyond the limit of excavation towards Baring Street; it was not possible to excavate it further. At its southern end, Wall *200* was abutted by and possibly rebuilt as Wall *223*.

Wall ***203*** was laid north / south, parallel to wall ***200,*** and was located 2.6m to its east. It had been truncated during the construction of various later concrete remains but had likely originally been the same structure as wall ***200***. It had a width of 0.47m and a maximum exposed length of 2.1m. It survived to a maximum height of 0.35m.

Several east/west aligned brick walls were connected to the two walls *200* and *203* which created small square rooms. These east / west aligned walls continued to the west of Wall *200* and it was likely that the squares rooms were mirrored to the west of Wall *200*, though this lay beyond the limit of excavation. These walls included ***202, 207, 210, 211, 212,*** *and* ***213***.

Wall ***202*** was the northernmost of this group. It was keyed-in to Walls *200* and *203*, had a width of 0.23m and a length of 2.6m.

To the south of Wall *202* was wall ***207*** which had a maximum width of 0.45m and a total length of 8.25m. It was keyed-in to wall *200* at its western end and wall *209* at its eastern end.

1.84m to the south of wall *207* was wall *210****.*** Wall ***210*** had a maximum length of 2.1m and a width of 0.36m. Its eastern was disturbed but it likely had connected to wall *203*. A brick floor was found between walls *207* and *210* and covered the area of the room, 1.84 x 2.1m.

2.2m to the south of Wall *210* was another east / west aligned wall, ***211***. It measured 1.93 x 0.36m.

5.75m to the south of wall *211* was wall ***212***. It was aligned east / west, measured 0.36m x 1.05m and was keyed-in to wall *200*. It was disturbed on its eastern side. A stub located between walls *211* and *212* suggested that a further wall had been located between the two but had been disturbed by later activity. Wall *200* did not continue beyond wall *212* to the south. It appeared to have been truncated and possibly replaced with Wall *223* in *Phase 5*.

4.5m to the south of wall *212* was wall ***213***, which was also aligned east / west. It measured 2.05 x 0.36m and was abutted by wall *223*. It continued westwards beyond the limit of excavation. The relationship between walls ***213*** and ***203*** had been truncated by later concrete remains.

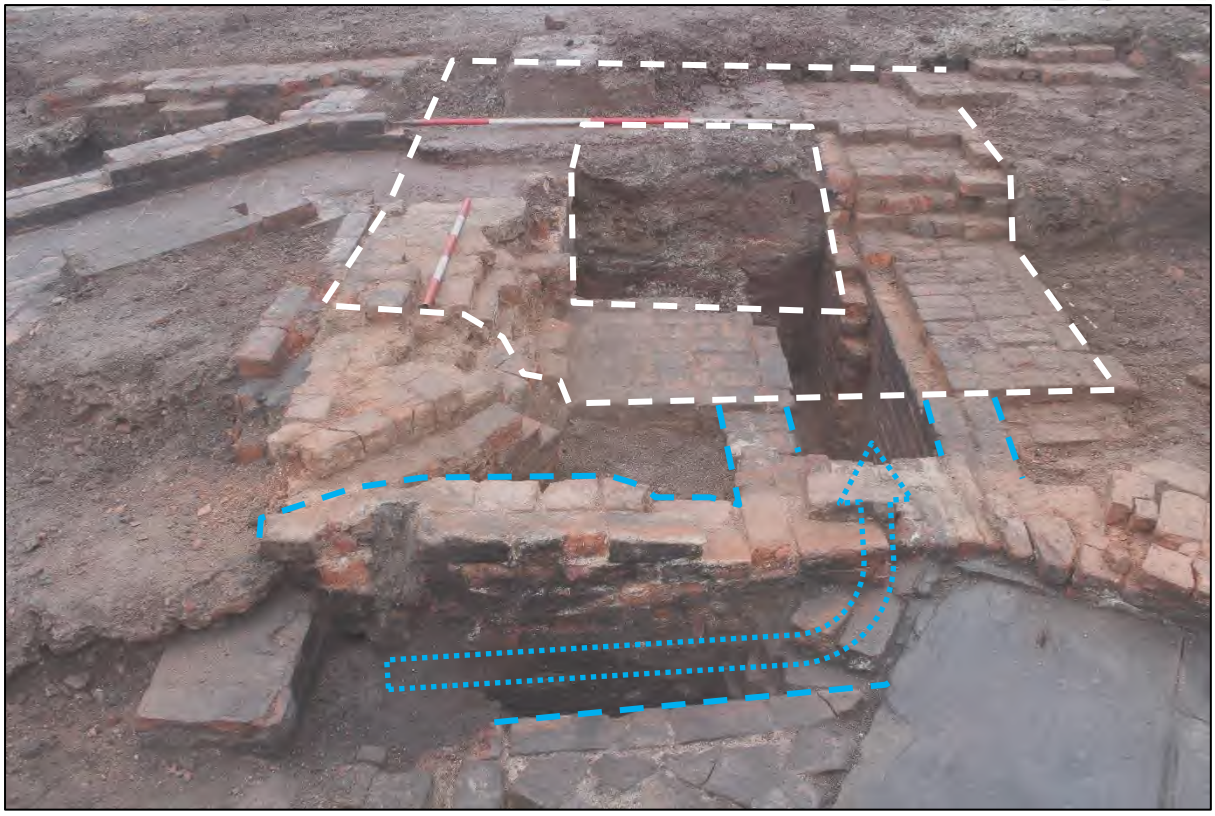


Plate 53: The remains of chimney 219 (white) and flue 218 (blue)

Boiler House

At the northeast extent of Area 2 were the remains of the boiler house. As the Baths were in use for *c.* 90 years, it was therefore unsurprising that this structure displayed signs of alteration in *Phases 5-7*. Few remains of the original power systems from the 1850s survived at the site. The remains of *Phase 4* could mostly be recognised by their fabric. The walls were built in handmade brick and did not contain firebricks, were bonded with a soft, reddish brown mortar, and generally appeared cruder than the later features, such as flue *217*.

The fragmentary remains of wall *207* formed an east / west dividing wall between the building housing the men's second-class pool in the middle of the baths and the boiler house and plant rooms to the north. The wall was 0.45 – 0.48m wide and had a total exposed length of 8.25m. The wall incorporated a series of brick buttresses on its northern side, several of which survived within the footprint of the boiler house.

Contemporary with wall *207* were the remains of the chimney ***219***, located to the south of the flue *218* and to the west of flue *217* (Plate 53)***.*** It was constructed solely of red handmade brick and did not incorporate any firebricks or refractory materials. It had an internal depth of 1.15m. A concrete stanchion had destroyed much of the feature, but the internal chimney flue originally measured approximately 1.22 x 1.25m. The western wall of the chimney was keyed-in to wall *207* and had a somewhat obscure relationship to wall *204,* due to the presence of the vaulted roof of the flue, *218**,*** though it appeared to be keyed-in and contemporary. It was aligned north / south, had a length of 2.21m and a width of 0.71m. The eastern wall of the chimney survived to a lesser extent of 1.74m, truncated at is southern end and was 0.61m wide. The northern wall of the chimney had a length of 1.01m and width of 0.71m; it was stop-ended on its western side forming the entrance of flue *218* into the chimney. The southern wall of the chimney was mostly destroyed by the concrete stanchion, but it had likely been

part of wall *207*, which doubled as the southern limit of the boiler-house. Based upon a visible wall stub, which extended from Walls *209-207*, the southern wall had a likely width of 0.7m. The inside faces of the chimney walls were scorched. An additional single skin of bricks around the three surviving internal faces of the chimney, probably represented a relining. The base of the chimney was built of handmade bricks and was similarly heat-affected. The entirety of the structure had been backfilled with boiler ash, consistent with its use as a chimney.



Plate 54: The brick conduit and remains of the boiler house of the Baths, looking southeast

Immediately to the northeast of the chimney, *219*, was a brick structure, ***224.*** It had a maximum width of 0.89m and was broadly rectangular in shape with a curved north-eastern side. Wall *224* was crudely constructed in handmade brick and was keyed-in to both the flue *218* and chimney *219* appearing to represent an integral part of the flue system. The curved north-eastern side of the flue, which extended a further 1.15m from the corner of chimney *219,* presumably constituted an entrance into the chimney at ground level.

Flue ***218*** was L-shaped; it was aligned north-south and east-west. It had a maximum internal width of 0.48m and a depth of 0.92m. The walls of the flue typically measured 0.23m in width. It was constructed solely of red bricks which were heat-affected. The southern end of the flue adjoined chimney *219*. Here, two parallel walls extended northwards from the north-west corner of chimney *219*, forming the side walls of flue ***218***, which entered the chimney at its base. These side walls were keyed into the northern side of chimney *219* and appear to have formed a contemporary element of the flue system. The western wall of the flue was also visibly keyed in to wall *204.* The eastern flue wall returned to the east and was keyed into structure *224*. The northern side of this return measured 0.66 x 0.90m. At the eastern end the

flue appeared to have been partially filled with boiler ash and was truncated, possibly during the installation of a later boiler, *221*. Prior to this, the flue had been blocked in two places.



Plate 55: The brick conduit formed by walls 204, 206 and 205 looking south-east

Close to the northern edge of the excavation was a large brick conduit, which ran from rear of the boilers and chimney to the northeast edge of the building (Plates 54 and 55). It consisted of three parallel brick walls, ***204, 206,*** and ***205***. All were aligned northwest / southeast. Wall ***204*** formed the south-western side of the structure and had a width of 0.47m and a maximum exposed length of 11.5m. The south-eastern extent had been truncated during the construction of 20th century concrete foundations. Wall *204* was keyed-in to walls *200* and *209*. Running parallel with wall *204* was wall ***206,*** which acted as a central partition between walls *204* and *205*. It was exposed for 4.2m though it continued to the northwest beyond the limit of. Wall *206* had a maximum height of 0.72m below the level of the flagstone floor, *208*. The top of both walls were recessed to hold a series of adjoining stone capstones, which survived intact over the south-west side of the conduit. The flagstone capping, ***208*** ran between walls *204* and *206* and extended from wall *209* to the northwest limit of excavation. It covered an area of 1.3 x 11.5m. The individual flagstones were made of the typical grey York stone and measured 1.44 x 1.3 x 0.08m.

Wall *205* was laid parallel to wall *206*. The capstones sealing the conduit had been removed, revealing a sunken corridor aligned northwest / southeast. It had a maximum width of 0.47m, an exposed length of 4.5m, and a maximum height of 1.30m. The inner faces of walls *205* and *206* were whitewashed. A small brick ledge, 0.1m wide, protruded the inner faces of walls ***205*** and ***206*** and had originally held fragments of a flagstone capping, similar to *208*. At a depth of 0.82m below this brick ledge was the brick floor of the corridor.

Along the northern edge of this conduit was a collared cast-iron steam pipe, which had a diameter of 0.114m (4½ in). This suggests that the conduit could have been used as an underfloor channel for running pipes to and from the boilers, perhaps supplying the private slipper baths and laundry in the western half of the building.

5.4.2 Mayfield Baths Phase 5: 1872-1891

A considerable amount of development took place at the Mayfield baths and was visible in the archaeological record. This was supported by the historical record, which indicated that when the baths were purchased by the Manchester Corporation they were in an 'unsatisfactory' condition and in order to remediate this, a considerable amount of work was undertaken at the site. The alterations made in *Phase 5* were largely to the existing structures. These changes were identifiable in part by the materials used, some of which were constructed using mass-produced tiles, wire-cut bricks, machine made bricks and firebricks, none of which were evident in the *Phase 4* structures.



Plate 56: Wall 223 looking west (2m scale)

Room Divisions

At the north-western and western end of the area some walls related to the rooms there had been added and / or rebuilt. A northwest / southeast aligned brick wall, ***201***, had been cut into wall *200* on its eastern side and possibly was added during this phase of renovation. The alignment of the wall did not match the nearby wall *202* but corresponded with the alignment of the brick conduit running from the rear of the boiler house. It clearly post-dated wall *200.* Wall *201* had a maximum length of 2.66m and a width of 0.36m. At its south-eastern end it

had been truncated by 20th century construction activity but had likely previously abutted wall *203*.

Wall ***223*** was located at the southwest of the excavation area (Plate 56). It was aligned north / south and measured 7.1 x 0.36m. It may have been a rebuild or repair of the *Phase 4* wall *200* but in plan it appeared as a continuation. It abutted the junction of the walls *200-212* and the east / west wall, *213*. The foundations of the wall were shallower than those of Wall *200*. The wall consisted of stepped bricks built upon a flagstone foundation and stood at a maximum height of 0.6m. A wall stub was visible on the western side of wall *223* between walls *212* and *213,* indicating that this area had been further divided into small rooms: the southern room had a length of 2.17m and the northern room, a length of 2.2m. Both continued beyond the limit of excavation to the west.



Plate 57: Pool 225, Men's first-class, looking east (2 x 2m scales)

5.4.3 Mayfield Baths Phases 5-6: 1872-1908

A sequence of events took place after the take-over of the baths by the Manchester Corporation in 1877 up to 1908, which saw the plunge pools *225* and *226* much improved from their original state.

Plunge Pools (Plates 57 and 58)

This was particularly evident in the lining of the pools, new steps and the introduction of pumps and steam injection heating. Comparison between the original design plans, and early engraving of the baths with photographic evidence from 1902, reveal a number of alterations made to the interiors in the period 1877-1902.

In the first-class pool, ***225*** the walls were mainly covered with plain white earthenware tiles affixed with a hard-grey waterproof cement. A repeating pattern of motif tiles – three forms of two-tone, blue radial design – with a solid blue border were used above the waterline (Plate 59). A different blue patterned tile had been used following subsequent alterations; these plainer tiles were arranged in a grid-iron pattern on the base of the pool; they were used in repairs to the damaged areas of the pool walls and had been used to face the later steps, which had obscured the waterline-border around the edge of the pool.



Plate 58: Pool 226, Men's second-class, looking south-west

The walls and base of the second-class pool, ***226*** were finished more simply. In contrast to the ornate tiling in the adjacent pool, the walls were lined entirely in plain 6" (152mm) white earthenware tiles. This was also reflected in the use of black and white enamelled bricks, which were arranged on the base of the pool (Plate 58). Laid above an original flagstone surface, the bricks were bedded on a light greyish-blue cement. Produced by Gilmour & Co of Kilmarnock, Ayrshire, the frogged, fire-clay bricks bearing their maker's mark likely date to the period *c.*1880-90. The pattern on the base of pool *226* was perhaps more utilitarian. It consisted of three east / west blue stripes along the base of the pool, perhaps used to divide the pool into swimming lanes; two additional stripes running north / south were found at either end of the pool.



Plate 59: Example of the Minton Hollins and Co. tile used in the retiling of pool 225



Plate 60: The poolside of 225, showing the spit trough and floral tiles, looking east.

The fact that two different types of materials were found on the walls and base of the pool suggest two separate episodes of repair. This is also supported by the reconfiguration of access into the pools. The steps that were uncovered during the excavation were found to be contemporary with the relining pool floor.



Plate 61: Pool 225 showing the later steps and replacement tiles (2m scale)

Pool ***225*** retained four flights of steps, set into each corner of the pool. Noticeably, these steps were not integral to the pool's original construction. They were not keyed-in to the main structure of the pool and were built atop the retiled floor and up to the tiled face of the walls. From this we can infer they post-date both instances of retiling. The two sets of steps at the east end of the pool had a height of 2.08m. The individual treads had a height of 0.185m and a width of 0.42m. Like the rest of the pool, the main structure of the steps was constructed in brick and mainly faced with white tiles. Where the steps obscured the wall's tiled border, replacement tiles had been used to replicate the pattern on the inward face of the steps; these tiles matched those used on the floor, bearing a slightly different design and colour to the earlier two-tone examples (Plate 61). The individual treads were made of sandstone blocks. The steps at the west of the pool were of the same construction but stood to a lesser height of 1.32m.

Near identical steps were uncovered in the second-class pool ***226***, albeit lined with plain white tiles. These however only survived at the eastern end of the structure, having been truncated by modern remediation at the western end.

In both instances, these steps appear to have replaced an earlier open-treaded design shown on Worthington's plans from 1856 as well as an engraving from 1858 and as such were probably installed in the latter half of the 19th century, following the pools' relining.

Both pools *225* and *226* had identical drainage systems. The earliest remnant of this was an outlet for draining each pool, which had been built over by the *Phase 5-6* steps. In both cases however, these outlets were maintained, and extended underneath the steps. Cast-iron grates measuring 380 x 660mm were placed over the outlets at the lowest point of each pool, allowing the water to be emptied directly into an east / west conduit between the two pools.

Two collared cast-iron pipes (102mm internal diameter) were set into the lower portions of the wall to the west of the steps at the deep ends of both pools. These may be associated with the installation of a filtration system and appear to have been installed prior to 1902.

A range of fixtures and fittings survived within the first-class pool ***225*** alluding to its use and modernisation and improvement. These included a cylindrical, hollow, iron handrail fixed to the wall at the shallow end of the pool. The presence of four cupped iron supports would have held a rail at the opposing end, although this had since been removed. Brass fixings just above the waterline were recorded at the same level along the northern and southern walls and may have supported a similar rail, whilst a series of L-shaped brackets found only at the deep end of the first-class pool probably supported a wooden walkway.

A series of cast-iron spittoons arranged around the edges of the first-class pool *225*. Five of the original seven spittoons survived *in-situ*. These took the form of a half-bowl with a flat back fixed to the wall just above with the waterline. They had a length of 0.76m, a depth of 0.095m, and protruded 0.095m.

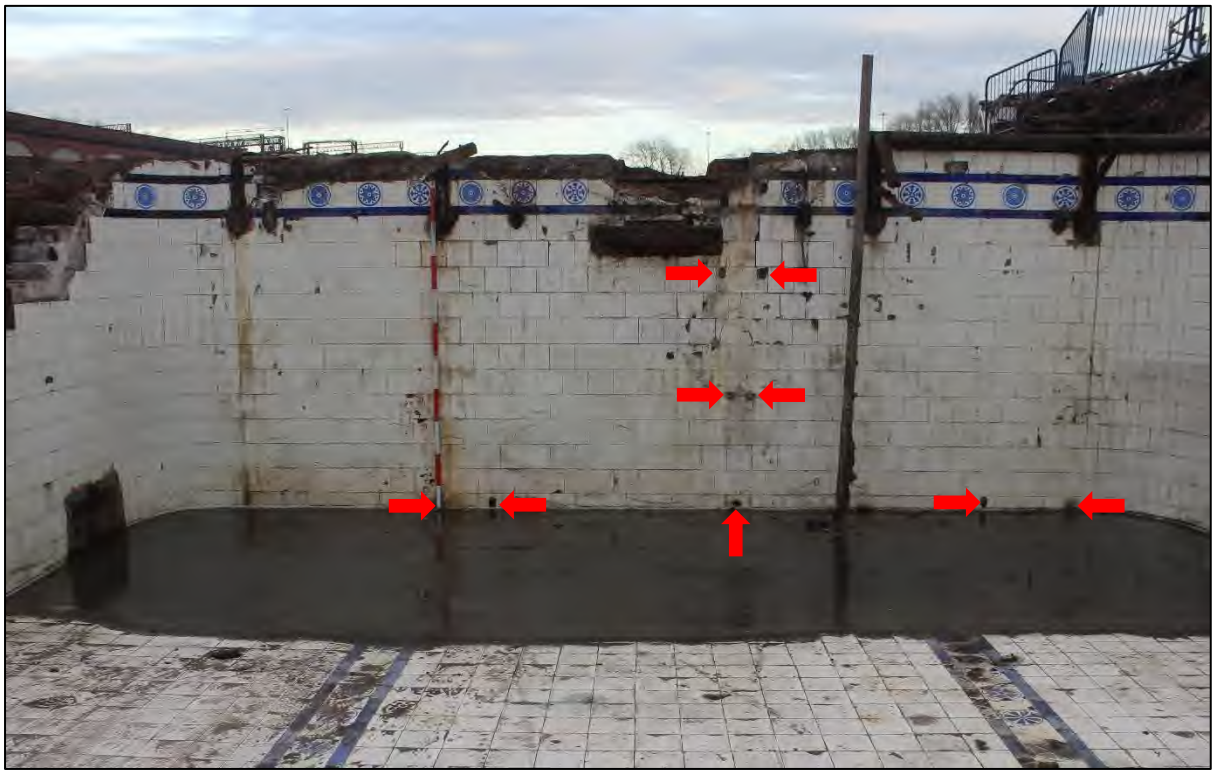


Plate 62: The eastern end of Pool 225 showing the position of the fixings for the steam injection pipe (removed) and L-shaped brackets visible above the waterline (2m scale)

Whilst the pipework for the pools' steam injection system had long since been removed, indications of the position of the pipe in pool ***225*** were visible on the eastern pool wall, which retained a series of brass fixings. An impression was left by the T-shaped pipework on the surface of the tiles, which were cracked and discoloured due to heat (Plate 62). In places the glaze of the tiles had been removed entirely and the underlying fabric had turned orange.



Plate 63: Phase 5-6 brick structure 228 to the east of pool 225 (0.50m scale)

A further element of this heating system was found in the upper fabric of the pool wall and to the rear in the form of a small brick-built channel or inlet ***228***, possibly housing part of the pipework (Plate 63). This structure was built using wire-cut bricks and bonded with a brittle black ash mortar, consistent with a late 19th or early 20th century construction date. The structure measured 0.57 x 0.45m.

5.4.4 Mayfield Baths Phase 7: 1908 -

Given the use of the baths up until their destruction in 1941, a considerable number of improvements were made, some in the Edwardian period leading up to 1914 and in the interwar years, particularly in the early 1930s. Accounting records from the first half of the 20th century provide the basis for this interpretation and some of the documented changes made after 1908 were borne out by the physical remains revealed during the excavation.



Plate 64: Cast iron collared pipe in pool 225 (0.50m scale)



Plate 65: Brass grate at the south-west corner of Pool 225 (0.50m scale)

Filtration plant

Company accounts for 1913-4 record that large sums of money – £401 1s 2d in 1913 and £827 5s in 1914 – were expended on filtration plant, suggesting it may have been installed or

improved at this time. Such a system would have relied on pumping water from the deep end of the pool, aerating it via a large spray before filtering through sand and gravel, reheating and returning to the pool at the shallow end. Based on the evidence provided by early photographs taken in 1902, the collared pipes set at the deep ends of both pools *225* and *226* were already in place (Plate 64).

An accompanying inlet for refilling the pool was revealed at the opposing southwest corner of pool *225*, adjacent to the steps. This consisted of a rectangular aperture covered by a brass grate, measuring 0.5 x 0.3m (Plate 65). Given the level of truncation to pool *226* no corresponding inlet had survived.



Plate 66: Anteroom to the boiler showing stone machine beds 216a (foreground) and 216b in the rear of the shot (1m and 2m scales) Inset: showing threaded bolt

Corroborative evidence for the installation of a mechanical filtration and aeration system was found in an early photograph of the plant room at Mayfield Baths, depicting a Royle's water-feed heater, or calorifier, that will have formed part of this system. The photograph is reputed to have been taken in 1902, which would make this a very early example; it seems more likely that the date attributed to the image is incorrect and that it dates from the 1910s or '20s. Although direct physical evidence for this plant was lacking, several stone beds *216* with an anteroom to the boiler house were found that might have supported such apparatus (Plates 66 and 67).

This anteroom was defined by an existing wall *207* to the south, chimney *209* to the west and the boiler beds to the north. It consisted of a large area of concrete floor, ***215***. This appears to represent the re-flooring of an existing room. The poured concrete surface was laid up to wall *207* in the south, flue *217* to the west, and boiler *221* to the north and had been built over by

the Wall *220*. It covered a maximum area of 9 x 2.3m. It consisted of a smooth, hard, mid-grey concrete with few visible inclusions.

Set within the concrete floor, *215*, were two machine beds, ***216a*** *and* ***216b*** (Plates 66 and 67). These machine-beds consisted of two hard, mid-grey sandstone slabs which were flush against wall *207*. The western of the two slabs *216b* measured 1.54 x 1.53m, 1.3m to the east, the eastern slab measured 1.53 x 1.39m. Both slabs contained up to twelve iron or steel fastening points, which were machine threaded.



Plate 67: Example of one of the 216 machine beds (2 x 1m scales)

Wall ***220*** was located at the east of the boiler-house and was notably built above the concrete floor, *215*. It was aligned northwest/southeast and abutted Wall *207* to the south and the southeast edge of the Boiler *221* to the north. It had a maximum length of 2.65m and a width of 0.25m. It was bonded with a hard, dark-grey mortar. It contained a central 0.95m-wide doorway, which afforded access to another room further eastwards.

Boiler House

Situated to the north and west of the plant room described above were the boilers *221* and *222,* and flue *217*, which were operational during the final stages of the buildings use.

Two boilers were located at the north-east of the site, ***221*** and ***222***. Both were filled by a mix of boiler-ash and demolition rubble. Boiler bed ***221*** was the southern of the two. It had a typical T-shaped plan comprising a southern plinth or wall to the south and brick floor, forming the base of the boiler setting and charging platform at the eastern end. The northern side of the structure was obscured by a later concrete footing. The boiler bed was aligned east / west. It had a total exposed length of 5.3m. All exposed areas of the structure were constructed of machine-made firebricks and bonded with a hard, dark-grey mortar. The southern wall of

Boiler ***221*** had a thickness of 1.21m and a height of 0.75m. The base of the boiler had an exposed width of 1.1m along its length and 1.7m at the widest point of the 'T', though it was truncated by the concrete foundation. The eastern end of the structure had been destroyed while the western limit consisted of a 0.45m-wide, north / south aligned firebrick wall, which was integrated with flue *217*.



Plate 68: Flue 217 looking south-east (2m scale)

The remains of the second boiler bed, ***222***, were located to the north of *221* and a large modern concrete footing. The remains were broadly similar to those of Boiler *221* and consisted of a partially exposed brick floor and a large brick-built plinth or wall, constructed primarily in firebrick and bonded with a hard, dark-grey mortar. The wall was located adjacent to the concrete intrusion, was aligned east / west, and measured 3.25 x 0.8m. It stood to a height of 0.75m. The brick floor measured 3 x 0.9m and was located on the northern side of the wall. The east of the structure had been truncated while the west of the feature was the firebrick wall of the flue, *217*.



Plate 69: View of the boilers 221 and 222 and flue 217 looking west (2m scale)

The flue ***217*** was constructed of machine-made bricks and firebricks and ran from north to south along the rear of the boilers, doglegging to the southwest where it entered chimney, *219* (Plate 68). The fabric of the flue was consistent with the adjacent boilers and probably represents a rebuilding of an existing flue occupying the same position. It had an internal width of 0.77m while the walls of the flue had a thickness of 0.35m. It had a total length of 4.2m to the large east / west aligned concrete intrusion which truncated it. A further small section of the flue *217* was found to the north of the concrete intrusion, adjacent to Boiler *222*. This section had an internal width of 0.78m and a maximum exposed length of 1.5m. The flue *217* was likely fed by smaller east / west aligned flues which would have been located on the large walls of the boiler-beds. The flue was constructed on a crude foundation of hard, dark-grey concrete, which had been poured up to the remains of flue *218* and chimney *209*.

The renovation of the boilers can be related to expenses recorded in the company accounts, namely in 1923 and 1931-2. In the process of installing the new system the network of flues

became redundant. This was manifested archaeologically with the blocking of flue *218*. The entrance of the flue at its junction with wall *204* and its surviving western end were both blocked. The materials used comprised a mixture of handmade and machine-made bricks bonded with a hard-black ash mortar, consistent with an early 20th century date. The western end of the blocked flue was in turn partially covered over by the concrete foundation of flue *218*.

5.5 Excavation Area 3 Results: Mayfield Dyeworks (Oliver Cook)

5.5.1 Excavation Area 3 Results: Mayfield Dye Works

Excavation Area 3 expanded upon the results of the earlier evaluation Trenches 3, 4, and 5. In addition to those expanded trenches, three further trenches, 2, 6, and 7, had also uncovered remains which were associated with the dye works, though these did not fall into the main area of excavation. Area 3 uncovered significant remains of the Mayfield dye works / printworks, which occupied the site from the late-18th to the late-19th centuries. It uncovered well-preserved remains related to boilers, walls, floors, engine beds and underfloor drainage. The excavation covered a total area of 1450m^2. Area 3 was covered by a series of conjoining concrete slabs forming the floors of the early 20th century Indian Rubber Works and later warehouses. 20th century foundations were encountered across the site, the most substantial of which consisted of concrete wall foundations, stanchions and machine beds, all ascribed to *Phase 7*.

The dyeworks remained in use for a considerable period of time and underwent significant phases of expansion through the course of the 19th-century; these developments have been placed within five archaeological phases which date from the late 1770s to *c.* 1900. The structural remains were phased according to wall fabric (materials, brick types and sizes and mortar) and structural and stratigraphic relationships. This was supported by study and comparison with the historical and cartographic record. The extensive map regression available particular helped to establish the intricate phasing of the site; for example, *Phase 3* remains were more accurately dated 1831-50 as they were first surveyed for the 1850 Town Plan map and not on any earlier maps, such as Banck's map of 1831. Additionally, all of the remains uncovered in Area 3 were associated with one of three historically and cartographically attested buildings. These structures were all considered multi-phase though all three had elements which dated back to *Phase 1*, Late 18th Century. These structures are referred to as Building A, located in the north-western corner of Area 3; Building B, located in the western and southwestern portion of the excavation; and Building C, which was located across the central and eastern half of the Area 3.

The following narrative is sub-divided between Buildings A – C with separate summaries provided for the development of the Boiler House (contained within Building C) and external drain network situated between Buildings B and C.



Plate 70: South-east corner of Building A, showing the external drain 3007 running alongside wall 3002 (2m scale)

5.5.2 Building A (Figure 10)

The earliest remains of the dyeworks were dated to the late 18th-century and likely the from late-1770s to the early-1780s as the works were historically recorded as starting production in 1782. Though considerable expansion took place through the 19th century a large quantity of remains, particularly brick walls, likely dated to the earliest phase of construction. This included most of those structural remains associated with Building A.

5.5.2.1 Building A: Phase 1: c.1782 - 1800

The footprint of Building A in Area 3 was delineated by walls *3001*, *3002*, *3005*, *3006*, *3053*.

The eastern limit of the building was represented by wall ***3001***. ***3001*** was aligned north-north-west / south-south-east. It ran for a distance of 4.40m across the excavation area, continuing beyond the northern limit of excavation. The wall measured 0.35m wide and was the same construction as wall *3002*, which it was keyed into. It utilised handmade bricks (brick dimensions: 215 x 105 x 60mm), bonded with a hard, yellowish/greyish-white lime-based mortar. Wall *3001* was abutted by two brick structures, a series of internal divisions represented by walls *3003*, *3004* and *3008*, and a rectilinear structure *3009*. Wall *3001* returned to the west-south-west and was designated context *3002*.



Plate 71: General view across the excavated portions of Buildings A and B, looking south

Wall ***3002*** was aligned east-north-east / west-south-west (Plate 70). The brick wall, measured 0.35m in width and had a total length of 6.12m. It was constructed with handmade brick (brick dimensions: 215 x 105 x 60mm) bonded with a hard, yellowish/greyish white lime-based mortar with moderate charcoal flecks. Wall *3002* was keyed-into wall *3001*. It was abutted by a rectilinear brick structure, *3009*, probably dating from Phase 5. It was truncated by a later drain, which had been punched through the western extent of the wall, close to the junction with *3006*. The drain for the most part respected the alignment of the wall, running alongside the exterior of Building A.

Wall *3002* continued further to the west as wall *3005*, sharing the same alignment and construction. Wall ***3005*** was constructed and bonded the same way as Wall *3002*, into which it was keyed-in. It was on the same alignment and had a width of 0.35m and an exposed length of 2.75m. A wall stub at its south-western end indicated that it likely returned towards the northwest at that point, though no remains were uncovered.

Wall ***3006*** was somewhat keyed-in to Wall *3002*/*3005* and likely formed the 18th western limit of Building A. It was aligned northwest-southeast parallel to Wall *3001*. It had a length of 3.2m, a width of 0.35m, and a height of 1.75m.

5.5.2.2 Building A: Phase 2: 1800-31

Three brick walls, *3003, 3004,* and *3008* abutted the Phase 1 brick wall *3001* on its internal western side. Though the three walls were bonded with a similar mortar there was some indication that they there were not an original part of Building A. Wall ***3008*** was aligned

northwest / southeast adjacent to Wall *3001*, which it abutted. It had a width of 0.35m and an exposed length of 2.5m as it continued beyond the limit of excavation towards the north. The two brick walls ***3003*** and ***3004*** were aligned broadly northeast-southwest and were keyed-in to Wall ***308.*** The single-course brick wall ***3004*** had a width of 0.11m and a length of 3.95m. Wall ***3003*** had a width of 0.22m and a length of 3.6m. Both were likely truncated at the western end.

5.5.2.3 Building A: Phase 3: 1831-49

Several brick walls were found at the west of Building A which formed a cellar surveyed for the 1851 Map. The relationship between the walls was somewhat ambiguous though the cartographic evidence was clear.

Wall ***3053*** extended westward from Wall ***3006*** for a length of 1.94 m. It had a width of 0.42m and a height of 1.70m. With walls *3006* and *3005*, it enclosed a small, cellared area (Plate 72) which was covered by the brick floor *3054.* The brick floor, ***3054***, abutted the surrounding walls and covered a maximum area of 3.30 x 1.82m, extending westwards beyond the limit of excavation. It was found at a depth of 1.75m from the height of Wall *3006* and abutted the foundation step of that wall.

5.5.2.4 Building A: Phase 5: 1872 -1891

Three structures associated with Building A were assigned to Phase 5: *3192*, *3009* and *3007*.

A fragment of curved wall ***3192*** survived adjacent to drain *3007.* This corresponds closely to the corner of Building A as it was depicted on the Ordnance Survey 1891 Town Plan. This measured 0.34m in width and 1.25m in length. The fabric of the wall was consistent with structures *3007* and *3009*, described below, which appear to be contemporary additions.

Structure ***3007*** was a drain feature which ran alongside wall. The western end was aligned northwest-southeast adjacent to Wall ***3006***. It cut through Wall ***3002*** and continued to the east and beyond the limit of excavation towards the north. The total length of the drain was 14m. It had a width of 0.48m and an internal depth of 0.18m. It was somewhat crudely constructed of two single-course brick walls contained a slate-base. Occasional rough flagstone coverings were also present along with occasional reused firebricks. It was bonded with a light-grey ashy mortar.

Structure ***3009*** was a brick chamber which abutted the southeast internal corner of Building A, walls *3002* and *3001*. It measured 1.2 x 0.55m. The brick walls measured 0.35m and included some firebricks and a slate damp-proofing layer. The internal depth of the chamber was in excess of 0.90m; it was not fully excavated. It was bonded with an ashy purplish-grey mortar.



Plate 72: View of Building A, looking east (2 x 2m scales)

5.5.3 Building B (Figure 11)

Building B was located at the south-west of Area 3. Most of the structural remains were constructed during the late 18th century, although the building appears to have remained in use until the early twentieth century. The 18th-century remains mostly consisted of brick walls, together with associated floors, forming part of a long L-shaped building, which was built along the same axis as Building A. An early representation of the building can be found on William Green's map surveyed 1787-94. This building was expanded during the early, mid and late 19th century, during which time various extensions were added; these were primarily made to the north- and east of the existing block but also included additions at the south-eastern end of the building. This ultimately resulted in the rectangular building plan, as it is shown on the 1872 Insurance Plan and 1891 Ordnance Survey map. Roughly one third of Building B was revealed during the excavation. This excavated portion of the building was delineated by the outer walls *3026, 3027, 3032,* and *3011*, and contained at least five rooms, which span the first four phases of the site's development (*Phases 1 – 4)*.



Plate 73: Walls 3011 and 3057 forming the northern wall of Building B. Note the yellowish-brown mortar and handmade brick forming the original one-and-a-half brick wall. Looking north-east (2 x 2m scales)

5.5.3.1 Building B: Phase 1: 1782 - 1800

The earliest parts of the building were revealed along the western and southern edges of the excavation, defined by a series of handmade brick walls and surfaces. All the 18th-century structures were built in handmade brick and bonded with greyish-yellow lime-based mortar.

Walls ***3011*** and ***3057*** were aligned north-east/south-west and together formed the northern side of Building B. The walls had a width of 0.35m and a combined length of 6.75m. Wall *3011* continued beyond the limit of excavation to the west. A stone threshold placed within the centre of the exposed wall measured 0.32 x 1.42m; this consisted of single large flagstone set into the brick wall. The wall was braced by a second brick wall *3010* built immediately north-west of the structure; this appears to have been added during *Phase 3*, when a covered walkway was erected between buildings A and B. During this work a second larger threshold was inserted in the new wall, presumably indicating the doorway was also moved at this time.



Plate 74: The northern room of Building B (2 x 2m scale)

At its eastern end, Wall *3011* was keyed-in to Wall ***3020****,* a north-west/southeast aligned brick wall, which formed the easternmost limit of Building B during *Phase 1*. It had a width of 0.36m and a maximum length of 7.40m. It was keyed-in to the brick walls *3058* and *3022*. It was noteworthy that the northernmost end of the wall extended slightly further than the outer face of *3011*, as if creating a pronounced buttress on the corner of the building. The fragmentary remains of stone threshold were visible within the room, which during the early use of the building would have led to an external space to the east of the building. In the later phases of use, the doorway would have afforded access to an adjacent room.

Wall ***3022*** was aligned southeast / northwest and represents a continuation of wall *3020*, beyond where it was keyed into *3058*. Wall *3022* had a width of 0.36m and a length of 5.24m. Set within the wall were two thresholds, both providing access to the eastern part of the building (*Phases 3 and 4)*, which during Phase 1 would have formed an open yard or workspace. Both were constructed in flagstone and had a width of 0.90m. The northernmost threshold set in wall *3022* was abutted by a later brick structure *3028*, suggesting it may have fell out of use during the later uses of the building.

A break corresponding to a doorway shown on the 1872 Insurance Plan was found at the southern end of wall *3022*. 0.92m to the southeast, the wall continued for a further 2.55m. This section of wall was designated context ***3023***. This almost certainly would have formed part of the original outer wall. A noticeable phase-break was visible at its southern end, where a 0.75m long section of wall *3105* had been added separately, perhaps as a blocking for a doorway or aperture. Moreover, the wall fabric of *3105* was visibly different from a *Phase 3* wall, *3025*, which it appeared to post-date. It was also clear that the it abutted the Phase 1 wall *3024*. *3105* discussed below has been assigned to *Phase 4*.

Wall ***3024*** was aligned northeast / southwest and formed part of the outer walls of the original *Phase 1* Building B (Plate 75). It had a width of 0.23m and a length of 4.65m. It was keyed-in to Wall *3026* and may have formed part of wall *3040*, though this relationship had been disturbed through later insertions. As stated above, wall ***3024*** was abutted on its northern side by a later wall *3025*. Present in the south-eastern face of the wall were two rectangular apertures.

Wall *3024* returned to the southeast as wall ***3026.*** It was laid north-west/southeast and formed part of the eastern limit of Building B. It had a width of 0.36m, an exposed length of 3.66m and continued beyond the limit of excavation to the south. A lead water pipe had been inserted through the wall to the north of another probable entranceway. The stone threshold adjacent to the pipe was highly fragmented and had a light grey mortar adhered to its surface, which suggested it fell out of use and was blocked during the later uses of the building. The threshold was 0.93m wide.



Plate 75: Wall 3024 looking north-east (2m scale); inset showing rectangular aperture (0.50m scale)

A number of internal elements to Building B were also ascribed to *Phase 1*, including internal walls and floor surfaces constructed in handmade brick. As many as five rooms were present within the original building.

At the northern end of Building B were two small rooms immediately in front of and to the west of the northern entrance. The vestibule or lobby found immediately south of the northern entranceway was originally modest in size, measuring 1.14m in width and 1.22m in length. The south-western wall *3013* was 0.41m wide and evidently load-bearing, probably owing to the fact it supported a stairwell to the west. From the surviving flooring *3016,* the position of the eastern wall could be inferred, however this appears to have been remodelled and moved

during subsequent phases of the building, creating a wider lobby area. Only the north-eastern return had survived and been incorporated into a later wall *3014* associated with the widening.

From cartographic evidence it was clear that the room to the west of the lobby housed a stairwell, which would have provided access to the upper floors of the building. This was delineated by two internal walls ***3012*** and ***3013***, both constructed in a similar fabric. *3013* was substantially larger and compared to *3012*, which measured 0.22m in width. Inserted into the south-western face of wall *3013* slightly above floor level was a cast iron plate with rounded corners and an internal recess. This may have formed part of the structural ironwork within the stair tower. Internally, this area this area was floored with handmade brick ***3015***, exposed over an area 2.50 x 1.00m. There was a noticeable drop in floor level between this anteroom and the lobby to the east, indicating the floor beneath the stairwell was slightly sunken. It should be noted that *3013* and *3014* were keyed-in to Wall *3011* and *3057*, respectively.

The most extensive area of flooring to have survived was ***3017***, which was found within a large rectangular room to the north of walls *3019, 3058* found to the south of the stairwell and lobby. The most intact area was found in the south of the room. Set within the floor were two rectangular stone column bases. These were formed of squared pieces of sandstone measuring 0.47 x 0.47m and 0.41 x 0.44m. A centrally placed recess of 0.24 x 0.24m in each retained traces of the upright columns. These were spaced 1.31m apart. The northern extent of the floor surface had been subject to repair during alterations to a sub-floor drain *3018*.

A large brick walled drain, ***3018***, was aligned east/west and ran beneath the floor of Building B. It seems unlikely this would have been undertaken after the construction of the building and probably dates back to *Phase 1*. It had a width of 0.86m, a depth of 0.65m and a length of 6.5m. A later cylindrical stoneware pipe had been placed within the structure sometime in the 19th or 20th-century, accounting for the repairs made to floor *3017*.

Virtually nothing survived of the internal surfaces to the south of wall *3019/3058*, which had been truncated by a modern concrete structure. A small area of brick and flag flooring ***3028*** was recorded immediately south of wall *3019*, covering 1.46 x 1.12m. To the east were two later brick structures *3056/3055* abutting the south-eastern face of wall *3058*.

3019/3058 together formed a north-east / south-west aligned division, through which was a stone threshold. The walls were constructed in handmade brick, set in a similar mortar to *3020*.

Other internal divisions were found in the south-west corner of the excavation, represented by walls *3040, 3041* and *3042*. Only ***3041*** formed part of the original build and represents a continuation of the wall line *3024*. The wall returned to the south-east and was visible in plan for 1.60m and. Immediately north of *3041* was *3040*. This ran parallel with the north-east/south-west face of wall *3041* and was probably added during Phases 2 or 3. Remnants of a threshold were evident within wall *3041/3040*, part of which had been covered by a relatively late wall insertion *3059*, obstructing part of the doorway. This insertion was constructed in wire-drawn, handmade brick and black ash mortar, implying further modifications were made to the arrangement of the building during its later phases of use.

5.5.3.2 Building B Phase 2: 1800-31

As stated above, some further additions were made to Building B throughout the 19th-century. Most of these were allocated to *Phase 2* based upon the building materials and the historic mapping. These included slight alterations to the internal layout of the 18th-century building,

as evidenced by an internal partition wall, *3040*. However, the most notable change to take place during this period was the erection of a north-west/southeast aligned block built along the north-eastern side of the building. The extension measured approximately 12.30 x 4.10m. This did not continue as far north as the end of the *Phase 1* building, stopping 3.51m short of wall *3057*. From the physical evidence and representation on the mapping, the *Phase 2* extension comprised at least two rooms. The internal divisions between the longer, rectangular northern room and smaller, square room to the south are clearly shown on the 1st edition 6" to 1-mile Ordnance survey map from 1851 (Figure 13) and 1872 Insurance Plan (Plate 20). This extension is nonetheless represented on Bancks and Co's map of 1831 (Figure 12) and was therefore constructed at some stage in the early 19th-century.



Plate 76: Detail of brick pier in wall 3027 (0.50m scale)

The *Phase 2* rooms were created by the addition of three brick walls, *3025,* 3027 and 3028, which were tacked onto the existing structure. Internally, the usable floor space was limited to a narrow corridor of flooring, measuring 2.50m in width, hemmed in on either side by two north-west/south-east aligned drains, which presumably stretched for the length of the building. *3037* and *3038*. Stone flag flooring survived together with remnants of the sub-floor drains in the northernmost room, whilst to the south the only surviving structure was a drain positioned against wall *3025*.

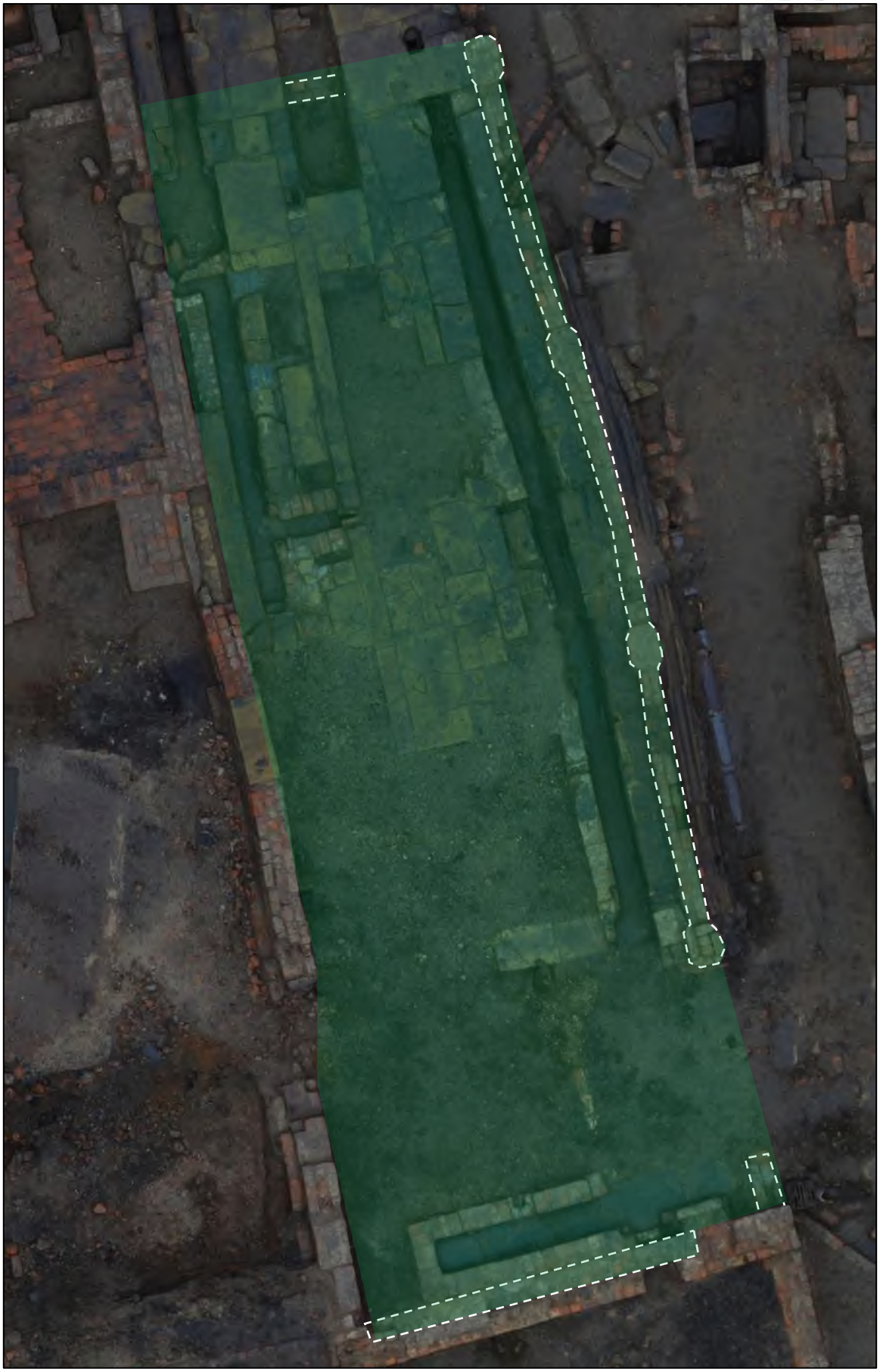


Plate 77: The early 19th-century (Phase 2) extension, formed by walls 3025, 3027 and 3028

Wall ***3027*** was located at the east of Building B and was aligned north-west/southeast. It formed the eastern limit of the extension to Building B. It had a width of 0.21m and a length of 9.69m. The construction of the wall differed from the original walling techniques; it was narrower and incorporated a series of four brick piers constructed with rounded corners in bullnosed bricks (Plate 76); these measured 0.46 x 0.37m and were spaced 2.55-2.60m apart. The wall had suffered from subsidence, resulting in the movement and bowing-out of a large section of masonry. The southern end of the wall was removed almost in its entirety, perhaps as a result of later intrusive activity. A remnant of wall *3027* was found to abut wall *3026.*

The southern wall of the extension consisted of an additional wall ***3025*** built directly against the north-western face of *3024*. A phase break was visible running laterally between the two structures was observed. Wall *3025* also abutted the return of wall *3026*.

The materials used in wall *3027* were virtually indistinguishable from the *Phase 1* structures, excepting the use of bullnose bricks, which are more common in 19th-century structures. The recorded brick dimensions for the main body of wall *3027* (230 x 110 x 65mm) are however consistent with an early 19th-century date. The bonding material used in the walls was yellowish-white lime-based mortar, similar to that found in the earlier elements of the building.

Located between the brick walls ***3020*** and ***3027*** were a series of drains and floors.



Plate 78: View of drain 3038 constructed alongside wall 3027 looking south-west (1m scale)



Plate 79: Detail of the drain interior, rebated stone coping and collapsed cast-iron grate

The best-preserved example was drain ***3038***, which was aligned north-west/southeast along the western side of wall *3027* (Plate 78). This was constructed in brick with a slate base and stone coping. It had a width of 0.45m with an internal width of 0.22m. It had a length of 9.10m but was truncated at its southern end, suggesting it may have continued further to the south. The drain had been extended northwards during the second half of the 19th-century (Phase 4). The side walls of the drain were bonded with a yellow-coloured lime-based mortar and had been capped in large fragments of sandstone coping, which sat flush with the adjacent flooring slightly overhanging the interior of the drain. The copingstones were rebated to hold a cast iron grate; fragments of the grate had collapsed into the base of the drain (Plate 79). Upright fittings were also set into the copingstones in regular groupings. Noticeable groups of four (two pairs of opposing bolts) were suggestive of the position of installations, perhaps dyeing stations. The interior of the drain was stained heavily with traces of vivid purple and blue (cobalt) dye, which may represent run-off from the dye making or printing processes.

To the west of the drain structure *3027* was a partially surviving flagstone floor, ***3033***. This covered a maximum area of 6.63 x 1.95m. The flags used came in an assortment of shapes and sizes. Intact examples ranged in length from 880 to 1100mm and in width from 220 to 670mm, varying in thickness from 40 to 60mm. A single flag survived at the southern end of the room adjacent to the end of drain *3038*, suggesting the entirety of the northern room was once floored in this material. The surface in north-eastern corner of the room was stained with traces of a greenish-blue dye; this area was adjacent to a concentration of upright iron fittings alongside drain *3038*, lending weight to there being a dye-related installation positioned here.

A similar drain to *3038*, was found on the opposite side of the building: ***3037***. This was located to the west of surface *3033* and ran alongside wall *3020*. This drain shared the same alignment as *3038*. It had a maximum width of 0.65m, internal width of 0.30m and a total length of 4.08m.

It was constructed in brick was a slate-lined base. Fragments of the same rebated copingstones survived *in-situ* but only one upright fitting was visible. This suggests it fulfilled a similar function to *3038* but perhaps had fewer installations stationed above it. Both drains appear to have been in use at the same time and were interconnected by a brick-built channel on the north-east side of *3037*, leading into a ceramic pipe buried beneath the central floor, and exiting into drain *3038*. Where parts of the coping had been removed on the eastern side of drain *3037,* these had been patched with pieces of slate.

Less obvious alterations were made within the main building. This may have included the erection of ***3040***, perhaps as a supporting internal wall to the north of *3041*. This structure featured a wide stone threshold. Wall *3040* measured 0.72m in length and 0.22m in width. There was a lateral phase break between it and the pre-existing wall *3041*.



Plate 80: Sub-aerial view of slate-lined drain 3039 with part of drain 3052 visible to the east, looking north

5.5.3.4 Building B: Phase 3: 1831-49

Based upon the building materials and the historic map regression, a few structures associated with Building B have been ascribed to *Phase 3*. These include a further drain, ***3039***, which was aligned north-east / south-west and abutted the northern face of wall *3025* (Plates 80 and 81). It was constructed in brick with a slate-covered base, similar in construction to drains *3037* and *3038*. It had a width of 0.82m, an internal width of 0.34m, and a length of 2.80m. It was bonded with a mid-grey lime-based mortar, which although similar in colour to wall *3025* contained far less lime content. The mortar used probably contained a mixture of ash and lime, a technique which is indicative of mid-19th century construction and began to be adopted in the 1840s (Nevell, 2017, 6). The interior of the drain was stained blue with dye.

Drain ***3052*** was located at the southeast of Building B and was probably contemporary with *3039*. It was aligned north-west / south-east and constructed in brick and slate. It measured 0.45m in width, with an internal width of 0.20m and was 4.50m long. The drain inlet at the north-western end was covered by a cast iron grid; it was also fed by a later ceramic stoneware

pipe, which had been punched through the side wall of the drain. Remnants of stone capping survived *in-situ* at the exposed south-eastern end of the structure. The walls of the drain abutted wall 3026 and continued beyond the limit of excavation towards the southeast. It was noteworthy that this structure post-dated a brick vaulted culvert *3079* (discussed below), visibly truncating the puddling clay seal and brickwork of the earlier culvert.

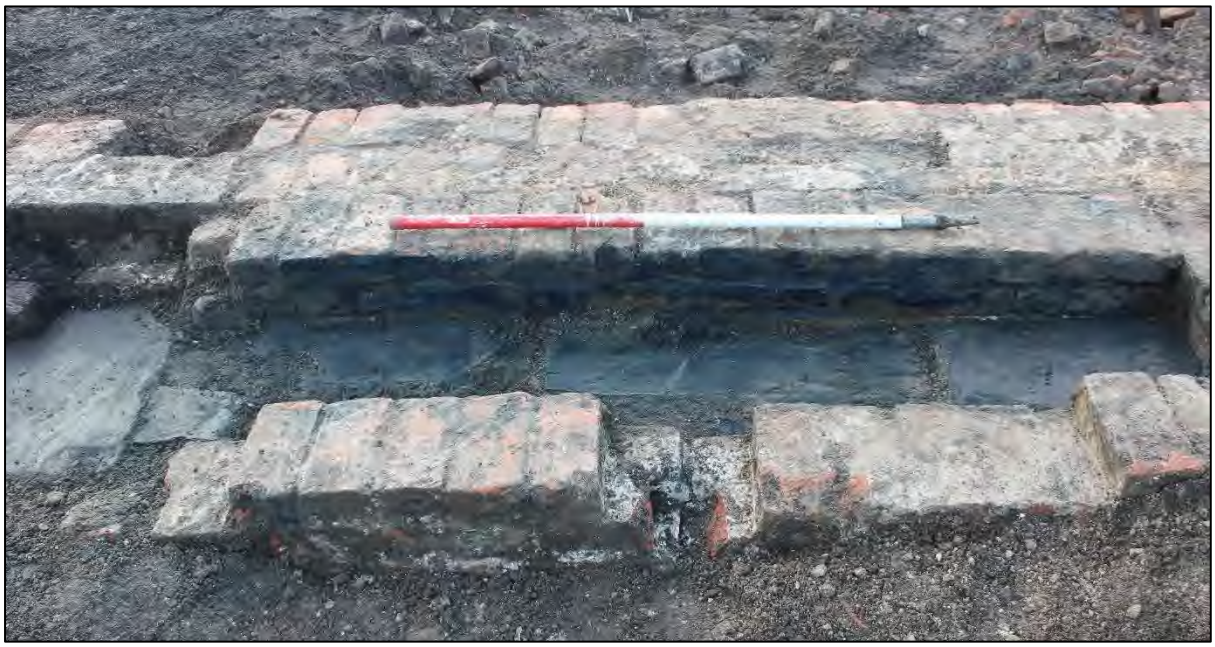


Plate 81: Slate-lined drain 3039 (1m scale)

Other internal changes were made during this period. Two rectangular brick pads ***3055/3056*** abutting the southern face of wall *3058* and were located within the original part of Building B. Both were constructed in a similar fabric to *3039* utilising an ash-mortar. It was also clear that these were added after a threshold in wall *3022* had fallen out of use. The easternmost brick-pad *3056* measured 0.93 x 0.60m, whilst *3055* to the west measured 0.91 x 0.65m (Plate 82). The function of the structures is unclear.

As stated above, the northern wall of the 18th-century block was widened during this phase of the building's use. The newly added wall ***3010*** was 0.22m wide and was exposed in plan for a total of 6.26m. A new threshold was also added during this time; this was 1.42m long and 0.32m wide (Plate 83). It seems likely these changes were made when a covered walkway was erected between Buildings A and B. This structure is first depicted on the Ordnance Survey 6": 1-mile map, Manchester, surveyed in 1848 and published in 1851 (Figure 16), implying it was added sometime in the 1830s or '40s.

Modifications were made at the southern end of Building B during this period, mostly involving an large extension with rounded corners. Most of this area had been truncated by 20th century activity and was not subject to excavation. Remnants of a surviving floor surface at the southern end of the excavation, were however attributed to a small north-easterly extension added here during the early to mid-19th century. This surface was formed of sandstone flags, which had been laid up to the north-eastern face of wall *3026.*



Plate 82: The Phase 3 Brick Pad 3056 abutting walls 3058 and 3022, obstructing an earlier threshold, to the rear (0.50m scale)



Plate 83: Wall 3010 featuring a later threshold with rectangular sockets for the door jambs. The earlier wall and threshold are visible to the rear. Both exhibit traces of significant wear. (1m scale)

5.5.3.5 Building B Phase 4: 1849-72

Fewer structural remains within Building B were assigned to *Phase 4*, 1850-72. Those that belong to this phase of development were mainly limited to the north-east corner of the building, where an extension was added, sometime after 1849. This completed element of the building was first recorded on the Insurance Plan of 1872. From the physical remains and cartographic evidence, it would seem this essentially formed an extension of the *Phase 2* build, with no internal divisions separating it from the early 19th-century room to the south. The sub-floor drainage system was also expanded during this period.

Fragmentary remains of the north-west and north-east exterior walls were uncovered. The outer walls of the extension did not feature the brick-built piers used in *3027* and were more simply constructed. The wall fabric was visibly different from the *Phase 1* and *Phase 2* remains and had clearly been added later. Moreover, the phase breaks between the structures were readily apparent. One element that was missing from the excavation and had been truncated was the chamfered corner wall depicted on the 1872 Insurance Plan.

Wall ***3032*** functioned as the north-western wall of the building and was aligned north-east/south-west. This abutted the *Phase 1* wall, 3020. It was bonded with a mid-grey ash-and lime-based mortar, had a width of 0.36m and a length of 1.27m. The south-eastern end of the wall was truncated.



Plate 84: The fittings and drains set into the flags capping the extension of drain 3038 (0.50m scale)

Of broadly comparable construction was wall ***3031***, which formed the south-eastern wall of the extension. This was more intact than the north-eastern wall and had survived to a

maximum length of 2.87m and was 0.22m wide. This abutted the northernmost brick pier of wall *3027*. The north-western end of the wall and the corner of the building were truncated.

The north-west/south-east aligned drain *3038* was extended during this period. The extension continued a further 3.60m to the truncated corner of the building. It was of broadly similar dimensions to the original structure, measuring 0.28m in width, internally. The same rebated stone coping had been used or reused to cap the side walls of the drain. Much of the drain was however covered by three large stone slabs ***3035***, evidently fulfilling a similar role. These measured up to 1.30 x 0.80m and featured a similar arrangement of upright iron fixings, this time inserted into square recessed sockets in the surface of the slabs (Plate 84). Two cast iron grates were set into cut-outs within the northern- and southernmost slabs, allowing for the run-off of liquid into drain below (Plate 84); these measured 0.31 x 0.36 and 0.18 x 0.28m. The construction of the drain slightly differed from the original section to the south-west, most notably by the use of brick rather than slate as a lining. The mortar utilised within the walls of the drain was a grey-coloured ash mortar, similar in composition to the outer walls of the extension; a number of firebricks had been incorporated into the side walls of the drain.

On the opposite side of the building, a separate drain ***3036*** was constructed to the north *3037*. This ran north-west/south-east alongside wall *3020* and feature returned running north-east/south-west at the north-western end of the building. This was constructed primarily in handmade brick, incorporating occasional fragments of reused firebrick and was bonded with a grey ash mortar. The construction of the drain suggests it was contemporary with the north-western extension to *3038*. The north-west/south-east arm of drain *3036* measured 3.71m in length and had an internal width of 0.25m, whilst the north-east/south-west return was 2.04m long. In places the side walls were capped with the same rebated sandstone coping stones as used in drain *3037* to the south. The north-east side wall was however simply covered by overhanging stone flags, forming floor *3034*, which had been chiselled to create the same rebate. Two upright iron fixings were set within the copingstones on the south-west side of the drain.

The contiguous floor surface ***3034*** covered an area of 1.94 x 0.93 metres and was formed of sandstone flags. It was noteworthy that both this surface and the flags capping drain *3038* were laid over the denuded remains of the *Phase 2* wall *3028*, which had been reduced and buried below floor-level during the extension of the building.

5.5.3.6 Building B Phase 5-6: 1872-1908

Alterations were made internally within the core of Building B during the latter half of *Phase 4*. One alteration that was borne out by the physical remains was the partial blocking of a threshold ***3059*** between walls *3040 and 3023.* The inserted wall measured 1.42 x 0.49m. As stated above, the materials – wire-drawn bricks bonded with black-ash mortar – used in the blocking are characteristic of late 19th-century construction. The threshold is not depicted at all on the Insurance Plan of 1872, suggesting that this doorway within the building was sealed prior to this date.



Plate 85: Vaulted culvert 3079 truncated by drain 3052

External Features

A number of external drainage features were revealed between Buildings A, B and C. These appear to have channelled rainwater and liquid residues from the dyeing making and application processes. These were hard to phase but can be broadly dated to the mid to late nineteenth century, falling within Phases 3 – 5.

3049 consisted of an L-shaped drain running north / south between Building's A and C, returning south-east into Building C through wall *3103 / 3077.* It measured 4.78m north / south and 2.07m east / west and was 0.50m wide. It was fed by a smaller drain exiting the north-western exposed corner of Building C. The drain was constructed with handmade brick forming the base and side walls and was capped with flagstones.

Drain ***3044*** was encountered both within the footprint of Building C and between building Buildings C and B. For much of its visible course it runs alongside Building B and appears to run in the direction of drain 3052 at its southern end. Close with its junction with *3046*, it curves to the east and enters the *Phase 3* footprint of Building C. The drain had been built over by *3101* and *3094* and also appears to pre-date structure *3087*. As the capping stones covering *3044* are intact, it appears *3044* remained in use after *3087* was built.

Drains ***3045*** was a short section of exposed brick drain connecting drains *3038* and *3046.* This had a maximum footprint of 1.20 x 0.32m.

Drain ***3047*** led directly from Building B, feeding into drain *3048*. This short section of drain was constructed in brick and capped with sandstone flags. It measured 1.36 x 0.60m.

Drain ***3046*** was situated between Buildings B and C and was parallel with wall *3031.* It was associated with drain *3044, 3045* and *3047*. It was of broadly similar construction as *3046,* being capped with sandstone flags.

Drain ***3050*** was exposed to the west of Building C and to the south of drain *3049.* The top of the exposed structure was capped with sandstone flags. Two integral rectilinear brick structures were built in handmade brick and firebrick bonded with a grey ash mortar, consistent Phases 4 / 5. The structure is likely to span multiple phases.

An L-shaped wall ***3051*** had been constructed between the outer face of drain *3048* and drain *3051*. This measured 0.94 x 0.48m and was 0.35m wide.

5.5.4 Building C (Figure 12)

Building C was the largest of the three buildings, which were uncovered in Area 3. Additionally, it was the most complete of the three buildings and demonstrated the clearest phasing. Structural elements within the building represented all seven phases of historical development, spanning the late 18th to mid-20th century. Historic mapping indicated that some of the exposed portion of Building C dated to Phase 1, the late 18th Century, as illustrated by a representation of the dye works on Green's Map of 1794 (Figure 14). However, most of the 18th Century built remains lay beyond the northern limit of excavation. The layout of the site remained unchanged on early 19th century plans of the site, such as those produced in 1800, 1801 and 1819. The original configuration was maintained until *c.* 1819-1824 when it underwent a phase of expansion that saw several detached buildings, extended, and brought together into a single complex. It was probably during this episode of building that a purpose-built boiler house was added to the eastern end of Building C.



Plate 86: Phase 1 elements of Building C

The clearest representation of the expanded works can be found on Bancks and Co's map of 1831, which illustrates the additions to the building, which were ascribed to *Phase 2 (1800-31)*. Further expansion was carried out in the early to mid-19th century, *Phase 3 (1831-1849)*.

This period of building saw the southern half of the complex constructed, including four boiler beds housed in a southerly extension to the original boiler house. An obvious external addition, partially exposed within the eastern half of Area 3, was the economising house. This adjunct to the boiler house and chimney was assigned to *Phase 4* and was clearly depicted on an insurance plan of 1872. Much harder to date are the internal modifications to the sub-floor drainage and installations within the footprint of the building. Such modifications were probably enacted as the complex was expanded and as the new machinery and techniques were brought in. Where remains cannot be closely dated, they have been broadly ascribed to one of several phases. Nearing the end of the 19th century, much of the available land surrounding the works was built-up, offering little room for expansion. A noticeable change to the southern elevation was an extended and modified frontage to the boiler house, ascribed to *Phase 5 (1872-1890)*; depicted on the 1890 Ordnance Survey Town Plan, this change was seemingly associated with the introduction of automatic feeders for the coal-fired boilers. The final phase of construction for Building C was during the late 19th to early 20th century, after which it was eventually being superseded by the India Rubber Works. A number of evidently later structures *Phase 6 (1890-1920)* were identified, largely by their construction materials and relationship to earlier built elements. Of lesser significance archaeologically were the foundations and concrete surfaces assigned to *Phase 7 (1920-)*, which in some cases visibly truncated the remains of the earlier dye works.



Plate 87: View east along wall 3078 (2m scale)

5.5.4.1 Building C: Phase 1: 1782 - 1800

During the 18th century a number of detached buildings made up the dye works. Several of these were eventually incorporated into the multi-roomed complex, Building C. Within Area 3,

evidence of two such *Phase 1 (18th century)* buildings were uncovered. A wall *3078* in the north-western corner of Building C was found to correspond to the southern side of a rectangular building, depicted on Green's map of 1794. Situated 4.50m to the east of this building was a larger rectangular block; approximately half of which, extended into the excavation area. Fragmentary remains of the outer walls of this structure were incorporated into the later elements of Building C.; this was similarly represented on the late 18th century cartography.

Wall ***3078*** was aligned east/west at the north of Area 3 (Plate 87). This wall corresponds to the southern side of a building depicted on Green's map of 1794. It had a maximum width of 0.36m and had a total exposed length of 9.10m. It consisted of three courses of handmade bricks which were bonded with a yellow sandy lime-based mortar. It returned to the north, forming part of the western wall of Building C. It was abutted by several other later structures visible within the northern section of the trench. Part of the wall was overlain by a flag surface, indicating the position of a later threshold inserted through the wall.

Walls ***3119*** and ***3115*** were identified as belonging to the first phase of development of the dye works. Wall ***3119*** was located at the northeast of Area 3 (Plate 89). It was aligned north/south and was bonded with a yellow sandy lime-based mortar. It had a width of 0.36m and a length of 6.52m though it continued beyond the limit of excavation towards the north. It was abutted by multiple features and walls of later phases. At the south it returned towards the west as Wall *3115*.

Wall ***3115*** was aligned east/west. This wall was more fragmentary than *3119* and had partially been built over and truncated by subsequent drains and structures, such as *3085*, which suggested it probably not standing during the later phases of use at the site. It had a maximum width of 0.47m, including a probable foundation step. It had a maximum length of 12.24m. It was bonded with a light greyish-yellow lime-based mortar.

A large culvert ***3079*** was also ascribed to this phase on the basis of its apparent relationships with other structures and its construction (Plate 85). It was situated to the east of Building B, in the south-west of Area 3***. 3079*** consisted of a brick-built culvert which was aligned northeast/southwest. It had a width of 1.20m and was excavated to a depth of 0.46m, although internally it appeared to be in excess of 1m; the structure was visible in plan over a length of 2.58m. It was bonded with a yellow sandy mortar and utilised handmade bricks. It had a rounded corbelled roof which had been partially disturbed during the excavation. It was truncated at both the eastern and western ends by the drain *3052*, and the Wall *3076*, respectively. It's temporal relationship to Building B is unclear, although it likely ran beneath the building.

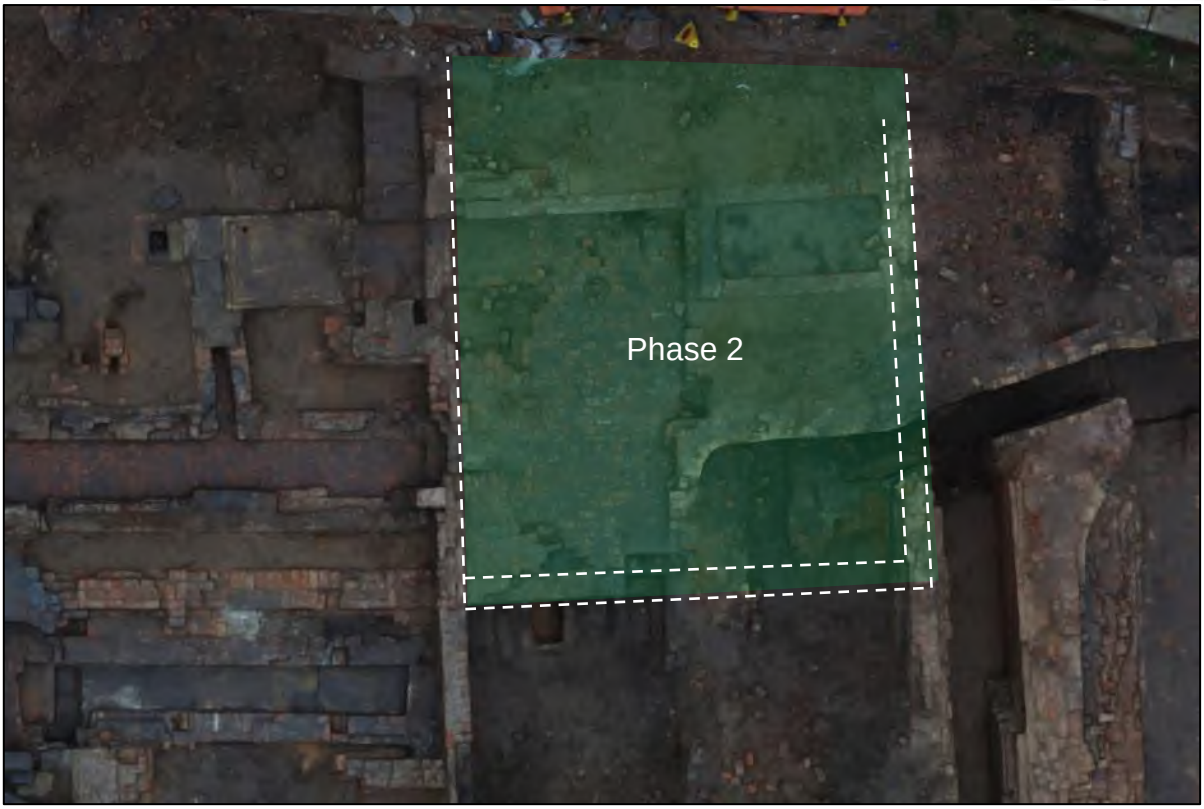


Plate 88: Aerial view indicating the eastern area of expansion within Building C during Phase 2

5.5.4.2 Building C: Phase 2: 1800-31

Some of the remains associated with Building C were assigned to *Phase 2* based upon the building materials used, relationships, and historic mapping. The mapping indicated that there may have been more structural elements associated with that phase but that they had been removed as a result of subsequent episodes of building and were not present in the archaeological record.

Two clear elements of *Phase 2* expansion were identified in the northern half of Building C. One of the extensions abutted the eastern side of the *Phase 1* wall *3119* (Plate 88)*;* this portion of the structure was delineated by ***3120*** to the south and ***3106*** to the north and walls ***3126=3127*** to the east. A surviving floor surface ***3084*** and internal flight of steps ***3107*** were viewed as broadly contemporary to the walls.



Plate 89: View looking south along wall 3119 with the Phase 2 structures to the east (left) 2m scale

Wall ***3106*** represents an internal wall within the extension but was the most northerly element of this extension to be exposed within Area 3; it measured 0.22 x 2.88m and was aligned east/west, forming the northern side of a room within the *Phase 2* addition. It abutted Wall *3119* on its eastern side and appeared to be abutted itself by the brick structure, *3107*. A lateral phase break was visible between the structure and a parallel wall to the north, *3128*; the relationship between these walls was not determined.



Plate 90: Surviving extent of Wall 3120 showing the integrated short flight of steps, looking north (1m and 0.50m scales)

Wall ***3120*** was laid parallel to *3106* 4.55m and positioned to the south (Plate 90). This once formed the southern external wall of this part of Building C, as can be seen on Bancks and Co's map of 1831 (Figure 15). The eastern half of the wall, where it originally was keyed into wall *3126* had been removed during the expansion of the adjacent flue system *3064*. The surviving western half of the wall stood to a height of 1.20m, measuring 0.36m in width 2.05m in length. Built into the middle of the wall were a set of steps, which led up to Floor ***3084***. Two flagstone treads were uncovered which measured 0.60 x 0.25m with two course brick risers, 0.22m in height.

The eastern side of the Phase 2 extension was represented by the fragmentary remains of two walls, thought to be contemporary: ***3126=3127***. Both were constructed in handmade brick and were bonded with a greyish-white lime-based mortar. ***3126*** was aligned north / south and had a surviving length of 1.32m, truncated to the north by flue *3064*. The remains of a westerly return, evidently once forming *3120* were visible in the upstanding elevation of the wall (Plate 91). The wall was lined with later walls forming parts of flue *3064* and an associated flue or walkway *3069*. Continuing to the north of the flue was another element of the same wall ***3127***, visible in plan for 3.48m. This measured 0.46m in width and had been subject to partial repair or modification during the construction of the adjacent flue. The repaired area measured 0.61 x 0.47m and was bonded in a grey ash mortar. The wall was truncated to the north by a modern wall.

An internal brick floor ***3084*** was bounded by and abutted the brick walls *3120, 3119*, and *3106*. It covered a maximum area of 2.50 x 4.55m. It was built with handmade bricks and laid upon a shallow layer of sand. It was thought to be contemporary to the brick walls *3120* and *3106*.



Plate 91: Remains of wall 3126 with the vertical phase break and truncated return of the wall, incorporated into a later extension of flue 3064, looking east (2 x 1m scales)

The eastern half of Building C was extended during this period. Whilst the extent of this expansion was clear from historic mapping, the structural remains were more fragmentary.

Wall ***3103*** consisted of the partial remains of a brick wall (Plate 93), which was located at the west of Building C. It was aligned north/south and abutted wall *3078* at its western end. It had a width of 0.35m and a maximum length of 5.35m. It had likely been heavily modified in later phases to accommodate various drains. In plan, it had no clear relationship with Wall *3077*, however closer examination of the wall fabric above *3128/3103* revealed a phase break consistent with the southern half of the wall being rebuilt during Phase 3. From historic mapping it was clear *3077* was added in *Phase 3*, during which time the southern wall *3128* was reduced in height.

The eastern return ***3128*** of wall *3103* was far more fragmentary; this was largely a result of it having been reduced in height during the Phase 3 expansion. It was also evident that the southern wall line had originally incorporated a series of openings or outlets, perhaps associated with relieving arches or drainage. As a result, the surviving wall existed as four individual fragments of masonry. All were built in handmade brick bonded with a white lime-based mortar. These were assigned a single context number ***3128****,* essentially forming a continuous wall line along the then southern limit of Building C, presumably once joining the corner of wall *3115*. The

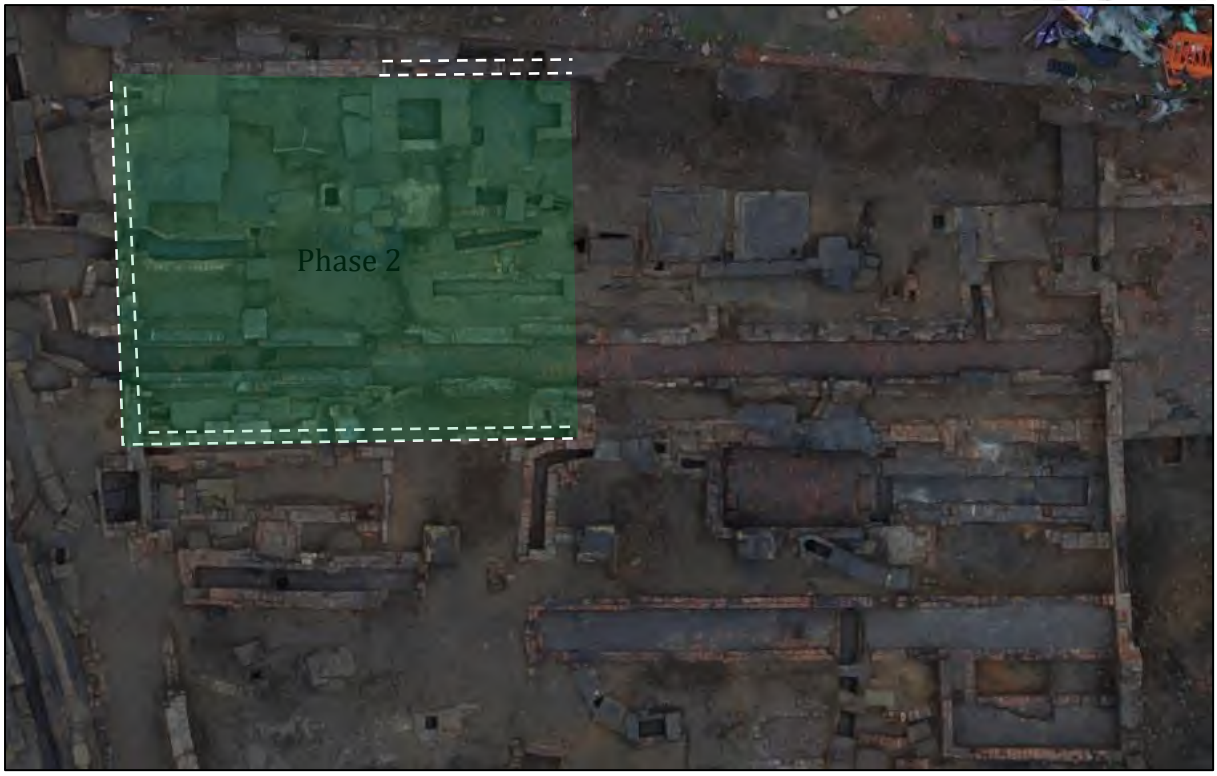


Plate 92: Aerial view showing the western half of the Building C expanded during Phase 2



Plate 93: Phase 2 walls 3103 and 3128 overlain by wall 3077 (1m scale)

The northern limit of the extension (within Area 3) was largely defined by an existing Phase 1 wall *3078*. This was however extended eastwards during this period, a modification represented by wall *3129.* Wall ***3129*** was of similar proportions to wall *3078* and measured 2.86m in length. It was bonded with a grey lime-based mortar. An aperture within the wall,

measuring 0.58m in width, likely housed a bearing box associated with a steam engine once fitted to masonry bed *3095.* Evidence of repair to the west of the aperture within *3078*, raises the possibility the bearing box and engine were features added in subsequent phases.

Stone Vat Bases

The most tangible evidence for dyeing or washing processes were four stone vat bases uncovered in the northern half of Building C, falling within the footprint of the Phase 1 and 2 buildings. The vat bases consisted of slabs of worked stone, the surface of which contained a perimeter groove, set back from the edge of the stone. Each also had a plug-hole set in the corner, allowing the contents of the vats to be drained. The grooves around the edges may have once held upright stones or potentially wooden vats or becks. The stone slabs varied in size but were all approximately 60-80mm thick. The arrangement of the vat bases suggests they were not all laid out simultaneously, but instead added progressively between *Phases 2 – 3*.

The earliest example is probably *3104* situated in the *Phase 1* element of Building C and was rectangular in shape measuring 1.49 x 1.16m (Plate 94). This exhibited slight yellowish-green staining, seemingly deriving from its use.



Plate 94: Vat base 3104

Two further vat bases were found to the west *3098* and *3099* (Plate 95). These were close to square in shape, measuring 1.59 x 1.57m. Both *3098* and *3099* were incised with markings, presumably carved by the masons who shaped these stones (Plate 97). A raised flag floor surface *3102* together with a cast iron grate had survived along the southern side of the slabs (Plate 96). Floor ***3102*** measured 3.80 x 1.02m.



Plate 95: Vat bases 3098 and 3099 looking south (2m scale)



Plate 96: Detail of the plug hole, adjacent drain and floor surface 3102, raised slightly above the stone slab forming the vat base 3098 (0.25m scale)



Plate 97: Detail of the masons' marks on the vat bases 3098 and 3099

The fourth vat base was exposed in the north-western corner of Building C. *3118* was a slightly smaller example than the other three slabs but broadly similar in form (Plate 98). It measured 1.35 x 1.34m and was 80mm thick. Of particular relevance was a buried lead water pipe, seemingly representing a means of feeding the tanks with water. The visible ends of the pipe were deliberately bent over, consistent with this vat becoming obsolete. This was further supported by a later floor surfaces *3138* and *3139,* which had been raised 0.32-34m above the vat base (Plate 98).



Plate 98: Vat base 3118 looking north (1m scale)

Internal Drainage

A number of other internal elements within Building C, can tentatively be ascribed to this phase of use. These are dominated by drainage features, many of which are hard to closely date and

remained in use during multiple phases. The drains can be sub-divided into a series of groups with the largest structure being *3083*, presumably built in stages over Phases 1-3. This is likely to have been an open drain, perhaps covered over with a grate.

3083 ran across the majority of the factory floor in Building C, measuring 20.49m in length and 0.62-0.75m in width. It was constructed with handmade brick and predominantly bonded with lime-based mortar. This was repointed in places with a grey ash mortar. The western 4.78m on the structure was possibility rebuilt and was bonded entirely with mid purplish grey ash mortar. This re-built section of the structure had truncated an earlier stone capped drain *3132.*

A number of smaller predominantly east / west aligned, covered drains (*3093, 3134, 3135, 3117*) were identified within the footprint of the Phase 1 / 2 buildings. These represent a different category of sub-floor drain and capped with flags. Linked to several stations (vat bases) where washing or dyeing processes were carried out these evidently allowed for the vats or tubs to be emptied quickly and were fed by plugholes in the stone vat bases. The drains were also connected to an exterior drain *3049*, which ran northwards beyond the limit of excavation. Other small rectangular openings were noted in the tops of the drains and also acted as inlets, as well as an additional inlet set into the brick and stone floor *3142* forming part of *3096* adjacent to small masonry machine base *3095*, evidently for the run-off of condensed steam or surface water from the engine. The survival of a vertical downpipe and spout attached to wall *3103* and situated above drain *3093* clearly indicates the drains were used to divert rainwater collected from the roof of the building (Plate 99).

Three of the drains (*3088, 3137, 3116)* found in the northern half of Building C represent a more direct link between the dyeing/washing stations (stone vat bases) and main east/west conduit *3083.* Whilst it remains possible that *3116*, could have been built during *Phase 1* all certainly seem to have been in operation by *Phase 2/3*. These drains were narrower than the larger sub-floor drains, measuring between 0.18m and 0.21m wide (internally) and did not exceed 0.09m in height.

Situated immediately west of vat base *3099* was a substantial brick-built chamber ***3136***, which appears to have been linked to much deeper drain, extending southwards underneath southern half of the building. The chamber measured 1.07 x 1.09m. It was capped with a large sandstone flag measuring 0.92 x 0.46m. The brick-built chamber was fed by drains *3134*, *3135* from the west and drain *3131* to the east.

Floor Surfaces

A surviving area of a flagstone flooring within Building C were ascribed to this Phase. It was noteworthy that this was raised slightly above the surface of the vat bases. In this instance, the raised surface does not appear to have precluded the use of the supposed vats. However, a later surface *3138* laid adjacent to vat base *3118* was built up 0.39m and indicates floor level in the western half of the building was raised subsequently.



Plate 99: Drain 3093 with cast iron downpipe and spout (0.25m scale)

5.5.4.3 Building C: Phase 2 - 3: 1800 - 49

Drain *3086* runs north / south through the eastern half of Building C. The side walls of the drain were formed of brick bonded with a light grey lime-based mortar and it was capped with sandstone flags. It had a total recorded length of 9.17m and was 0.63m wide. The drain is connected at its northern end to *3083* and runs beneath a number of later structures within the footprint of the Phase 3 extension. It is likely that it existed as an external drain during Phase 2 and was maintained during subsequent phases of use. Crucially, this drain physically lies beneath structure *3090*, in the southern part of the building, indicating it was a relatively early component pre-dating the early to mid-century expansion of the building. It was found to have physical and functional relationships with the following structures: *3153, 3157, 3162, 3090 and 3108.*

Also ascribed to this phase was a short, fragmentary section of wall ***3160*** found in the southern half of Building C. This does not appear to relate to any of the upstanding structures. Its function could not be ascertained. Wall *3160* measured 0.79m in length and 0.21m wide. It was constructed in handmade brick bonded with a sandy lime-based mortar.

5.5.4.5 Building C: Phase 3: 1831-49

Most of the development associated with Building C took place during Phase 3, *c.* 1831-51. This included the whole of the boiler house and the large extension to the dyehouse across the south and central part of the excavation area, bounded by the brick walls *3077/3130* and *3082* and *3076*. These conclusions were strongly supported by the cartographic evidence in addition to the archaeological record.



Plate 100: Column bases 3112-3113, looking east (0.50 and 2m scale)



Plate 101: View across the southern half of Building C indicating the Phase 3 walls 3130 and 3076

The South-Western Extension

The western side of the extended building was defined by two sections of brick wall, *3077 and 3130* the southern half being more fragmentary in nature. The northernmost part of the structure was wall ***3077***. This consisted of an L-shaped wall measuring 1.81m in length and 0.40m in width, with a 0.48m long north-eastern return. It was bonded with a mid-grey lime-based mortar. It was built over the denuded remains of earlier walls, *3103* and *3128.* As such this falls within the part of the *Phase 2* building, which as a result of this third phase of expansion had been remodelled. This evidently involved pulling down some of the existing *Phase 2* walls such as *3128* that formed the southern extent of the *Phase 2* build. In doing so it was presumably necessary to rebuild the corner walls as indicated by *3077*. An external stairwell or steps were tacked onto wall *3077.* The return to the wall, suggests some form of access was added during *Phase 3*, perhaps associated with the corridor running laterally through the building, represented by three internal walls *3143, 3144* and *3145*. Any external steps however are absent on the 1850 OS and appear to have been built during *Phase 4.*

To the south of the steps the wall continued as ***3130***, which continued for 0.71m before altering its course. The southern half of the wall was built on slightly different axis, positioned north-northwest/south-southeast. It measured 0.52m in width and was revealed over a distance of 4.41m. The northern end of the wall was truncated. It was bonded with a mid-grey lime-based mortar. Several insertions through the wall were evident and had been repaired with a mid-

grey ashy bonding material consistent with a mid-late 19th century date, perhaps inserted during *Phases 4* or *5*.

Wall ***3076*** was aligned east / west and formed the southern demarcation to the Phase 3 extension. It had likely been keyed-in to Wall *3077,* but this junction had been truncated by a large concrete tank base (Phase 7). Although it had been truncated by other modern features the combined sections had a total exposed length of 16.84m; the wall was 0.48m wide. It was bonded with a mid-grey lime-based mortar. At its eastern wall *3076* met with the staircase *3068*. Further to the east were a series of six exposed brick piers, which were part of the same alignment as Wall *3076*.

Wall ***3082*** was aligned north / south and formed the eastern limit of the dye house and its southern extension. The relationship to Wall *3076* was somewhat disturbed though it appeared to be keyed-in and were probably contemporary. It measured 10.82 x 0.36m. It abutted Wall *3119/3115* at its northern end. It was bonded with a mid-grey lime mortar. At its southern end it may have formed the edge of a small cellar or machine bed associated with the steps, *3068*.



Plate 102: View of the interior of chamber 3108, note the cast-iron plate on its southern side, looking east (2 x 1m scales)

The footprint of the dye house included several other rooms, which were presumably added at this time to the east of wall *3082*. These were accessible through internal steps built into wall *3120* and from the southern side of the building via steps *3068*. Much of this area was left unexcavated due to the detection of suspected asbestos containing material (ACM), presumably used as lagging within the rooms later housing an additional boiler and aniline machine. A portion of the cellared rooms in the north and south were therefore only exposed in plan.

Nonetheless, some comments can be made about the southern and northern elements of this area within Building C. The original southern extent of the building is indicated by wall ***3125***, which consisted of a handmade brick wall bonded with a light yellowish white lime-based mortar. *3125* measured 1.86m in length and appeared to respect a line of brick piers or columns that formed the remaining southern wall line of the Boiler House, broadly contemporary in date. At some stage *3125* was extended to the north by means of a returning wall *3155* built in a slightly different fabric, consistent with *Phase 4*. It was apparent the eastern end of *3125* was remodelled during the construction of *3155*, notably with the use of bullnose bricks.



Plate 103: Aerial view of structural remains along the southern side of Building C, including steps 3068

Drainage

A major installation running along the southern side of the extended building parallel with the southern wall *3076* was a brick-built conduit or drain, ***3090=3092*** of similar proportions as structure *3083*. This appears to have formed another open channel or conduit. Structure ***3090=3092*** survived in two fragments visible at the eastern and western ends of the southernmost room of Building C. It would have had a total length of 19.70m and was 1.12m wide. It was formed of brick walls and had a brick floor, internally measuring 0.45m. Two later machine beds, tentatively ascribed to *Phases 5-6* were placed partially over the structure, potentially whilst it remained in operational. The construction of structure *3091* attributed to activity in the late 19th or early 20th century (*Phase 5*) appears to mark the end of use for *3090=3092.*

3108 was a rectangular chamber situated above the exposed southern extent of drain *3086* and was built against wall *3076* (Plate 102). It measured 1.26 x 0.84m externally and 0.37 x 0.93m internally and was constructed with handmade brick bonded with a light greyish white lime-based mortar. It abutted the southern face of wall *3076*, suggesting it post-dated its

construction and was perhaps added to facilitate the run-off of rainwater from the roof into drain *3086*. As such it can be seen as broadly contemporary with this phase of construction. It may have also functioned as an inspection chamber and was wide enough for human access.

Another brick-built chamber ***3159*** was ascribed to this phase. *3159* was located in the southern half of Building C. This was only exposed in plan. It measured 0.59 x 1.03m. The structure consisted of walls built in handmade brick bonded with a lime-based mortar.

Broadly contemporary with *3159* was structure ***3161***. ***3161*** was of similar construction. It comprised brick-built inspection chamber with a sandstone capping. This structure measured 0.54 x 0.43.



Plate 104: Steps 3068 looking south (1m scale)

Access and Layout

Internally, the main part of Building C was transected by a corridor, which is shown on the *1872 Insurance Plan* but can be inferred from its relative position on the 1850 OS map. This appears to have been formed between the former southern wall of the building and a row of brick and stone column bases.

The remains of two walls found in the western half of the building appear to correspond to this position of the corridor in the western half of the building and together delineate the northern

and southern sides of a 0.78m wide passage. The two parallel walls ***3143*** and ***3145*** were aligned east / west, positioned to the south of *3128*. Both were 0.35m wide with a maximum length of 5.20m. It should be noted that these were constructed in a similar fabric to the column-base supports, as discussed below. The insertion of two later walls, *3094* and *3144* presumably in *Phases 4* and *5* may relate to changes in the internal layout and access during this time.

Two walls of broadly similar proportions and alignment were exposed in the eastern half of Building C. Walls ***3149*** and ***3150*** were 1.50m apart, slightly wider than the spacing left between *3143* and *3145*. Both walls were 0.23m wide. Wall *3149* had a surviving length of 4.71m, whereas wall *3150* had a surviving length of 1m. *3149* was hemmed in between the Phase 1 wall *3115* and structure *3085*, deriving from *Phase 4. 3150* abutted the western face of *3082*. Both appear to have been truncated during the installation of 3085.

A row of column bases (***3110, 3111, 3112, 3113, 3114***) were exposed across the middle of Building C, arranged at regular intervals of 2.50m (Plate 100). These were formed of brick bases consisting of regular courses of brickwork, above which were laid stone column bases. The brick pads or bases measured 1.00 x 0.85m, whilst the stone blocks were approximately 0.77 x 0.70m. The stone blocks were not however uniform in their size or shape, suggesting they may have been repurposed from another part of the site. The tops of the surviving masonry were chamfered and in the case of *3111* and *3113* featured a raised rectangular pad (360 x 380mm); the middle of *3112* featured a similar shaped recess. Both the pads and recessed areas would have enabled the plates on underside of the upright cast iron columns to be held in place securely. Although none of the ironwork survived, the column bases give some sense of the internal arrangement within the building and also provide some indication of the floor levels, which for the most part did not survive. Additional column bases were found in the southern half of the building but were ascribed to *Phase 4* on the basis of distribution within the building, which did not correspond this row.

Remnants of structures attributable to external access were noted in the southern half of Building C, affording access into the main floor of the dye works and the sub-cellared rooms to the east.

Structure ***3151*** was built against the southern face of walls *3076*. Its position broadly corresponds to a ramp or steps shown on the 1850 OS map and reproduced in greater detail on the 1872 Insurance Plan. The brick footing *3151* measured 2.05 x 0.89m and was constructed in handmade bricks set in a light grey ashy, lime-based mortar. From the cartographic evidence it can be inferred this was broadly contemporary with *3076/3082*, but as it was not keyed into either external structure was clearly added after the outer walls were constructed.

Immediately east of *3151* were the degraded remains of a 0.35m-wide wall, seemingly associated with access into the building. This survived to a length of 0.78m. It was built with broken handmade bricks and bonded in a light yellowish/greyish white lime-based mortar. The function of this wall was unclear.

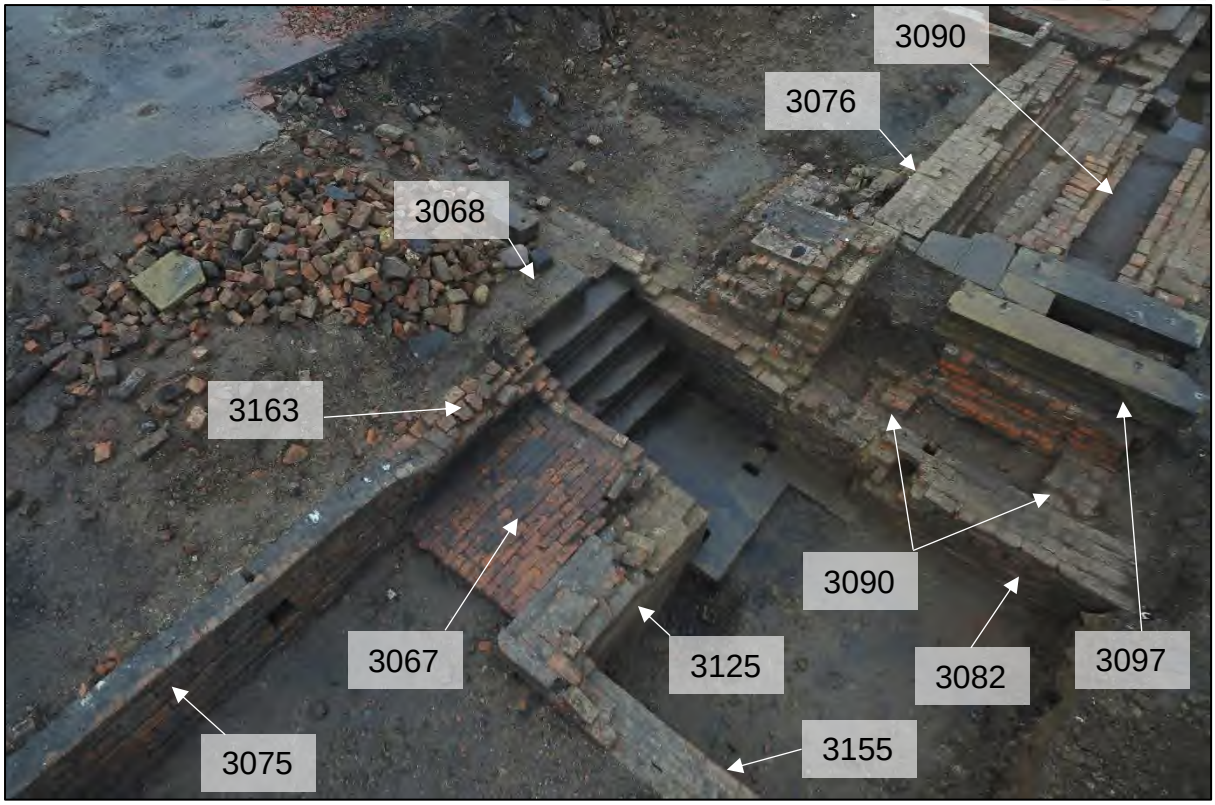


Plate 105: Aerial view showing steps 3068 and associated structures

A flight of steps ***3068*** leading down into the cellared area were revealed on the northern side of walls *3076* and *3125*. It was keyed into *3076* and *3082*, as well as *3125* and *3163* (Plates 104 and 105). The steps were formed of two parallel side walls built in the same fabric as *3076/3082*. The steps themselves consisted of two-course (0.24m) brick risers with sandstone tread

Wall ***3163*** was situated to the west of the flight of steps *3068*. This structure is shown on mapping to have originally extended as far as the boiler house. It had a surviving length of 1.34m and was 0.34m wide. The remaining eastern portion of the wall had been rebuilt in Phase 5. The rebuilt wall rather than being vertical, sloped inwards in a similar manner to the boiler house walls.

Floor ***3067*** was viewed as broadly contemporary with the steps and wall *3163*. It was constructed with handmade brick and survived between walls *3163* and *3125*, covering an area of 1.44 x 0.76m.

5.5.4.6 Building C: Phase 3-4: 1831-72

Power-systems

Three stone engine beds *3095, 3140* and *3141*, and associated structural remains *3096* and *3142* were ascribed to *Phases 3-4* on the basis of their construction, morphology, and position within the Building C. Whilst it was clear these elements post-dated the *Phase 1* and *2* developments within the building, they could not be closely dated and may have been added incrementally at various stages of the building's use. All three were revealed along the

northern limit of the excavation area and were set against substantial brick walls, *3078/3129* and *3109*. Small steam engines became common place in the mid to late 19th-century and would have been installed to mechanise various processes within the dye works.

Housed internally within the *Phase 2* extension, to the north and south of walls *3078* and *3129* were two small stone engine beds, ***3095*** and ***3141***. *3095* abutted the *Phase 1* wall *3078* and its *Phase 2* extension *3129*. Although the fabric visible at the base of 3129 was set in lime-based mortar, the upper portions of the wall appeared to be reset in a hard-grey bonding material, similar to that utilised in *3095.* This might suggest that the wall was remodelled during the installation of the engines.



Plate 106: Masonry engine bed 3095 beside wall 3129 (1m scale)

3095 was initially exposed during the evaluation of the site (Plate 28). It consisted of a brick base utilising handmade bricks and reused firebrick, bonded in a very hard grey ashy mortar. The brickwork did not extend fully underneath the overlying stone blocks, with two openings left in the eastern and southern side. The base of the masonry bed appeared to consist of a much larger block of stone.

Atop the brickwork were two stone blocks set 0.91m apart, both abutting the southern face of wall *3129* (Plate 106). The western block measured 1610 x 570 x 420mm; the eastern block was slightly wider, measuring 620mm wide. Both featured perforations or crow holes in the surface of the stone blocks, and retained iron holding down bolts, which had been secured into the holes with molten lead. The eastern stone block had two further circular perforations and two vertical sockets, presumably for accommodating the fittings of the steam engine (Plates 106 and 107). A stone flag had been laid between the stone blocks, flush with the surface of the stones.

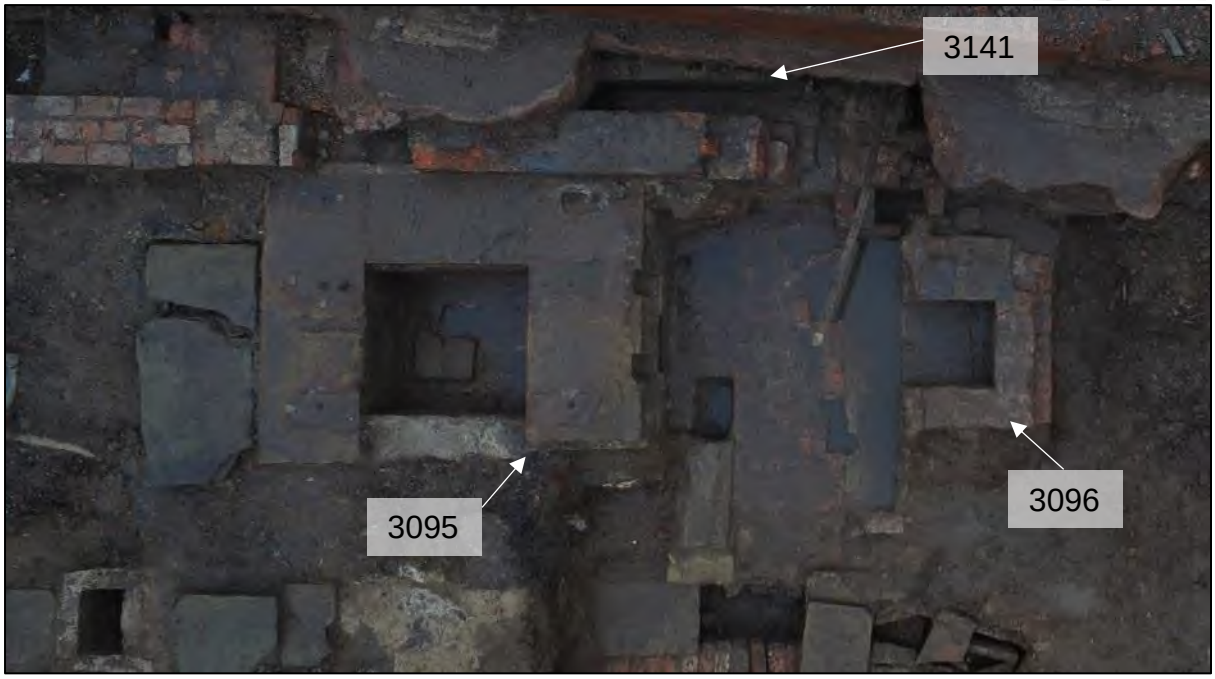


Plate 107: Aerial view of 3095 and 3096

To the east of 3095 was structure ***3096*** consisting of a C-shaped brick construction with a central recess (Plate 107). It sat on a brick and flagstone floor *3142*, which extended up to *3095*, measuring 1.92 x 1.44m. ***3096*** stood to a maximum height of 0.35m with a maximum footprint of 1.11 x 0.89m. The internal recess measured 0.54 x 0.51m. The function of the structure remains unclear but was likely associated with the power systems in this part of the building.

To the north of wall *3129*, revealed in the section of the trench was a further stone engine bed ***3141*** (Plates 108 and 109). This measured 1.20m in length and was in excess of 0.25m in width and 0.35m in height; it was not fully exposed in plan. From its position it appears the two engines were more or less positioned on opposite sides of the same wall and were perhaps contemporary.



Plate 108: Detail of the various sockets and crow-holes within stone engine bed 3141 (0.50m scale)



Plate 109: Stone engine beds 3095 (left) and 3141 (right), positioned either side of wall 3129 (1m scale)



Plate 110: Stone engine bed 3095 (left) and associated floor 3142 and structure 3096 (right) Note the position and height of stone engine bed 3141 beneath the Phase 7 walls visible in the section. Looking North (1m scale)



Plate 111: View of the adjoining blocks making up engine bed 3140 (0.50 and 1m scales)



Plate 112: View of the adjoining blocks making up engine bed 3140 (1m scale)



Plate 113: Stone bed 3140 positioned against wall 3109

A further stone engine bed ***3140*** was revealed alongside wall *3109* (Plates 111-113). This comprised a series of at least three adjoining stone blocks. These had a maximum width of 0.87m and together with a cast iron plate, were incorporated into a rebuilt section of wall *3109*. Their combined length exceeded 2.20m, continuing beyond the northern limit of the excavation. The stone blocks rested on a brick plinth, which was bonded with a hard-grey bonding material.



Plate 114: Structure 3101 looking east (0.50 and 1m scales)

Floor level

Surviving portions of flooring in the north-western corner of Building C provide an indication of the floor level, which was seemingly raised during these phases of use. This was most evident adjacent vat base *3118*.

Floor surface **3138** measured 2.96 x 1.84m. The surface comprised flags. These had been laid up to 3103 and 3078 and formed a threshold through the latter. The surface appeared to have been raised 0.40m above the surface of vat base *3118.* Other vestiges of the surface were found adjacent to and level with the top of structure *3095* and to the south, represented by floor surface ***3139***.

5.5.4.7 Building C: Phase 4 1850-1872

The majority of the remains from this phase represent internal modifications and additions, made to the internal layout, access and sub-floor drainage within the building.

Access and layout

The 1872 Insurance Plan reveals a flight of steps or external stairwell was added on the western side of Building C. Structure ***3101*** appears to relate to this addition and therefore was added between 1850 and 1872 (Plate 114). It consisted of a C-shaped section of wall that abutted the western face of *3077* and *3130*. The three sides of the structure consisted of single-skin brick walls bonded in a light greyish white ashy lime-based mortar. This had been constructed above an existing drain *3044*. An associated crude brick surface had been laid either side of the drain. The structure measured 1.53m north/south and 1.01m east/west and had a surviving height of 0.54m. It post-dated *3077* and *3130* and was itself abutted by *3094*.

Other alterations were made within the southern half of the building. Three stone column bases ***3146, 3147*** and ***3148*** (Plate 115) were found in the southern half of Building C. These were arranged in a row, however unlike the *Phase 3* column bases these were not spaced evenly apart. *3146, 3147* and *3148* ranged in size from 667 x 410 x 482mm to 550 x 500 x 476mm. The stonework was less consistent in shape and size than those blocks utilised earlier phase, implying these were added spontaneously perhaps in response to structural issues suffered by the building. Subsidence was evidently a problem for Building B and it is possible that Building C may have encountered similar problems, which necessitated reinforcement. The fabric of the underlying brickwork beneath the stone columns was also notably different from the *Phase 3* walls and other structures. The grey mortar used was however consistent with other structures ascribed to this phase.



Plate 115: Column base 3148 looking north. Note the shadow left behind by the cast iron column base as well as holes left by other potential fittings (0.50m scale)



Plate 116: Phase 6 3080 overlying curvilinear drain 3100 (2 x 1m scales)



Plate 117: Alternative view of 3100 looking west (0.50 and 1.00m scales)



Plate 118: 3087 looking west (2m scale) Note the use of a light grey, ash mortar, which can be differentiated from the whiter lime-based mortars utilised in Phase 3

5.5.4.8 Building C: Phase 4 – 5: 1849 – 1891

A group of drainage features in the southern half of Building C could not be closely dated but appeared to pre-date the Phase 6 developments in this part of the site.

3100 consisted of a curvilinear brick and stone drain, pre-dating structure *3080*. The full extent of the structure and its entry and exit points were not established although it seems likely it was connected to *3089* and *3086*. Drain ***3100*** was exposed over an area of 1.45 x 2.26m and had a maximum width 0.45m and internal width of 0.27m. The drain was constructed with brick and capped with sandstone.

3157 was situated to the east of drain *3100* and likely built above the drain. It was constructed with firebrick bonded with a light grey ashy mortar. The structure had a maximum footprint of 1.64 x 1.66m.

In a similar manner to *3100*, structure 3158 can be phased based on its structural relationship to structure *3109*. As such, *3158* pre-dates this later insertion. It probably served as an inspection chamber into the drains running through this part of the building. It was rectangular in plan measuring 1.00 x 1.25m.

5.5.4.9 Building C: Phase 5: 1872 -1891

Drainage

Alterations were made to the vast network of drains within the main part of the Building C. The most notable additions were *3085* and *3087.* These structures appear to form smaller open channels of conduits, built in a similar manner to structures *3083* and *3090=3092*. The fabric of the walls and their apparent temporal and structural relationships with the *Phase 3* structures indicate these were later additions. Both were built against the column bases and corridor walls constructed during Phase 3. *3085* and *3087* utilised similar mid grey ash mortars, which made them visibly greyer in colour than the *Phase 3* walls. The bricks and bonding material utilised was however notably different from the latest structural remains ascribed to *Phase 6*.



Plate 119: Part of structure 3085 forming an open channel (2m scale)

3087 was situated in the western half of Building C (Plate 118). It measured 5.30 x 1.17m and had an internal width of 0.44m. The walls of the structure were formed largely of handmade bricks, incorporating occasional firebricks, and was bonded with a hard, ashy, light grey mortar the walls were 0.35m wide and survived to a maximum height of 0.40m, although evidently truncated horizontally. The base of the structure was formed of handmade brick bonded with the same grey mortar. The structure was built over an existing drain, *3044*, which entered Building C from the east. The middle of *3087* was built around a pre-existing brick column base, *3110*; it abutted another, *3111* at its eastern end.

3085 was situated on the eastern side of the main part of Building C, immediately west of wall *3082* (Plate 119). *3085* had an overall length of 4.74m in length and was 1.31m wide. The outer walls of the structure were 0.36m wide and it had an internal width of 0.63m. A mixture of wire-drawn bricks and firebricks were utilised in the construction of the side walls. The base was formed of sandstone flags. The bricks were bonded with a brittle, grey ash-mortar. Aside from its construction, which was typical of *Phases 5*, its allocation to this phase was evident from its relationship to existing elements of the building. It abutted the western face of wall *3082* and column base 3114 and walls *3149* and *3150 (*all ascribed to *Phase 3).* It was also evident that as a result of its construction, the adjacent wall *3149* had been reduced height. A residue had been allowed accumulate above the denuded wall *3149*; this was sampled (Sample No. <3>) to ascertain the nature of the processes carried out in this area.



Plate 120: Aerial view of structures 3153 and 3085

3153 represents a subsequent addition to *3085* (Plates 120 and 121). It had an overall footprint of 3.38 x 1.59m. It was situated to the west of the existing structure and was formed largely by the construction three sections of brick wall, tacked onto column bases *3114* and *3113* and wall *3115.* It was fed by a short section of drain connecting *3083* to *3153*; this had been inserted through wall *3115*. An exit through the southern side of structure *3153*, was connected to drain *3086*. From this it would appear this element of the drainage functioned as large tank or chamber, perhaps associated with access and maintenance to the drainage system.

The outer walls comprised three elements: an east/west aligned wall built between column bases *3113* and *3114,* measuring 1.97m in length and 0.24m in width; an L-shaped section of wall measuring between 0.24 and 0.36m wide and running 1.64m north/south between column base *3113* and wall *3115*. An additional single skin of bricks had been added along the southern face of wall *3115*.The fabric of the walls was broadly similar to *3085*, in that it too was bonded with relatively brittle, grey coloured ash mortar, albeit slightly darker in colour than *3085*. Conversely, the outer walls were built in a highly fired, moulded brick with a sharp arris. These were noticeably different from the irregularly formed handmade bricks, found in most of the other structures. The base of the structure consisted predominantly of handmade bricks, which had been laid immediately above the natural bedrock.



Plate 121: Structure 3153 looking west (2m scale) Note the sandstone bedrock visible where part of the brick base has been lifted



Plate 122 Southern side of 3153 with 3162 beyond. Note the exit drain (0.25 and 1m scales)

Another element of the drainage ascribed to Phase 5 was structure ***3162*** (Plate 122). This short section of truncated drain had a surviving length of 2.49m and was 0.43m wide. It was

linear in plan with a pointed north-western end. The south-eastern end of the drain was truncated. ***3162*** was constructed in brick bonded with a brittle, light grey ash mortar and capped with sandstone flags.

Access and layout

Two walls revealed in the western half of *Building C* indicate a slight alteration to the access and internal layout established during *Phase 3-4*.

An opening within the western wall of the building, between *3077* and *3130* was sealed-up during this period by the insertion of wall ***3094***. Measuring 1.07m in length and 0.23m in width, *3094* blocked a probable entrance situated between the stop-ends of *3130* and *3077*, and clearly abutted both existing structures. *3094* had a similar wall fabric to *3085/3087* and was markedly greyer in colour than both adjacent *Phase 3* and *Phase 4* structures.

A small extension southern end of Building C on the 1890 OS map but is absent from the 1872 Insurance Plan, suggesting it was added during this phase of development. Although very little of this structure was revealed during the excavation, a section of wall ***3154*** was revealed to the south of wall *3076*. It measured 0.22m in width and was in excess of 1.10m in length, continuing south beyond the limit of excavation; at its northern end, it had an easterly return that continued for 0.23m but was truncated. *3154* was constructed in handmade brick and was bonded with a light grey ash mortar, consistent with a mid- to late-19th century date.

Wall *3164* located in the eastern half of Building C *was* constructed between wall *3155* and *3165* can also be ascribed to this phase. It was 0.22m wide and 2.30m long. The structure was only exposed in plan.

5.5.4.10 Building C: Phase 5-6 (1872 -1908)

Power Systems

Two stone engine beds were revealed in the southern half of Building C and constitute relatively late additions to the building, seemingly added in the late-19th century. It was difficult to assign a more precise date, but it seems likely these were broadly contemporary with some of the *Phase 6* additions to the building.

3097 had been built above structure *3090,* close to its eastern end. *3097* was formed two recumbent blocks of sandstone above a rectangular brick base (Plate 123). Constructed of machine-made bricks bonded with a hard-grey ash mortar, comparable to that used in *3087,* the construction is consistent with other elements added during this period. The construction of the base had effectively blocked off part of structure *3090*. The smaller block measured 1409 x 376 x 244mm and the larger 1806 x 373 x 245mm. They were set 0.31m apart, together forming the setting for a small engine or machine bed. Associated with the structure was a contiguous flagstone surface, which had been built above an accumulation of cinders and clinker at the southern end of *3097*.



Plate 123: 3097 constructed above *3090, looking north-west (0.25 and 1m scales)*



Plate 124: Stone engine bed 3156 looking north (1m scale)

3156 was situated against the southern wall Building C (Plate 124). It consisted of a large sandstone block with a brick base. The brick base extended beneath the masonry element of the structure, consisted of three courses of brickwork, 0.22m high built above the natural sand; this comprised wire-drawn bricks and firebrick and was bonded with a grey ash mortar. A 0.28m wide aperture was built into the brickwork. The overlying sandstone blocks measured 2200 x 800 x 480mm. *3165* was abutted by a series of walls consistent with *Phase 6* and may have become obsolete after the construction of structure *3091*, a large brick structure erected a short distance to the north.

A series of walls were revealed to the south of *3091.* These were found to abut the stone engine bed *3156* and were likely constructed prior to the erection of *3091*. Both were built with machine made brick and bonded with hard Portland cement; wall **3197** abutted the engine bed on the western side and wall ***3196*** on the eastern side.

5.5.4.11 Building C: Phase 6: 1891 - 1908

Four rectilinear brick structures were revealed in the southern half of within Building C. These were constructed with machine-made bricks set in hard, black Portland cement and were associated with concrete screed surfaces. Whilst these respected the main axis of the building and alignment of the earlier walls and were plainly built during the lifespan of the building, they had been constructed above earlier elements of the dye works, allowing them to be dated to its final phase of development.



Plate 125: 3091 and 3109 looking west (2m scale)

3091 was found in the south-west corner of the building and consisted of two parallel brick walls with integrated buttresses (Plate 125); a separate wall had been inserted between the

north and south walls at the eastern end. The western end was left open. *3091* was situated 0.34m to the north of *3076* and respected its alignment. The outer walls of *3091* were typically 0.36m wide, widening at the position of the buttresses to 0.72m. The structure had a maximum footprint of 8.18 x 1.73m and enclosed a space measuring 1.06 x 7.99m. As the interior lacked any surfacing, it seems likely the robust walls were built to support or raise apparatus within the dye works. A noteworthy characteristic of northern elevation of the structure were several portions of brickwork utilising chamfered bricks, as well obvious recesses that were built into the brickwork.

3109 was found on the northern side of *3091* (Plate 125). Although broadly contemporary with *3091*, it was evident that it abutted its northern face. *3109* comprised three outer walls and an internal brick floor surface, which had been covered over with a concrete screed. The wall fabric was identical to *3091*. This had a maximum length of 7.92m and measured 0.82m in width.

3080 was situated to the south of *3085* and *3153* (Plate 126). It probably served a similar function to the long open drains of conduits (such as 3083, 3090=3092, 3085, 3087), which had been built during the previous phases. *3080* measured 12.52m in length and 1.29m in width. It was ascribed to this phase on the basis of its construction and structural / stratigraphic relationships It abutted wall *3082* to the east and was built over several pre-existing drains: *3086* and *3100*.

Built immediately to the south of the *3080* was another structure, ***3081***. This had an L-shaped footprint, measuring 3.76 x 2.26m. It was formed of two parallel, L-shaped brick walls; these were keyed-in to *3080* and abutted *3082* (*Phase 3*). The base of the structure was formed of machine-made bricks, covered with a concrete screed.



Plate 126: 3080 looking east

5.5.5 Building C, Boiler House (Figure 13)

5.5.5.1 Boiler House: Phase 3: 1831 – 1850

The boiler house was also expanded considerably during this period, more than doubling its original footprint. None of the original boiler house was investigated in Area 3, lying beyond the northern limit of excavation. The southern side of the newly extended building was defined by four surviving brick piers, ***3121, 3122, 3123, 3124,*** which individually measured 0.75 x 0.50m (Plate 127). The piers were bonded with a mid-grey lime-based mortar and were constructed using bull-nosed bricks creating rounded corners (Plate 128). The boiler house had clearly been extended to the south in subsequent phases as indicted by later walls such as *3075*. The erection of the piers during the initial phase of construction, rather than a continuation of the brick wall *3076* indicates this side of the structure may have accommodated multiple openings, potentially arched, which would have facilitated the provision of coal into the stoking areas for each boiler. This notion is reinforced by the material choice of bull-nose bricks, frequently used at positions of ingress/egress.

Wall ***3070*** formed the eastern wall of the new boiler house of Building C and was aligned north/south. It was bonded with the same mid-grey lime mortar and was clearly built at the same stage as the brick piers *3121-24*, which in turn were a continuation of Wall *3076*. Wall *3070* measured 9.70 x 0.47m and continued beyond the limit of excavation towards the north. The southern limit of the wall terminated in a rounded stub or pier, of identical and construction proportions as *3121-3124*. This element of the structure formed the corner of the boiler house building.



Plate 127: Aerial view of the boiler House undergoing excavation with the brick piers forming the southern side of the building in Phase 3 highlighted (red)



Plate 128: Detail of brick pier 3124 with adjacent surface 3168, looking south (0.50m scale)

The western limit of the boiler house was defined by three walls *3126, 3127, 3171* and *3178.* The earliest elements originated in *Phase 2:* walls *3126/3127* and are discussed above. During the site's expansion in *Phase 3*, this alignment was extended to the south by means of ***3171***, which measured 4.54m in length and 0.35m wide. *3171* abutted the southern face of *3126* at the point of its western return, *3120*. A vertical phase break was visible at the southern end of wall *3171*, where it was in turn abutted by a later addition *3178*, which appears to have infilled. The fabric of wall ***3171*** differed from the earlier walls, *3126/3127*, and was comparable to *3070* and *3121-24.* It was constructed in handmade brick and bonded with a light yellowish grey, ashy lime-based mortar. The wall was abutted to the south by a later blocked aperture.

Contemporary with *3171* was a rectangular brick pier ***3176*** forming the south-east corner of the vaulted walkway *3069*. The pier ***3176*** measured 0.56 x 0.45m and stood to a height of 1.05m. It was built in handmade brick bonded in a light yellowish grey lime-based mortar.

Housed within the newly extended block, situated between brick walls *3070 and 3171* were the remains of four boiler *beds (3060, 3061, 3062 and 3063)* fitted with side flues, which fed into a main flue *3064* to the north.

Although the cylindrical boilers themselves had long since been removed, the surviving boiler beds (***3060, 3061, 3062, 3063***) (Plates 127 and 138) together with a number of the cast iron fittings and curved refractory supports recovered from the demolition rubble attest to their presence (Plate 138). Amongst the items salvaged were two cast iron fire-doors, which would have covered the openings to the twin furnaces. Lancashire boilers were patented in 1844 and were commonly used in the second half of the 19th century. The internal arrangement within the boiler house closely matches the 1872 insurance plan.



Plate 129: Aerial view across boiler beds 3061 and 3060, looking east towards the economising house

Boiler bed ***3060*** was the easternmost boiler had a lower flue measuring 1.04m in width and was only partially exposed in length (Plate 129). Only the western side flue was visible due to degradation and truncation; this had a surviving width of 0.52m but may have measured 0.79-1.00m in width. The western side of the boiler bed was formed of a 1.10m-wide support wall resting against the outer wall of the boiler house, 3070. The majority of the structure was formed from handmade brick with firebricks visible on the surface of the of western side flue. The fabric of the eastern wall comprised handmade brick bonded with a dark greyish brown lime-based mortar, whilst the surviving upper courses utilised a lighter coloured grey mortar.

Boiler bed ***3061*** represents the most intact example, with a complete T-shaped plan, featuring both side flues and bottom flue (Plate 129). The interior faces of the flue and base of the side flues had been lined with refractory brick, set in a crumbly sandy brown mortar. The width of the bottom flue was 1.05m wide, whilst the side flues were 0.56m wide. This structure survived to a height of 0.85m. An important observation was the occurrence of a centrally placed longitudinal wall at the base of the bottom flue; this was formed of a 0.11m-wide single skin wall.

Boiler bed ***3062*** was the least well-preserved structure with the majority of the support walls being severely degraded. In spite of its poor preservation, it was possible to ascertain the internal width of the base flue measuring 1.28m. The majority of the structure was formed from handmade brick bonded with a pinkish white mortar. A lining of firebrick survived on the inner face of the bottom flue providing a clear indication of its internal width. A scar-line in the base of the flue suggests this too had a longitudinal wall, similar to *3061.*

Boiler bed ***3063*** although less intact than *3061* was subject to full excavation. This enabled the length of the boiler beds to be established. *3063* was 9.54m long, consistent with the average length of a Lancashire boiler shell (24 – 30 ft). At its northern end were the remains of three downward sloping flues. The side flues sloped steeply from north to south and were formed in refractory brick. The base of the bottom flue was built on a lesser gradient. All three flues fed into flue *3064*, which ran alongside the back of the boilers.

A sub-floor drain was constructed to the south of the boilers. This appeared to run east / west beneath the floor at the southern end of the boilers. A rectangular brick chamber exposed to the south of boiler bed *3062* provided access to the drain (Plate 130); this had an overall size of 0.48 x 0.48m and an internal aperture measuring 0.31 x 0.27m. Another chamber existed to the south of boiler bed *3063*; this consisted of a square chamber capped with a sandstone flag. The flag was perforated to accommodate the collar of a cast iron pipe. The drain expose to the south of the boilers is likely to have been associated with the regular maintenance of the boilers, probably serving as a soakaway when the contents of the boilers were 'blown-off'. Lancashire boilers were commonly fitted with a valve, known as a blow-off cock, which was found on the underside of the boiler shell. This was designed to offload, under pressure, any sediment or waste deposited at the bottom of the boiler when the boiler.



Plate 130: Brick chamber above the east / west drain at the southern end of the boilers, looking east (1m scale)

Remnants of the original flooring ***3172*** laid at the charging end of the boilers lay preserved beneath two successive surfaces, *3065* and *3174* and was revealed within a sondage (1.35 x 1.35m) in the south-western corner of the boiler house (Plate 131). The original surface *3172* consisted primarily of sandstone flags laid above a layer of natural sand. The flags varied in size from 320 x 340mm to 600 x 340mm and were 80mm thick. The western half of the surface

consisted of handmade bricks raised slightly above the level of the flags. The brick and stone surface abutted and was broadly contemporary with an adjacent brick pier *3123* and north / south aligned wall *3175*. Built above surface *3172* was a sloping brick wall *3074* (*Phase 4*), which sloped inwards towards the brick piers.

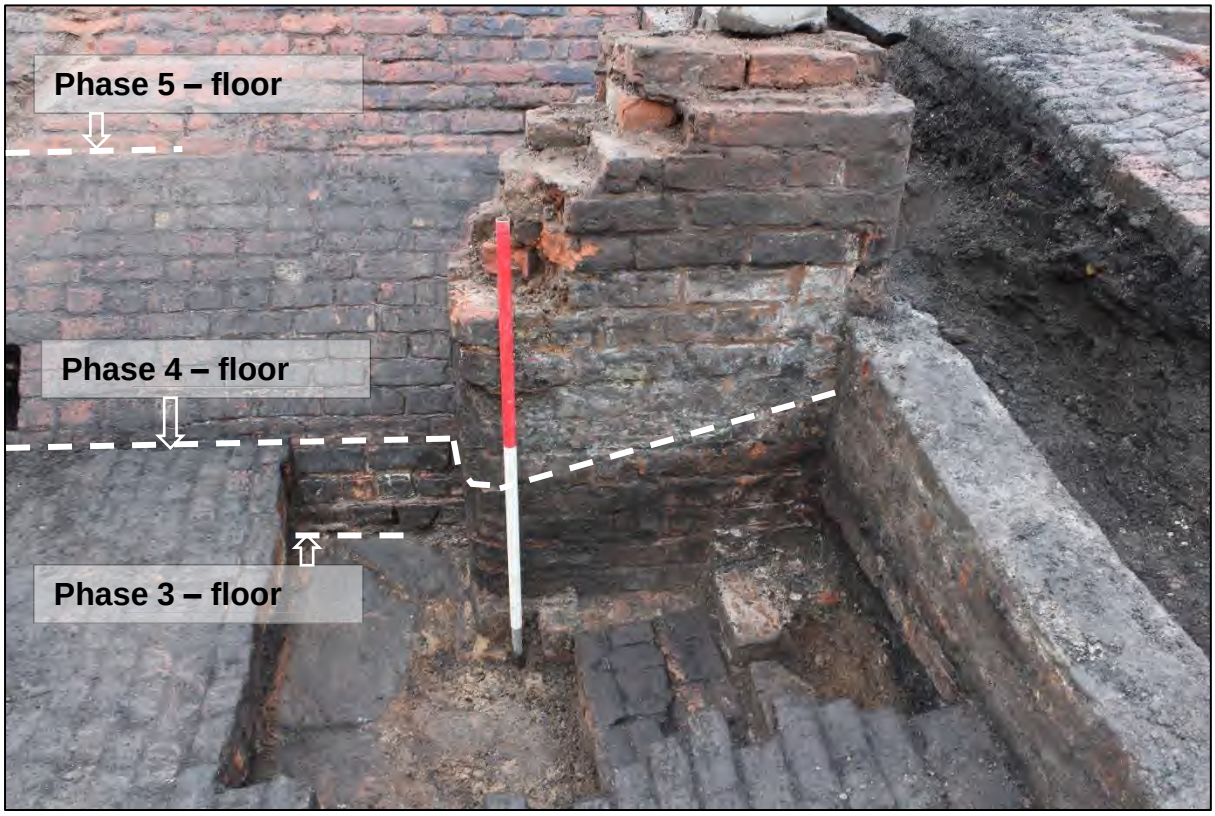


Plate 131: The three successive charging floors revealed within the southern half of the boiler house: 3172 (Phase 3); 3065 (Phase 4) and 3174 (Phase 5). Photographed looking south (1m scale)

Whilst a significant number of repairs were made to the boiler beds, the core of each the supports was constructed in handmade brick bonded with lime-based mortar, consistent with construction during *Phase 3*. This suggests that these were originally built to support a bank of Lancashire boilers. The evidence left by later alterations was plainly different, built using more regularly moulded bricks and refractory bricks bonded with a grey ashy mortar.

Flue ***3064*** consisted of an east / west aligned flue situated at the rear of the boiler house. This was accessible via walkway *3069* and behind the bank of boilers, which fed into the structure. Whilst much of the fabric, including the firebrick lining and raised floor surface were evidently later additions, part of the vaulted brickwork associated with walkway *3069*, probably represents an original element dating back to *Phase 3*. A phase break was visible within the northern elevation of the flue and appears to indicate its original western extent. The structure was relined with refractory brick in the late 19th century and extended further westwards. Its original walls were formed of handmade brick set in yellowish grey ashy lime-based mortar. The 0.22m-wide walls were set 0.87m apart. The roof was vaulted and sprung up from the side walls of the flue.



Plate 132: Remnant of the vaulted flue to the rear of the boilers, looking east. Note the rebated brick wall and adjacent flue sloping down from below the boiler. This would have been the location of a damper to regulate draught (0.50m scale)

Another element of the flue system was vaulted brick structure, ***3069*** presumably fulfilling the role of a service tunnel or walkway, facilitating access into the main flue system (Plates 133 – 136). This consisted of two parallel one-brick walls, 0.22m wide constructed with handmade brick and bonded with light grey ashy lime-based mortar. The southern end of the structure was formed by a slightly wider, 0.35m wide wall. The structure was floored with handmade brick. The structure was oriented north / south and was situated between boiler bed *3063* and the western wall of the boiler house *3071*. Given how neatly this sits within the footprint of the building, it appears to represent a relatively early design choice and was presumably constructed within *Phase 3*. Access into the service tunnel was afforded by a doorway at the south-east corner through the side wall of the boiler bed *3063* and an adjacent brick pier *3176*. Whilst the pier was built with ordinary handmade bricks and evidently pre-dated the insertion of the doorway, the corresponding wall to the north had been formed using bullnose bricks. During a subsequent phase of modification, part of the western and southern walls of *3069* were reduced in height to accommodate a southerly extension to wall *3071*, *3078*. 3078 was built over the denuded stub of the southern wall but was not fully repaired. Access to the walkway via the boiler house was later sealed up and the interior filled with a loose demolition rubble. The modified course of flue 3064, cut off access to the walkway from the north. Later, a drain was inserted above the remains of the infilled walkway, continuing to the south beneath surface *3168*.



Plate 133: View of the junction between walkway 3069 and flue 3064, looking north-east (0.50m scale). Note the original handmade brick wall (unscorched) and surviving vaulting. This was altered by the infill of walkway, followed by the raising of the floor surface within flue 3069 and relining. The modified flue cut off access to the walkway.

The flue system probably led to self-supported chimney, situated to the east of the boiler house. This structure is depicted on the 1850 OS map and 1872 Insurance Plan. Although the

chimney itself was not uncovered during the excavation, remnants of an early flue, ***3180***, were exposed along the eastern limit of excavation. Only the western side wall and part of the base of flue ***3180*** were exposed. The flue wall was 0.37m wide and was exposed in plan over a distance of 3.74m. The base of the flue proved to be in excess of 0.30m in width, continuing to the east beyond the limit of excavation.



Plate 134: Phase break between walls 3171 and 3178 with the western wall of walkway 3069 in the foreground, looking west (0.50m scale)



Plate 135: View of the interior of the vaulted walkway 3069, looking north (1m scale). Note the remains of the curved outer wall preserved beneath a later raised floor surface within flue 3064 to the north, and the surviving vaulting that was an original feature of both 3069 and 3064



Plate 136: Close-up shot of the curved outer wall of the flue / walkway (1m scale)



Plate 137: Apsidal brick wall with southern linear return (3167) looking east (0.50m scale). Note the overlying surface 3168 (part excavated) as well as an overlying brick wall 3169, contemporary with 3173 to the south

Another element that can be tied to the original construction that lay buried beneath a later raised floor surface (*3168*) was wall ***3167*** (Plate 137). Measuring 1.80m in length and 0.36m in width, *3167* had an apsidal shape in plan and was presumably associated with access or egress into or out of the boiler house. The southern extent of the wall had a linear shape in plan, visible for 0.80m and continuing beyond the southern limit of excavation. The wall abutted brick pier *3123*. Wall *3167* was eventually reduced in height and buried beneath a later floor surface, which represented a later reconfiguration of access. Reused cast iron boiler plates had been laid above the denuded wall as well as covering a later drain, above which had been laid floor surface *3168*; the arched plates may have derived from the original Cornish boilers that were likely replaced in the second half of the 19th century. As the apsidal wall is shown on the 1st edition 6" to 1-mile Ordnance survey map published 1851 (Figure 16), it is likely to have been a relatively early addition to the building within *Phase 3*; the use of a grey ash mortar places it towards the end of this phase. The structure is absent from the 1872 Insurance Plan suggesting it was demolished in the intervening decades.



Plate 138: Oblique aerial view across the boiler house showing the four boiler beds

5.5.5.2 Boiler House: Phase 4: 1849-1872

Several structural elements to the Boiler House can be attributed to its use and alteration between 1850 and 1872.

Two east / west aligned walls *3072=3074* represent a minor southerly extension to the boiler house (Plates 139 and 140). Both sloped inwards, presumably added to facilitate the provision of coal to the charging platforms. Wall *3072* represents the eastern continuation of the sloped wall, surviving to the east of a large concrete machine bed, which truncated the walls and was clearly added in *Phase 7*. The battered internal face of the wall was formed by courses of brickwork laid on a slope. An opening had been built into the interior sloping face of the wall. This measured 0.26 x 0.23m and was 0.35m deep. The top of the opening was capped with a stone lintel, measuring 0.46 x 0.08m. Housed within the aperture, extending upwards into the body of the wall was a threaded iron bolt fitted with two metal plates or anchors, one measured 0.14m in width, the other, 0.20m. Theses fixtures may have served to strengthen the sloping wall, in a similar fashion to tie rod, securing the sloped courses of brickwork together.

The charging platform for the boilers consisted of a brick floor ***3065***, which was encountered over an area of 3.14 x 3.06m in the western half of the boiler house, continuing for a further 3.67 x 3.06m to the east of a truncation caused by a building event in *Phase 7*. This floor surface was constructed above a layer of cinders *3190*, which raised the surface 0.15m above the *Phase 3* floor level, represented by the original stone and brick surface *3172.* As the surface abutted the northern face of wall *3074*, it was therefore added after the construction

of this wall. The western extent of the surface sloped upwards, where it had been laid over the remains of a truncated brick wall, *3175*.



Plate 139: Wall 3074 and brick pier 3123 looking south (1m scale)



Plate 140: Wall 3074 and brick pier 3123 looking south-west (1m scale)



Plate 141: Aerial view of boiler bed 3063, flue 3064 , its extension 3139 and walkway 3069



Plate 142: View of Flue 3064 and walkway 3069, looking east (0.50m scale)

It was probably during this phase of use that the flue system was subject to a complete overhaul. Flue *3064* was relined and extended (Plates 141 and 142). This was primarily achieved by knocking down the curved western wall forming the junction between 3064 and 3069 (Plates 135 and 136). An opening was also made within the adjacent brick wall *3126/3127* – once an external wall – to accommodate the western extension. The floor surface within the flue was subsequently raised and the former walkway *3069* was blocked off. The inner walls and raised floor were relined in firebrick.

As a result of these changes, walkway *3069* became obsolete. This interpretation is corroborated by the insertion of a brick wall into the southern doorway, which formerly provided access into the walkway (Plate 143). The inserted brick wall ***3177*** measured 0.96m in length and 0.40m wide. It was constructed in handmade brick bonded with a grey ash mortar and was set back from the face of the eastern wall of the flue and brick pier *3176*. Walkway *3069* was subsequently infilled with a loose deposit of brick rubble and degraded mortar.. Access into the flue system for clearance and maintenance was therefore probably achieved through the newly extended western end of the flue.



Plate 143: Southern end of the excavated walkway 3069, showing the blocked doorway 3177 (2m scale)

The obsolescence of walkway *3069* was also suggested by the creation of a new wall *3178* immediately west of the structure (Plate 134). Wall ***3178*** was constructed to the south of wall *3171*, representing a further extension to this wall line. Whilst it largely followed this alignment, it was apparent that southern extent of the wall partly truncated and overlay the southern wall of the walkway (Plate 145). Wall *3178* was built with handmade bricks bonded with a similar mortar to *3177*. Constructed within a 0.40m wide construction cut, the wall measured 3.16m

in length and 0.23m in width and stood to a height of 1.13m. The wall extended from *3171* in the north to the threshold of doorway of *3165* in the south.

Associated with the creation of wall *3178* was a brick-built drain with a sandstone coping and square internal profile, drain *3179*. Drain ***3179*** had clearly been constructed after the walkway fell out of use and had been housed in a cut through the southern end of the tunnel and vaulted roof of the earlier structure. Drain *3179* had a maximum footprint of 4.00 x 0.40m with an internal height of 0.20m.The drain was found to drop away steeply to the south and ran underneath surface *3168*, continuing as far as the brick piers forming the front of the boiler house.



Plate 144: Vertical phase break within the northern wall of flue 3064/3189 indicating its point of extension (1m scale). Note the upward sloping floor within the flue.

The western extension to flue *3064,* ascribed context ***3189*** was only subject to partial excavation due to the identification of possible ACM, presumably lagging, within the southern return of the infilled structure. Some basic observations can however be made about the construction of this component of the flue network.

The walls of the flue extension ***3189*** were constructed with an outer course of handmade, regularly moulded brick and an inner lining of refractory brick, bonded with a grey ash mortar. The exposed footprint of the flue covered an area of 2.38 x 1.00m (Plate 141). The extension of the flue to the south necessitated the truncation of another wall, which had previously formed the western return of wall *3126* (Plate 144). A single skin of bricks was then added to the western face of *3126*, filling in a slight recess. It was also noteworthy that the extension of the flue, had necessitated partial reconstruction of the northern end of wall *3155*. All the internal wall faces of the flue were blackened and scorched, and the refractory bricks were highly degraded, providing clear signs of use. The 1872 Insurance map usefully makes note of the presence of an additional boiler and aniline machine (not revealed archaeologically) within this part of Building C, to the south of flue. The insertion of an additional boiler and associated machinery provide an explanation for the need to extend the flue in this direction.



Plate 145: Denuded remains of the southern wall of walkway 3069, built over by wall 3178 (1m scale)

Economising House

A major improvement to the steam-raising plant was the addition of the economising house, built on the eastern side of the boiler house (Plate 146). Whilst much of this structure lay beyond the limit of excavation, a suite of structural remains relating to the economiser were revealed. These included a brick-built cellared room, which had a rectangular footprint and had been cut into the natural sandstone (Plate 146). To the south of the main structure was a narrower rock cut channel or passage, aligned north / south alongside the eastern wall of the boiler house; housed within the passage was a large cast iron pipe (Plate 148). An east / west

aligned flue, evidently contemporary with the economiser can also be ascribed to this phase and appears to run in the direction of the *Phase 3* chimney; in doing so this cut off an existing *Phase 3* flue *3180,* running north / south (Plate 147). The 1872 Insurance Plan also depicts an external flight of steps, which either afforded access to the boiler house or the upper levels of the economising house.

Three substantial brick walls (*3181, 3183* and *3186*) were ascribed to this period on the basis of their position and alignment, which corresponded with the mapped footprint of the economising house.

Wall ***3183*** was aligned north / south and was exposed along the eastern limit of excavation. It was constructed in wire-drawn, moulded bricks and firebrick bonded with a dark greyish-brown sandy, ash mortar with small flecks of lime and coal. The wall measured 0.30m in width and was revealed for a total length of 2.07m. An easterly return was visible at the southern end of the wall and continued for 0.31m beyond the limit of excavation. The truncated remains of an additional structure were visible in the western elevation of the wall, suggesting the removal of a floor surface together with much of the northern wall of flue *3184* from this part of the excavation.

The western side of the economising house was defined by a brick wall ***3186***, laid parallel to *3183*. Wall *3186* was built beside the external wall of the boiler house, *3070*, constructed in *Phase 3*. The wall was substantial, 0.46m in width, and was evidently load-bearing; this suggests the economising house may have been several storeys high. The fabric of the wall was identical to wall *3183*. Built into the exposed, northern end of the wall was a sandstone block, measuring 0.62 x 0.50m. The function of the stone block was not ascertained. The wall incorporated an eastern return at the south.



Plate 146: Remains of the economising house looking south (1m and 2m scales)

Wall ***3181*** was aligned east / west and was keyed into both *3183* and *3186*. The wall was largely visible in plan and during the machining had been as reduced in height to the level of the floor surface, *3182*. It measured 2.78m in length and 0.25m in width. The wall was clearly contemporary with the adjoining structures and shared the same building materials.

To the north of wall *3181*, spanning the width of the building between *3183* and *3186*, was a brick floor surface ***3182***. The floor surface was exposed over an area of 2.75m (east / west) and 0.52m north / south, continuing northwards beyond the limit of excavation.

Further remnants of a floor surface were exposed to the south of wall *3181*, adjacent to wall *3186*. This surface, ***3185***, was composed of handmade brick laid directly onto the natural sandstone. The surface survived over an area of 0.95 x 0.85m but was truncated to the north and south and may have originally continued as far as wall *3181/3183* to the north and east and the return of wall 3186, to the south. The surface of *3185* was heavily sooted, suggesting it may have formed the base of a flue.



Plate 147: Flue 3184 looking north (1m and 0.50m scales)

To the east of surface *3185* were remains that were positively identified as a flue (Plate 147). Flue ***3184*** was built to the south of wall *3186*. Much of the northern wall was truncated but a surviving stub of wall was keyed-into wall *3183* and was clearly contemporaneous; the northern wall was 0.24m wide. The southern wall of the flue was narrower and consisted of a single skin of handmade and refractory brick, 0.11m wide. This was reinforced with a second skin, to the south, which appeared to block-off an earlier flue *3180*. The top of the flue was convex and had a gradual break of slope to an east / west sloping base. The structure was built mainly with handmade brick, utilising firebrick in the outer walls, which was found more sporadically in its base; the base of the flue was heavily sooted, in a manner similar to *3185*, which suggest both may have formed elements of the same flue system.

Another element of the boiler house that was spatially and functionally related to the economising house was a narrow rock-cut conduit, ***3188,*** which ran along the eastern side of the boiler house (Plate 148). The rock-cut feature was 0.85m wide, 4.56m long and survived to a depth of 0.18m. A surviving portion of brick masonry, wall ***3187***, was built on a slight shelf in the bedrock on the eastern side of the cut and appeared to be contemporary with the feature. The wall survived over an area of 0.45 x 0.20m. Both structural elements correspond with a small addition that was built against the eastern exterior of the boiler house; this structure is absent on the 1st edition 6" to 1-mile Ordnance survey map published 1851 but is clearly depicted on the 1872 Insurance Plan providing clear phasing for its construction. Based on the details of the plan, the structure appears to have been built around an opening or doorway in the eastern wall of the boiler house.



Plate 148: Rock-cut conduit 3188 together with walls 3187 and 3189, and the large cast-iron steam pipe, looking north

The function of the rock-cut conduit may be explained by the presence of a large cast-iron steam pipe (140mm diameter, with 260mm collars). This had an L-shape in plan and had been inserted through an opening through wall *3070*. The date the pipe was inserted is not clear but it had clearly been surrounded by later brickwork, inserted in *Phase 5 – 6.*

Various details relating to the construction and remodelling of wall *3070,* provide evidence of the wider changes made to the boiler house throughout its use. First and foremost, an opening – situated 3.70m from the south-eastern corner of the wall – does not appear to have been original to the build and was perhaps added during *Phase 4*; a vertical phase break visible in the eastern elevation (Plates 149 and 150) marks the position where a section of masonry had been removed and to which bullnose bricks had been inserted. The position of the doorway corresponds to an opening shown on the 1872 Insurance Plan. The alterations to access most likely relate to the general improvements to the steam-raising plant and addition of the economising house. During subsequent alterations of the building, presumably in *Phases 5 or 6*, the opening was partially sealed; this blocking, *3191* utilised a brittle mid to dark grey ash mortar consistent with other *Phase 6* structures in the main part of Building C. The blocking and obvious redundancy of the aperture for through-access appears to signal yet another alteration to the layout of the boiler house during its final phases of use.



Plate 149: Eastern elevation of wall 3070 showing the blocked apertures in the wall (2m and 0.50m scales)



Plate 150: Western elevation of wall 3070 with blocked doorway 3191 (0.50m scale)



Plate 151: Part of the Phase 5 extension to the south of the boiler house

5.5.5.3 Boiler House: Phase 5: 1872 – 1891

The final phase of development attested by the physical remains within the boiler house relates to its improvements in the late-19th century.

This was most evident in the changes to the southern side of the building, as evidence by an extension built at a 49-degree angle to earlier frontage (Plate 151). Two walls relate to this

modification: *3071* and *3073=3173*. Wall *3071* projected from the corner of the building formed by wall *3070*. Wall 3071 measured 0.35m in width and was revealed over a distance of 3.00m, continuing south-west beyond the limit of excavation. This was keyed into an east / west aligned wall represented by *3073=3173*. *3073=3173* had a total length of 13.70m and was 0.35m wide. The structure was keyed into another wall 3169 at its eastern end.

Wall *3169,* together with walls *3166* and *3075* located to the west of the boiler house appear to also have been added during this phase of the building's expansion and relate to a reconfiguration of access into the boiler house. All three walls were constructed in handmade brick bonded with a hard, grey ashy mortar. ***3169*** was a north / south aligned wall forming the eastern side of an entrance into the boiler house. It measured 2.28m in length and was 0.23m wide. Wall *3169* constructed above the denuded apsidal portion of wall *3167* and abutted its eastern face. It also clearly abutted brick pier *3123* and was not keyed-in to wall *3074*. Running parallel with *3169* and forming the western side of the entranceway was wall *3166*. Wall ***3166*** was of similar proportions to *3169*, measuring 0.25m in width and 1.58m in length. Wall *3166* abutted the brick pier *3124* and was not keyed-in to wall *3075.* Wall *3075* appears to be broadly contemporary with *3166* and shares the same bonding material; it also clearly represents a rebuild or extension to wall 3163 to the west, which had been constructed during Phase 3. Wall ***3075*** had a total length of 3.11m and width of 0.24m and represented a rebuild of wall *3163*. The inner face of the wall sloped inwards in a similar manner to the boiler house walls to the east. This likely ties in with the known insertion of a boiler, corroborated by the westward extension of the boiler house flue system to the north.

A brick floor surface ***3168*** had been laid between walls *3166* and *3169*. The surface was raised above earlier walls *3170* and *3167* and can be seen as contemporary with the raised charging floors *3174* and *3066*. Floor *3168* was constructed in handmade brick. The surface had a concave profile, dipping in the middle of the surface adjacent to the stone threshold *3165*.

Within the boiler house, the charging floors to the south of the boilers had been raised during this phase of the site's development. The had been achieved by the accretion or dumping of waste cinders and ash, represented by layers *3193* and *3194*; two surviving elements of brick floor were encountered above this dump of material: *3066* and *3174*. The raised surface of the charging platform (*3066* and *3174*) was 0.68m above the Phase 4 floor surface. This change probably came about during the reconfiguration of the boilers in the final quarter of the 19th century. It is possible that this period resulted in the boilers being equipped with automatic feeders. Automatic feeders typically included hoppers that were fed from above; this necessitating the raising of the floor level to allow those working in the boiler house to manually fill the hoppers.

5.5.5.4 Boiler House: Phase 6: 1891 – 1908

A small group of structural remains within the eastern part of the boiler house were assigned to Phase 6: *3189, 3191 and 3195*.



Plate 152: Wall 3189 and blocking 3191, together with 3070, looking west (0.50m scale)



Plate 153: The cast iron pipe and Phase 5 3195 to the southern extent of wall 3070, note the use of a black mortar

Wall ***3189*** was encountered to the east of wall 3070 and lay within the rock-cut chamber *3188* (Plate 152). Measuring 0.64 x 0.34m. It appeared to be contemporary as blocking *3191,*

evidently fulfilling a similar function. It was constructed with a mixture of handmade and machine-made bricks bonded with a brittle, dark blackish grey ash mortar.

A probable entranceway through wall *3070* had finally been blocked during this stage. This blocking ***3191*** measured 0.79m in width and had filled in the majority of the former aperture, leaving only a small opening within the wall, which was capped with a sandstone lintel. The fabric of the blocking was consistent with the materials used in *3189* and likely added during the final phases of the boiler house's use, in the early twentieth century.

The final portion of infill, blocking ***3195***, visible in the upstanding remains of the eastern wall of the boiler house had been constructed around the steam pipe. This blocking utilised machine-made bricks and a hard, mid to dark black ash mortar (Plate 153).

5.5.6 Area 3, Chapelfield India Rubber Works:

5.5.6.1 Chapelfield India Rubber Works: Phase 7: 1908 -

The final phase of development is consistent with the incorporation of the dye works into Chapelfield Indian Rubber Works. This period saw the demolition of the majority of the existing dye works' buildings and the construction of a large factory block. Two brick walls, exposed along the northern and eastern limits of the excavation, can be assigned to this phase. These were constructed with machine-made brick bonded with a cement-based mortar and rested on a concrete plinth.

Poured concrete structures with walls built with deep-frogged machine-made bricks were constructed across the southern half of the excavation Area. The easternmost structure constructed in the place of the boiler house was a modern machine bed and had threaded holding-down bolts. The central concrete structure appears to have functioned as stanchion. The latter was situated at the southwest corner of Building C, truncating the juncture of walls *3130* and *3076*. It served a role as a tank base and was constructed with a concrete base and machine-made brick and cement side walls. Contained therein was an oily substance, perhaps implying its use as a tank or reserve, for petrochemicals or hydrocarbons. A further concrete foundation had been constructed within the footprint of Building B, presumably causing truncation to the floor surfaces in this part of the site. Covering a large portion of the excavation area was a spread of unbonded bricks laid out above the remains of the dye works, covering an area of approximately 21 x 20m; this was in turn covered by a series of adjoining concrete slab surfaces, which ran up to the external walls and contemporary concrete structures. Very few of the concrete surfaces encountered across the excavation area were reinforced with steel rebar, an indication they probably date from the first half of the twentieth century.

5.6 Excavation Area 4 Results: The Ardwick- and Chapelfield Dyeworks (Julian Thorley)

The Excavation Area 4 expanded upon the results of evaluation Trenches 16, 17, 18 and 19. Area 4 uncovered significant remains of the Ardwick and Chapelfield Dyeworks, which occupied the site from the late-18th to the late-19th centuries until their conversion into an India Rubber factory in the late 19th century. It uncovered well-preserved remains comprising walls,

floors, boilers, flues, a chimney and flywheel pit. The excavation covered a total area of 1260m^2. Area 4 was covered by a demolition rubble and MOT and was in places heavily truncated by more recent construction activity, comprising a series of concrete stanchions and foundations associated with the late 20th-century prefabricated buildings, which had stood on the site until 2021. Given the frequency of these intrusions and their limited archaeological value, only structures and deposits associated with the 18th and 19th century phases of development were assigned context numbers.

5.6.1 Phase 1: 1782 - 1800

The earliest phase of the dyeworks was Building A, comprising walls *402*, *403* and brick surface *404* (Plates 154 and 155) The survey of these structures was overlaid on the Greens map of 1787-94 and appears to represent the building seen on this map, which was orientated north-east / south-west. With modification and alteration this building and its orientation and remains present throughout *Phases 2 to 5*.

Wall ***402*** formed the south-east external wall of Building A. It was orientated north-east / south-west and was 6m long, 0.36m wide and had a surviving height of 0.91m. It was constructed from handmade bricks (brick dimensions: 230 x 105 x 60mm) and bonded by a yellowish grey lime-based mortar. Wall *402* was keyed-in to wall *403*. Both were constructed in a similar fabric and built to English Garden Wall bond. Wall ***403*** formed the north-east gable end of the building and survived as two separate sections of masonry; both remnants of wall were orientated north-west / south-east. The south-east portion measured 3.32m in length, 0.36m in width and survived to a height of 0.91m; north-western section of the wall measured 1.60 in length and 0.33m in width with a surviving height of 0.80m.



Plate 154: Building A showing walls 402, 403 and surface 404 facing south east (2 x 1m scales)



Plate 155: Building A truncated by station bases and concrete pad, facing north west (2 x 1m scales)

Running parallel to wall *403* was wall ***437***, which formed the south-eastern wall of a small room at the north-eastern end of Building A. This wall was partially truncated by a series of later concrete and brick structures, deriving from the 20th century. Wall *437* had a total length of 8m and width of 0.38m and was observed in plan. It was constructed of handmade brick and bonded with a yellowish grey lime-based mortar, consistent with a late 18th-century date.

Surface ***404*** was 12.14m long and 4.13m wide and was constructed from handmade bricks of various sizes. This building was heavily truncated by later 20th-century foundation cuts, housing concrete stanchion bases and a cement pad (Plates 154 and 155).

Three other fragments of wall survived in the south-eastern half of the building: ***418, 438*** and ***448***. Wall ***418*** formed part of the north-western side of Building A. Wall ***418*** was 0.59m wide and 4.13m in length, truncated to the north and south by later truncations. Wall ***438*** represents a southerly extension of wall ***402***; this survived to a maximum length of 1.91m, truncated to the north during the construction of structure ***433***. The wall was 0.35m wide. Wall ***448*** was aligned north-east / south-west and represents a return of wall ***438***. It measured 0.49m in width and 0.76m in length. All were constructed with handmade brick and a light yellowish grey lime-based mortar.



Plate 156: Building B showing walls 409, 410 and surface 411, facing north west (2 x 1m scales)

Once the site survey was overlaid onto an 18th-century map covering the site, it was clear the outline of a building on Green's map (surveyed 1787-94) closely corresponds with the outer of the walls Building B (Plate 156; Figure 21).

Wall ***406*** was an external wall. It was orientated south-west / north-east and was 10.70m long, 0.60m wide and had a surviving height of 0.88m. *406* was constructed of red handmade brick (brick dimensions: 230 x 140 x 100mm).

Wall *406* was abutted by surfaces and *405* and *408.* Surface ***405*** measured 5.08m in length by 2.07m in width and was constructed of red handmade bricks. Surface ***408*** was 4.03m long by 3.10m wide and was constructed from similar materials. Abutting these surfaces and wall *406* was a 0.37m-wide L-shaped wall ***407***, extending for 7.74m in length northeast / southwest and 3.10m northwest / southeast. Wall *407* was constructed of handmade brick.

Walls *409* and *410* and surface *411* to the north west corner of site are also part of this building (Plate 156). Wall ***409*** was an L-shaped external wall measuring 4.34 long by 2.30m with a width of 0.37m and an excavated depth of 1m with no external floor visible. It was bonded by pinkish white lime-based mortar. Wall *409* abutted wall ***410***, which was orientated southwest / northeast and measured 1.8 in length and 0.24m in width. Surface ***411*** had been laid up to both walls *409* and *410* and was 4.10 long and 3.60m wide, incorporating of mixture of sandstone flags, handmade brick and firebrick.

5.6.2 Phase 2: 1800 - 1831

Building C was constructed over earlier Building A but now on a north west to south east orientation and incorporated the *Phase 1* features; truncating surface *411* is flue ***412*** on the same orientation, measuring 6.90m long by 0.48 wide with a height of 0.57m constructed of red handmade house brick with some firebricks with a grey lime-based mortar bond (Plate 157). This was abutted by wall ***413*** orientated north west / south east, 11.66m long, 0.75m wide (brick dimensions: 230mm x 105mm x 80mm) constructed from handmade red bricks with a sandy mortar bond.



Plate 157: Building C showing flue 412 abutting wall 413 and surface 414, facing north west (2 x 1m scales)

An internal surface ***414*** abutted this and was 6m long and 5m wide constructed of red handmade bricks and sandstone flags (Plate 157). This also abutted internal wall ***416*** orientated north east to south west and was 5m long and 0.23m wide**,** constructed of red handmade bricks and was 6.5m long and 5m wide. To the south of this is surface ***415*** 6m long and 5.30m wide constructed of red handmade bricks and sandstone flags (158). These abutted an opposing external wall ***417*** orientated north west to south east and was m long and 0.48m wide constructed of red handmade house brick with a grey and sandy mortar bond.



Plate 158: Surface 415 abutting wall 417, facing west (2 x 1m scales)

There were two internal column bases *419* and *420* to the south of surface *415* (Plate 159). ***419*** was 1.37m long and 1m wide and constructed from red handmade bricks set in a sandy lime-based mortar. ***420*** was 1.37m long and 1.36m wide and constructed from the same material. These were heavily truncated by later 20th-century foundation cuts, housing concrete stanchion bases.

Wall ***413*** abutted wall *418* and was orientated north-east / south-west, measuring 4.08m in length, 1.20m in width and stood to a height of 11 courses (Plate 160). It was constructed of red handmade bricks bonded with a grey sandy mortar. This is the external wall to Building A which has been extended and modified to as seen on Bancks and Co's map from 1831 (Figure 22).



Plate 159: Column bases 419 and 420 showing later 20th century truncation, facing south west (2 x 1m scales)



Plate 160: Wall 413 abutting wall 418, vertical shot (2 x 1m scales)

An additional wall and extension to Building A was constructed during this phase, represented by an external wall ***431*** orientated north-east / south-west, measuring 8.60m in length and 0.85m in width (Plate 161). An internal floor surface ***432*** covering an area of 4.30m x 2.85m had been laid up to the walls. It was constructed of heat-affected red handmade bricks and firebrick, some of which were stamped 'Lamb & Co, Manchester'.



Plate 161: Wall 431 and surface 432 forming one end of a probable boiler bed, facing north west

Two additional structures also attributable to this phase of construction were ***439*** and ***440***. ***439*** was a rectilinear structure delineated by brick walls and a floor surface. The structure had a total footprint of 2.02 x 0.76m. The outer walls were 0.24-0.35m wide. To the north, was structure ***440***, which had a U-shaped plan. This was constructed against the outer face of wall ***438***. This measured 1.71 x 1.83m. Both structures were built with handmade brick bonded with a light yellowish/greyish-white lime-based mortar. Post-dating ***439*** and ***440*** were walls ***442***, ***443***, ***444***, ***445*** and ***446***, which delineated a rectangular room, in which was contained a brick built installation: ***441***.

5.6.3 Phase 3: 1831 - 1849

Archaeologically, there was very little change represented physically within the remains of the dyeworks that could be attributed to this phase of development. An additional range added to the eastern side of Building A can be seen on the 1850 OS map but was subsequently

demolished during *Phase 5* and sustained truncation from later 20th-century construction activity.

The detailed 1850's map shows the position of the engine house with ***433*** located here, an early concrete base, 7m long and 2.90m wide constructed of early concrete and brick fragments and containing machine fastening points. However, this could be from an earlier episode of construction, perhaps initiated during *Phase 3*. This interpretation is supported by the structure's association with a heat affected surface *431* potentially being the base of denuded boiler bed for this engine house.

5.6.5 Phases 4-5: 1849 – 1891

In the forty-year period between the mid and late 19th century, there was a substantial period of building activity as the site turned to the production of India Rubber. The first half of this period saw the construction of a large chimney to the north of Building A, which was initially fed by flue *425.*

Chimney ***424*** (Plate 162) was had an octagonal shape in plan with a length of 5m and a depth of 1.6 constructed from an inner single skin of firebricks with the outer shell of red handmade brick; its bonding material was pinkish mortar. It was 5m wide with a depth of 1.05m. This structure is first depicted on the 1891 OS map but was likely established in Phase 4 (1850 – 1871) and certainly pre-dates other structural elements depicted on the 1891 OS map.

Flue ***421*** was orientated north west to south east and was 10m long, 1.25m wide with a depth to the flue floor of 0.8m. *421* was built from red brick bonded with a pinkish white lime-based mortar. It ran from the vicinity of Building B in the northwest of the excavation in the direction of flue *422*. Both flues *421* and *422* were truncated by a later engine house *434* (Plate 164), shown on the 1891 OS map (Figure 24) . This suggesting the chimney and flue network was extant prior to the erection of the engine house, probably in the third quarter of the 19th century. A small surviving section of flue *421* was revealed beneath the footprint of a *Phase 4-5* extension to Building B and was truncated along the alignment of this extension.



Plate 162: Chimney 424, facing south east (2 x 1m scales)

Flue ***422*** probably functioned as the south-western continuation of flue *421* (Plates 164 and 165). The structure was aligned northeast / southwest and fed into the chimney on its south-eastern side; it was an L-shaped feature, 10m long, 1.40m wide with a depth from top to bottom of 0.50m. The flue was constructed of red handmade brick. Flue *422* contained a very dark sooty fill and the walls were heavily stained with soot. Flue *422* was truncated by the construction cut for an engine house and wheel pit *434*.

Flue ***425*** fed into the chimney to the north and was 12.40m long, 1.27m wide with a depth of 1.04m constructed from red handmade bricks (Plate 167). Flue ***425*** showed signs of intense heat but no soot was present on its walls or floor. The construction of this flue utilised an existing wall *406,* which has been quite clearly built over and incorporated in this structure.



Plate 163: Flue 422 feeding into chimney 424 blocked by later brick wall 423, facing north (2 x 1m scales)

The demolition rubble *401* within flue *425* sealed a bluish-grey silty residue *427*. As flue *425* was orientated towards the river Medlock, it may have been repurposed as a drain or run-off channel during its later use, hence the accretion of this silty deposit at its base.



Plate 164: Flues 421 and 422 truncated by the wheel-pit within engine house 434, looking north east (2 x 1m scales)



Plate 165: Flue 422, facing west (2 x 1m scales)



Plate 166: Flue 425 cutting surface 405 and wall 406 with modern concrete truncation, facing south east (2 x 1m scales)



Plate 167: Wall 406 built over by Flue 425, facing north (2 x 0.50m scales)

An engine house and wheel pit ***434*** (Plate 168) were constructed by 1891 and truncated earlier flue ***422*** also, which was also blocked off into chimney **424** by later brick wall **423** orientated north east to south west and was 0.96m long and 0.75m wide constructed of blue machine-made house brick (230mm by 110mm by 80mm).

The engine bed ***434*** was constructed with large rectangular cut stone bedding blocks overlain by brick bases a further level of cut stone with this overlain by brick bases with iron fittings (Plate 168). A large rectangular wheel pit was formed by wall ***435*** aligned northwest / southeast, measuring 6.5m long, 0.42m wide and standing to a height of 1m. It was constructed from red handmade bricks bonded with a sandy light brown mortar. This was abutted to the south by external wall ***436*** orientated northeast / southwest, measuring 4.45m in length, 0.75m in width. The northern extent of the engine house was truncated by a later concrete base.

Broadly contemporary with this building was the last active flue *426*, which fed into chimney *424* to the south-west. Flue ***426*** (Plate 169) had an L-shaped form in plan and measured 7.8m by 9.96m in length, 1.60m in width with an inner lining of firebrick (brick dimensions: 240mm by 110mm by 90mm) and the outer wall of red brick. The construction of flue *426* signalled the redundancy of an earlier flue *425*. Flues *421, 422* and *425* had all fallen out of use by 1891 with only *426* being active.



Plate 168: Engine bed 434 looking east (1 and 2m scales)



Plate 169: Flue 426 feeding into chimney 424 and blocking Flue 425, facing west (2 x 1m scales)



Plate 170: Walls 429 and 430, facing north west (2 x 1m scales)



Plate 171: Vertical detail shot of walls 429 and 430



Plate 172: Pipe feeding into 429 & 430 with walls 428 constructed over surface 404, facing south east

Flue *426* showed signs of modification over its period of use, with curvilinear walls ***429*** and ***430*** being constructed 5.40m from its south-eastern extent (Plate 171); wall ***429*** was 1.35m long, 0.23m wide and 0.45m high constructed from blue machine-made brick (230mm by 110mm by 80mm). Wall ***430*** was 1.66m long, 0.23m wide and 0.60m high, constructed from the same brick material. Both walls cut off access to the south-eastern end of the flue, where it ran up to boiler *431* and served to redirect the flue towards structure *428*.

Remnants of a large cast iron steam pipe were identified within structure *428* (Plate 172), surviving in the south-eastern corner of an earlier room in Building A (defined by walls *402*, *403* and *437*). Structure ***428*** measured 1.27 x 1.47m and was positioned to the north-east of flue *426*.

A series of walls were constructed within Building A around two existing structures. The fabric of the walls was noticeably different, utilising a mixture of handmade and machine-made brick bonded with grey ash mortar. The walls ***442***, ***443***, ***444***, ***445*** and ***446*** delineated a 3.98 x 5.35m room, continuing south-east beyond the limit of the excavation. The walls were 0.50-0.67m wide. Housed within the room was a rectilinear brick-built structure (***441***) measuring 2.40 x 5.18m with an interior channel measuring 0.59m in width. Incorporated into the structure were a series of rectangular slots / recesses. This structure likely supported machinery or apparatus within the dyeworks or later factories.

6. Discussion

6.1 Evaluation Trenches

6.1.1 Introduction

Most of the significant remains found during the excavation were extended into the excavation areas outlined above: Area 1, the Ardwick Tannery; Area 2, the Mayfield Bathhouse; and Area 3, the Mayfield Dyeworks. Despite this, some remains of archaeological interest were found during the evaluation which were not explored further in the subsequent phases of excavation. Those remains will be further discussed here.

6.1.2 Discussion of results

Trenches 2, 6, and 7 uncovered remains which were associated with the Mayfield Dyeworks but were outside Excavation Area 3. The brick structure ***202*** was a flue associated with the western buildings of the Mayfield Dyeworks. Some of those buildings were recorded on the 18th Century mapping though the chimney to which the flues were related was not clearly surveyed until the mid-19th century and appeared to have undergone changes before the survey for the 1891 OS Map. The presence of the flue along with the cartographic evidence confirms that the dyeworks had had multiple operational boiler houses, powering various ranges within the site.

Structures ***601*** and ***602*** of Trench 6 were similarly associated with the Mayfield Dyeworks. These features also likely related to power-systems at the site, likely a second large chimney which was located at the east of the works. Structure ***602*** was likely part of a flue associated with a chimney shown on the 1851 and 1891 maps. It was not surveyed for Banck's Map of 1831 and was likely constructed as part of the early-to-mid-19th century expansion of the dyeworks, which included the extension of the nearby boiler house. Structure ***701*** of Trench 7 was likely a flue which led from the boiler house of Area 3 to that chimney surveyed on the historic mapping at the northeast of the site.

Based upon the surviving height of the nearby extant 'Arthur Street' – of which the cobbled and flagstone surface were partially visible, it was likely that the un-cellared dwellings around Indigo Street did not survive within the site boundary No archaeological remains were uncovered in Trench 11. However, the area of Trench 12 had not been reduced to the same depth as around Trench 11 and some remains of the dwellings in that area were uncovered during the evaluation. The remains within Trench 12 were likely part of those 19th century dwellings shown on the historic mapping and fronted on to Hoyle Street. As the remains consisted of two rooms with a connecting threshold, it was most likely that they were the front and rear rooms of through houses. Rows of terraces had been constructed sometime 1831-51 based upon the historic mapping and were cleared in the mid-20th century.

The remains uncovered during Trench 14 were not manually excavated due to the significant depth at which they were found. However, based upon the remains in the trench – brick structures and steam pipes, and the cartographic record, some further information could be gleaned. Those remains were likely part of the boiler house associated with the Ardwick Dye Works (later the Chapelfield Works). Though the dye works had been constructed in the 18th Century, the remains found within the Trench 14 more closely correlated to a structure which

was first shown on Banck's Map of 1831. Several structures labelled 'Boiler' were shown in the vicinity on the 1851 Town Plan Map.



Plate 173: Remains of the chimney-flue in Trench 7.

6.2 Excavation Areas

6.2.1 Area 1: The Ardwick Tannery (Figures 4-6)

Trench 10 and the subsequent Excavation Area 1 uncovered various remains associated with the 19th century Ardwick Tannery. These remains included bricks walls, flagstone, floors, a chimney, and boiler-beds. In addition to the remains of the tannery, various remains associated with the post-tannery structures were uncovered. This included a series large brick stanchions of the late-19th-to-early-20th century which were associated with the site of the Chapelfield India Rubber Works.

Most of the remains of Excavation Area 1, and those of most significance, were associated with the Tannery and were dated to *Phases 4-5* and were built in the mid- to late-19th century. The historical records indicated that tanning was undertaken at the site from at least the 1850s, though it may have been as early as the 1830s. Production ceased in the 1890s and the site was soon cleared and incorporated into the nearby Chapelfield Works.



Plate 174: Extract from Pigot's map of 1836 showing the earliest configuration of the tannery

6.2.1.1 Phase 3 1831 – 1849

Early 19th century mapping reveals the site of the tannery remained undeveloped until the mid 1830s. The building plot was vacant on Bancks and Co.'s map of 1831 and Fisher's map of 1833. Some of the recognisable tannery buildings and yards are however shown on Pigot's map of 1836; this depicts two perpendicular buildings, touching corner to corner, with a

perimeter wall forming an L-shaped yard to the south and triangular yard to the north. It is reasonable therefore to suggest the tannery was established in the intervening years between 1833 and 1836. Subsequent maps replicate the configuration of the site until the late 1840s, when it underwent a second major phase of westward expansion. The extent of this development can be gleaned through a comparison of the plans produced by Pigot in 1836 and Pigot and Slater in 1848. Although both early maps were produced at a scale, which precludes close analysis of the buildings, the configuration of the site by 1848 closely resembled the Ordnance Survey 1:500 Town Plan, surveyed in 1849 published in 1851 (Figure 4).

The Ordnance Survey Town Plan provides the first detailed cartographic representation of the site, revealing a rectilinear arrangement of buildings surrounding a small, enclosed courtyard. This configuration was typical of the time with the bark stores, the bark mill and drying lofts situated around the courtyard (Nevell & Bell, 2009, 10). The buildings were situated immediately south of the River Medlock, providing a convenient place to discharge liquid waste although 'an abundant supply of water' was drawn primarily from wells located on the site. Two adjoining courtyards on the eastern and southern sides of the buildings, contained around 30-40 tan pits. Whereas traditional 'lime-yards and tan-yards were generally in the open or placed under the cover of lean-to structures (Nevell & Bell, 2009, 10; Rynne 2006, 305; Trinder 1992, 745) by end of the 19th century tanneries were typically roofed with most operations being carried out inside (Adcock 1915 52).

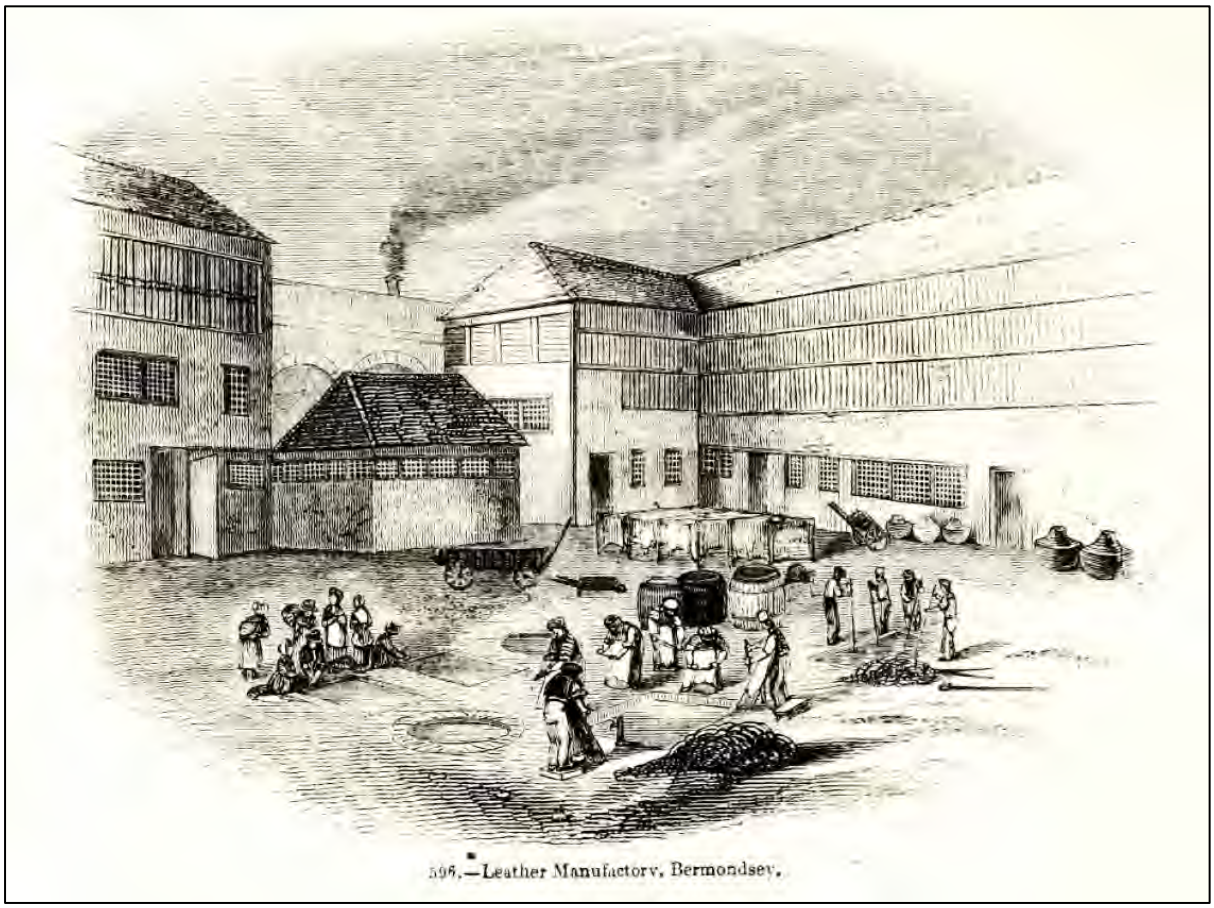


Plate 175: Example of a leather manufactory in Bermondsey, London

It was not possible to confidently ascribe many of the built remains in Area 1 to the tannery's earliest phase of development *Phase 3*, with most of the remains belonging to *Phases 4* or *5*. The octagonal chimney base ***110*** and several associated structures including boiler bed ***112*** were both of a construction consistent with this date.



Plate 176: 1890s example of a 'Scouring Machine' by Haley & Co. of Leeds, who held the patent for 'Jacksons Scouring Machine

6.2.1.2 Phases 4-5 1849 – 1891

During the second half of the 19th century, the tannery complex more than doubled in size. This transformation of the site is readily apparent from the 1891 Town Plan (Figure 5), which shows the premises extending from Nether Street in the west, to the southern limit of the Chapelfield India Rubber Works, in the east - the full length of Bond Street. The existing range of buildings had been extended, some of the former yards built over and a new large building was constructed along the entire eastern side of Nether Street. The 'Tan Pits' recorded on the 1851 Map were no longer visible and appeared to have been encompassed within a new building.

Over the course of 60-years, the scale of the industry within the Ardwick Tannery had developed considerably from a small collection of buildings in the 1830s to a vast complex of workshops and yards. From the winding down notice in 1892 a multifarious array of tasks and processes were being carried out within the complex, which housed its own bark mill, sizing house, tanning, currying and finishing shops.

6.2.1.3 Leather Manufacturing

Thomas Cunliffe and Son's Ardwick Tannery was a tannery, processing and leather finishing site founded in the first half of the 19th century, c.1833-6. The earliest reference to Cunliffe's business was made in 1837, at which time the company were operating as dealers on Church Street with no mention of their works in Ardwick. The business was expanded to include the works on Ardwick by 1841. Over 50-years later, it was recorded that the site had 'for a long

period [been] in the occupation of Messrs Thomas Cunliffe and Son's' and had evidently remained in the hands of the family for most, if not all of its existence.



Plate 177: The excavated remains of the chimney 110 (1m scale)



Plate 178: Close-up showing the scorched bedrock base of the chimney 110

From the available historical evidence, it is apparent that the manufactory contained a full suite of buildings and equipment used in the cleaning, tanning, currying processes, and finished leather goods production. They produced a range of goods (straps, belts etc.), together with many of the raw materials (bark) needed to carry out their work and produced much-needed by-products for other industries (size and animal hair).

Although the site investigation did not identify any physical remains directly associated with processing or manufacture, the excavation did uncover remains of the boiler house and an associated chimney, providing some insight into the steam raising plant, which powered the tannery steam engines and machinery.

The chimney was relatively small with a diameter of only 1.45m. It had an octagonal in shape in plan, which by the mid-19th century was the most common form found in mills and factories (cf. Giles and Goodall 1992, 151). Although small, the chimney is likely to have been large enough to create sufficient draught for the bank of two boilers situated closeby. Somewhat unusually, the chimney was not recorded on either the 1851 or 1891 OS maps, where generally such features were indicated or labelled, perhaps implying it was not of considerable height. Based upon the construction materials – sandstone blocks and handmade bricks bonded with a sandy lime mortar – the chimney can be dated to the early to mid-19th century and most likely derived from the initial construction of the tannery *c.* 1836-49.



Plate 179: Firebrick bearing the stamp Farnley Iron Co. Wortley' utilised in Boiler 111

As stated, the motive power for the works was provided by two boilers, drawing water from wells recorded at the site – or perhaps directly from the River Medlock. The uncovered boilers-beds were of a typical T-shaped plan and were likely used to house long cylindrical boilers, of the Cornish, or Lancashire or Galloway-type with a firing or charging platform at one end. The 1892 auction notice described the boilers at the tannery as 'single-flue steam boiler, 16ft. by 6ft. diameter, with mounting; one double-flue [boiler] ditto, 20ft. by 6ft. 6in. diameter, with [mounting] ditto, by Heaton'.

Based upon the size of the boilers uncovered during the excavation and the location of the flues, the 16ft. boiler was likely associated with structure ***112*** whilst the larger 20ft double-flued boiler most likely was mounted on structure ***111.*** The flues associated with those boilers almost certainly led to the nearby chimney ***110***.

Occasional stamped bricks were also found within the two boiler-beds, which included one with the stamp: 'Farnley Iron Co. Wortley'. The Farnley Iron Co was established in 1844 near Leeds (Yorkshire) and was a large producer of fireclay products in the second half of the 19th century. It remained in production until it was absorbed by the Leeds Fireclay Co. in 1889. Whilst it may be anticipated that existing stocks of brick bearing the stamp will have been in circulation after the company was absorbed, it seems likely these materials were incorporated into the structures at the tannery prior to c.1890.

Differences in the specification of the boilers installed at the tannery imply the steam-raising plant was expanded gradually, perhaps initially with the installation of one single-flued boiler, presumably a Cornish-type followed later by a Lancashire or Galloway boiler. This would be consistent with the growth of Thomas Cunliffe's enterprise over the course of half-a-century.

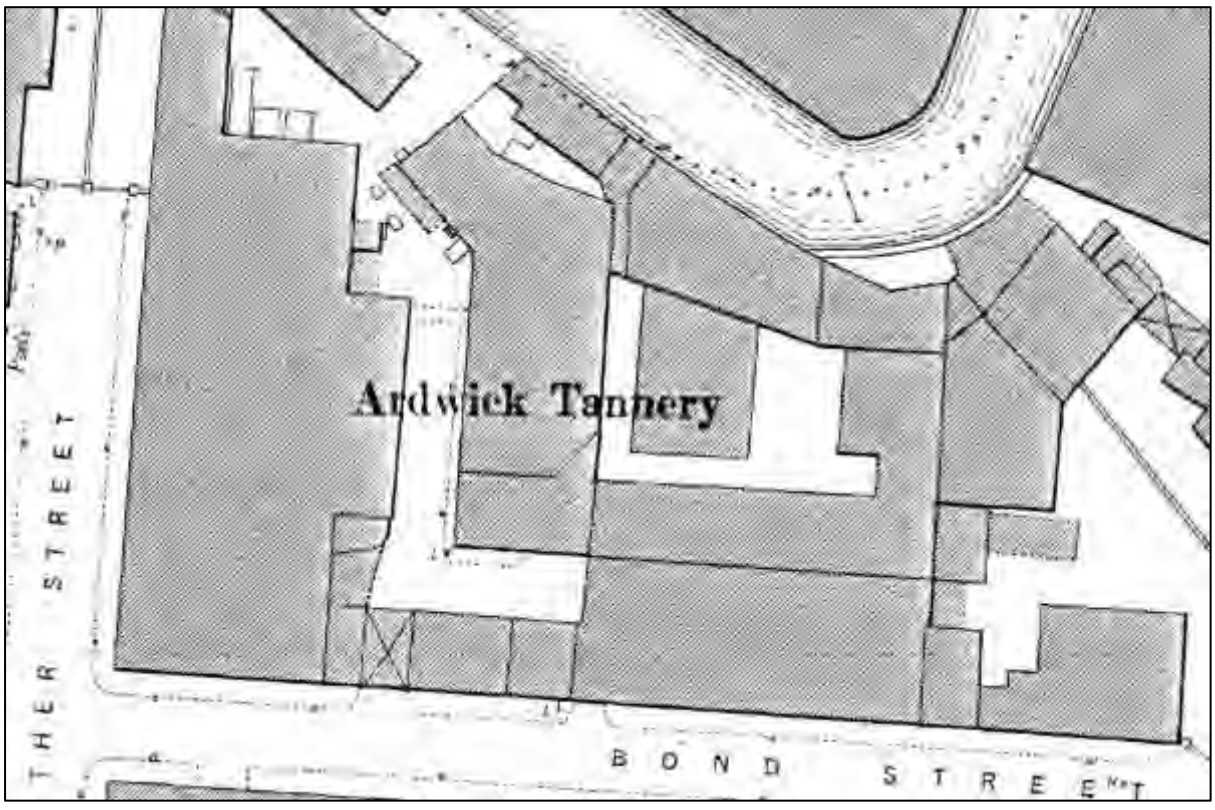


Plate 180: Extract from the Ordnance Survey 1891 Town Plan showing the Ardwick Tannery

The primary source of power was a 'high-pressure horizontal engine', which most likely replaced an earlier engine and would have ran shafting and gearing within the works. Steam from the boilers also powered the 'donkey engine' a winch type machine most likely used in the bark mill.

Throughout the 19th century the application of steam power to the industry saw the gradual mechanisation of a number of tasks within the tannery. However, as a leading contemporary recalled in 1915, before the construction of leather machinery 'barely started thirty years

ago…there were practically no efficient mechanical aids to lighten the exceedingly laborious operations incidental to leather manufacture three decades ago" (Adcock 1915 52). Some early advances were made with the introduction in 1818 of band knife machines that were used to stretch out irregularly shaped skins, and in 1856 a machine that could split hides into layers (Nevell & Bell, 2009, 10). It was however in the second half of the 19th century that most purpose-built machines were invented and adopted.

At the Ardwick Tannery a number of machines are listed in their winding-down sale of 1892 testifying to the mechanisation of the industry. These included: 'two of Jackson's self-contained scouring machines' used in the preparatory stage of scouring the hides (see Plate 6); 'setting machines'; a 'rolling machine'; a 'striking machine' for pressure removing impurities from the leather; a 'leather belt callender' for smoothing or finishing products; 'belt splicing machines'; and a 'hydraulic press'.

The investigation has enabled an in-depth study of a relatively rare site-type for this period in the Greater Manchester region and one that has been subject to limited work both regionally and nationally. The most important insight has been the evidence for mechanisation.

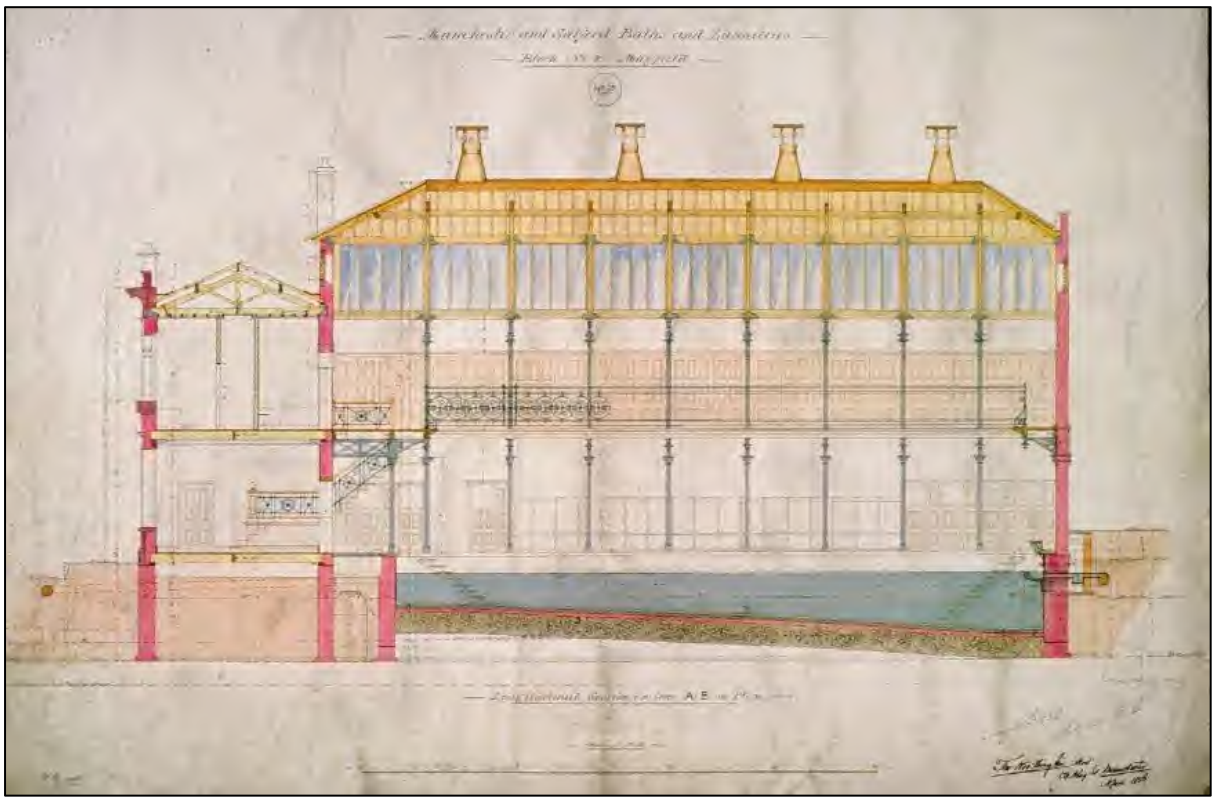


Plate 181: Worthington's design plan of Mayfield Baths, drawn on canvas by Thomas Worthington in April 1856

6.2.2 Area 2: The Mayfield Baths (Figures 7 and 8)

The investigation of Mayfield Baths formed a key element of the fieldwork. It provided a tangible link to an institution that once bestowed vital services upon the urban population of Ardwick, in the 19th and 20th century. Public baths and wash-houses represent the first civil engineering projects in 19th-century industrial towns that were implemented explicitly for the poor, and brought the first serious improvement to the health of the labouring classes. Their

provision signalled a change in attitudes to public health, which were acted on by various measures undertaken by local government and social reformers, intent on improving the physical, social and moral condition of the working population. The baths and wash houses in Manchester are particularly significant in that they were not originally built or managed by the Manchester Corporation, instead funded and maintained by private enterprise.

The excavation allowed for a more nuanced understanding of the complex and its development. This was made possible through a synthesis of the available historical evidence historic mapping and records made of the built remains. The fieldwork and research have demonstrated how the premises was built and adapted over its 90-year period of use.

6.2.2.1 Phase 4 1849 – 1872

The Mayfield Baths were a relatively late addition to the townscape in Ardwick and consequently occupied marginal land on the very edge of the River Medlock. The building was constructed c.1856-7. A number of structural remains within the complex were ascribed to the initial construction of the baths and laundries, which falls within *Phase 4* of the site chronology.

A series of brick walls (***200, 202, 203, 207, 210, 211, 212,*** and ***213***) were exposed in the western and northern half of the excavation. Through overlaying these with the original design drawings for the building, it was clear most of these corresponded closely with Worthington's original plans (Plate 182-185).

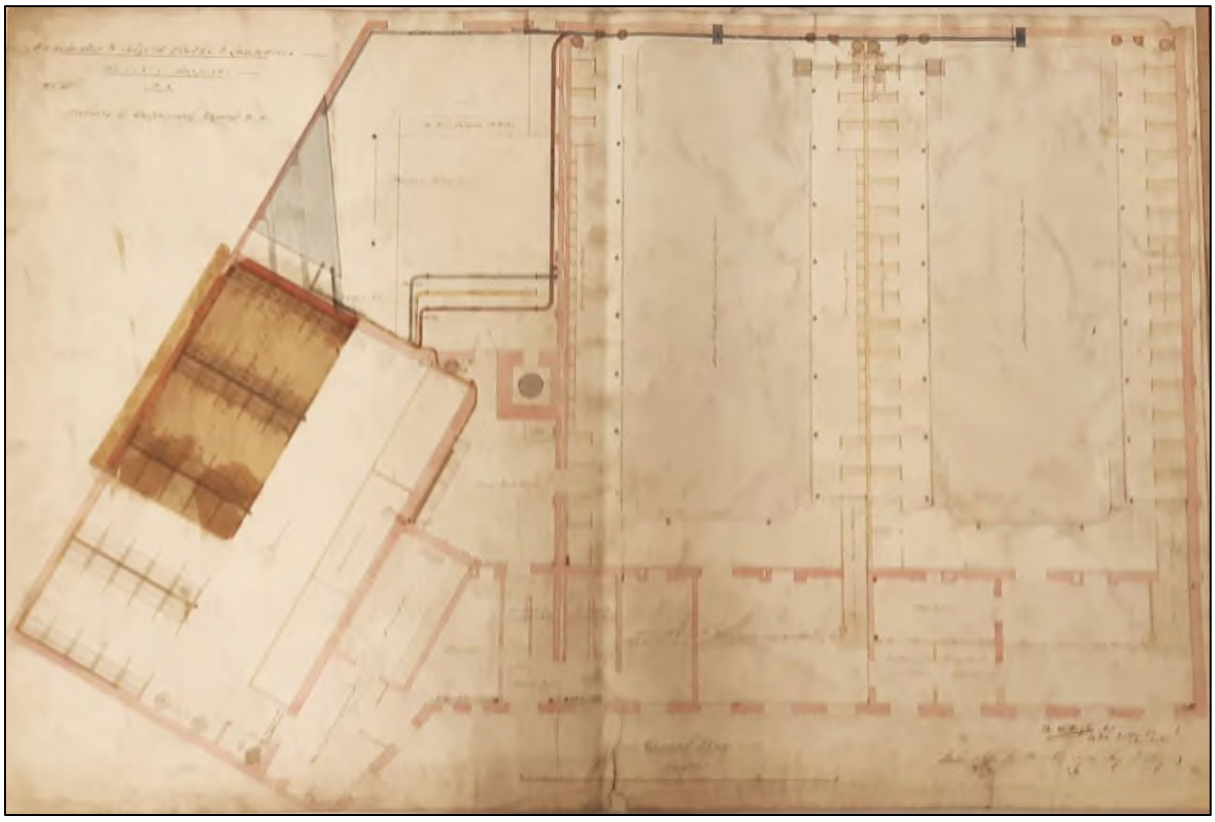


Plate 182: Extract from Worthington's plan of Mayfield, drawn on canvas by Thomas Worthington in April 1856

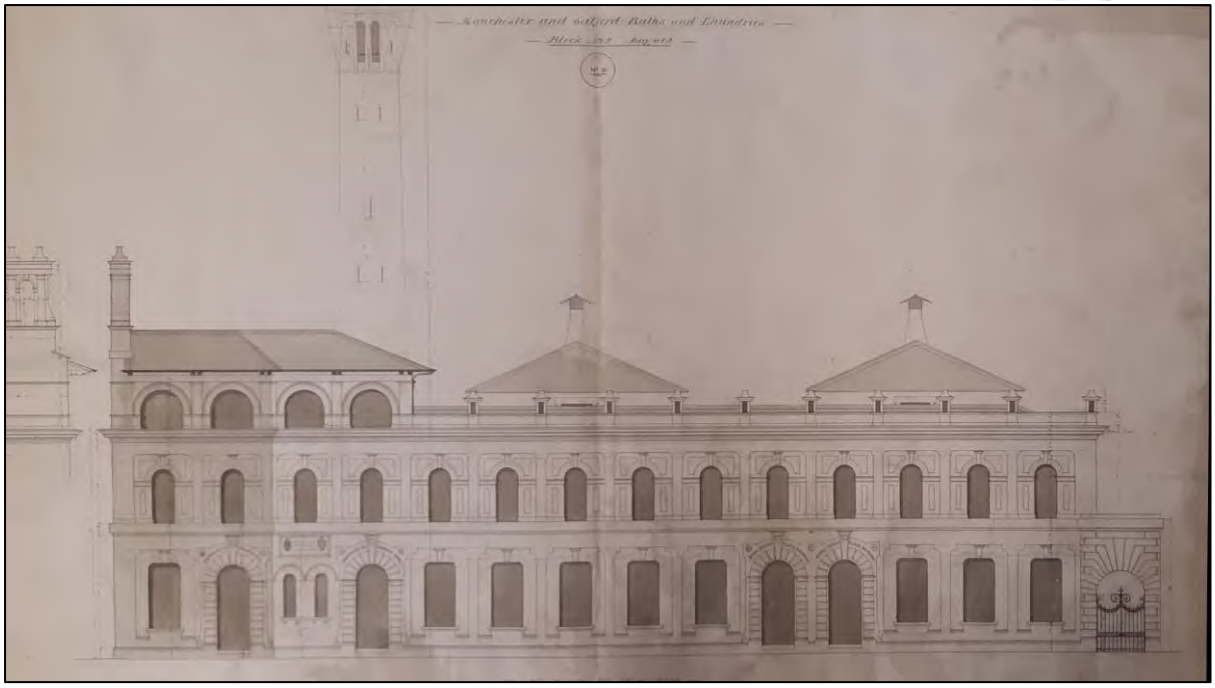


Plate 183: Worthington's plan for Mayfield Baths showing the proposed street frontage on Boardman Street

The majority of the walls encountered to the west of the plunge pools, alongside present-day Baring Street, can be seen to represent internal divisions within the building. These would have demarcated the foyers, offices and other rooms located on the western side of the complex (Plate 183) – the side of the building with a frontage on Boardman Street (now Baring Street).

To the rear of the street frontage were two adjoining 1-2 storey buildings, with galleries rising from cast iron columns; this housed the first- and second-class men's plunge pools. The arrangement shown on Worthington's 1856 plan corresponds closely to the excavated remains. The excavated structures, pools ***225*** and ***226***, were virtually identical in construction with an outer shell formed of substantial brickwork constructed atop a multi-layered concrete and brick foundation.

Comparison with the Worthington's original plan and cross-sectional drawings reveals several surviving elements of the pool design to be original. The curved internal corners within the pool and stone coping into which were set the uprights for the galleries and roof, were two elements that were integral to their design and were evidently retained throughout the structures' use.

Worthington's plan reveals two elements of the heating and drainage system for the pools that were evident in the excavation. Two square inlets are depicted beneath the pool steps in the north-eastern corner of pool *225* and south-eastern corner of pool *226*. These are shown feeding into an east / west pipe or conduit (colour-coded yellow) running between the two pools (Plate 182). Although the inlets were modified during the relining of the pool, this basic system was retained throughout the building's use. The same plan shows the hot water or steam pipes (colour-coded black) running from boiler house in the north to the eastern side of both pools. The position of the pipes corresponds closely with that of the steam-injection

pipework found in pool *225.* It does however seem likely the pipework had been replaced or modernised following the retiling of the pools in the third quarter of the 19th century.

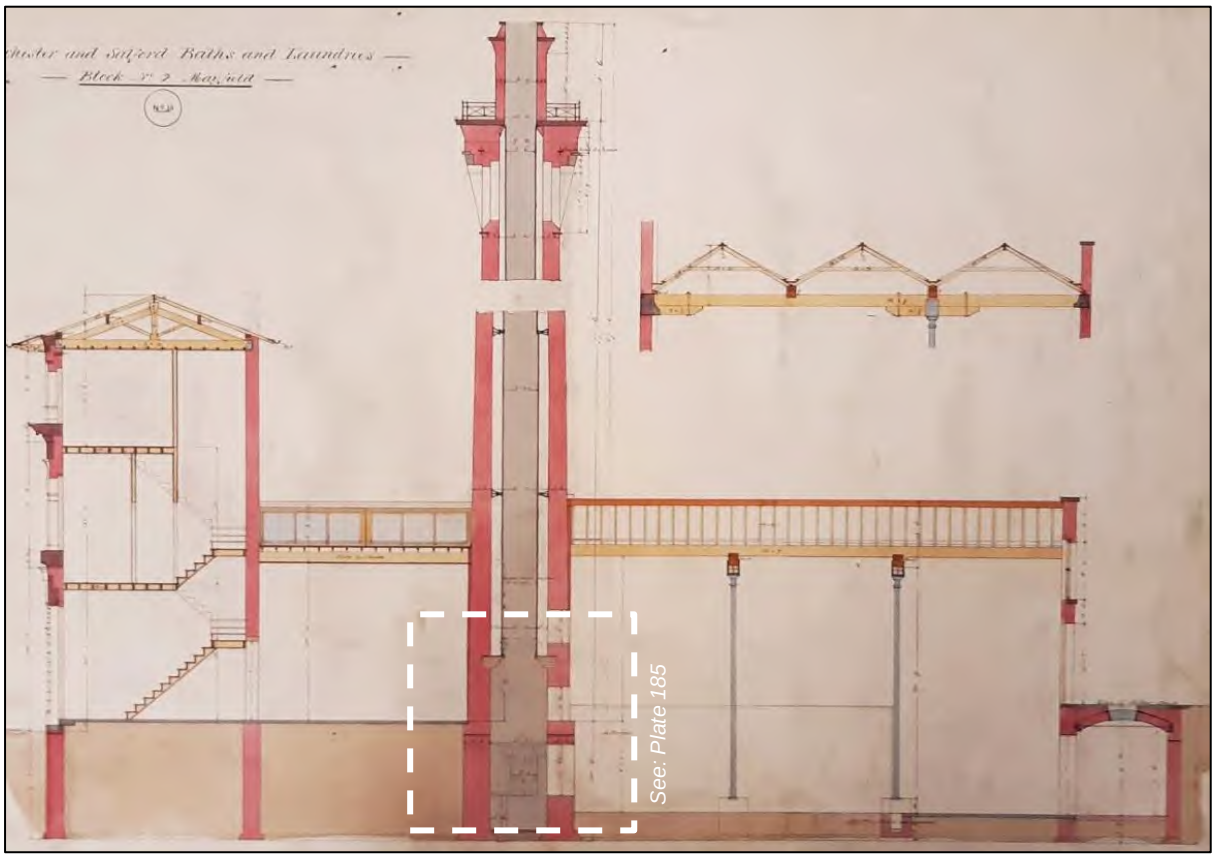


Plate 184: Cross-section through the northern part of Mayfield Baths with detail of chimney foundation

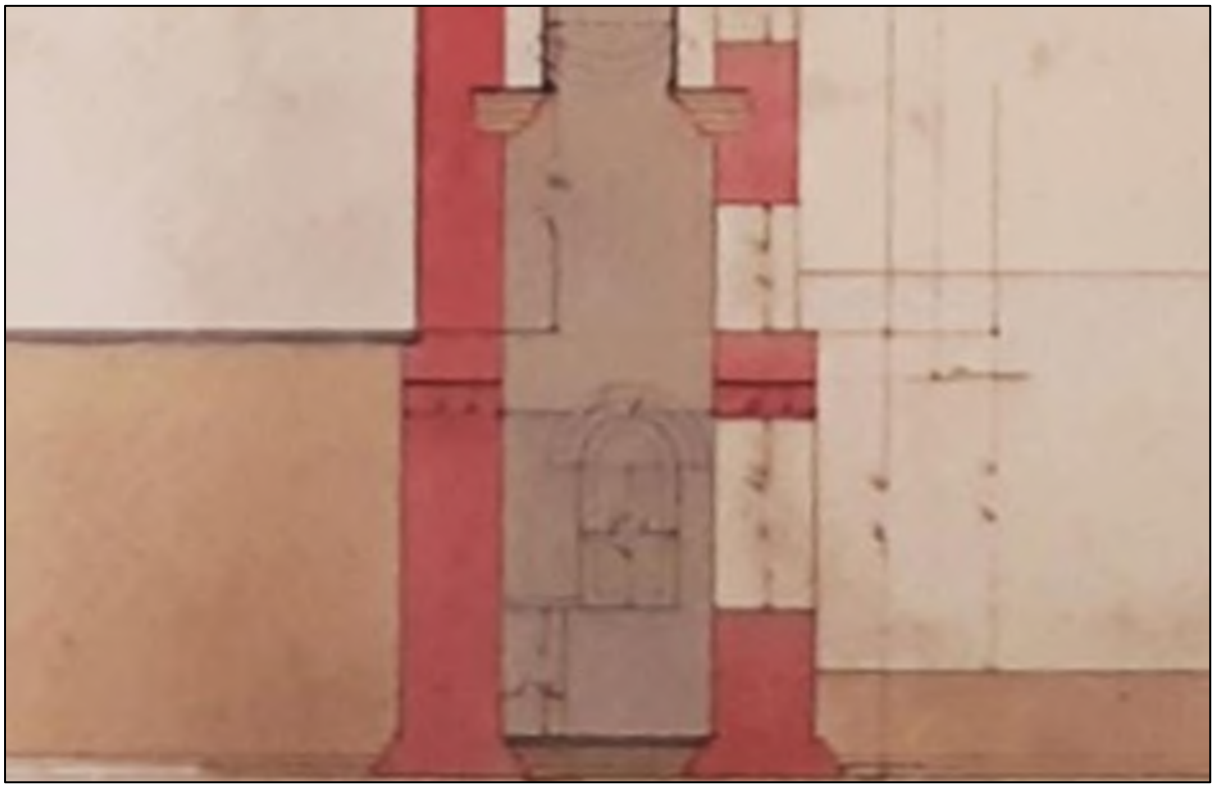


Plate 185: Detail of chimney foundation illustrating the position of the flues

Another key component of the baths revealed during the excavation was that of the boiler house, which once contained the steam-raising plant. Of the surviving arrangement, only the chimney base ***219***, part of the flue system (***219*** and ***224***) and sub-floor conduit (comprised of: ***204, 205, 206*** and ***208***) were ascribed to *Phase 4*.

From contemporary sources, we know the 90-foot-tall (27.43m) chimney rose from an 8-foot square (2.5m^2) foundation, with a slight batten up to the projecting top. It was deliberately designed to feature prominently above the building and had an Italianate appearance, likened to the Torre del Mangia, in Sienna. According to an article published in *The Builder,* it channelled 'smoke from the boilers and drying-furnaces […] into a chamber at the bottom, whence it [was] carried up a circular flue of boiler-plate, fixed in the centre of a brick shaft 5 feet square'. The chimney also expelled warm 'vapour from the several parts of the building' and the baths, which was channelled up the chimney, between the flue and the shaft. Together with a series of vents in the roof of the baths, the chimney thus formed a crucial part of the ventilation system, addressing the problems of condensation that had become readily apparent at Greengate Baths, and was ultimately a factor in its premature closure in c.1880.

The surviving foundation of the chimney ***219*** was exposed to the west of the boiler house, immediately north of wall *207*. The plan (Plate 182) and cross-sectional drawing (Plates 184 and 185) show an opening in eastern side of the chimney, consistent with the position of a later flue *217*, which had evidently replaced an earlier flue built in 1856-7. The drawing also shows additional details for a vaulted doorway or flue potentially located in the north wall; this was consistent with the location of structure *224*, which had a curved north-western face. Structure 224 was keyed-in to the chimney base and may have formed an inspection doorway for maintenance. The outline of a second flue constructed in the north-west corner of the chimney at its base is also apparent from Worthington's drawings; this was identified as structure *218*. The chimney *219* and associated structures *218* and *224* were constructed in red brick; according to a contemporary source, the structure of the chimney utilised 'ordinary seconds red stocks of the district' set and pointed with black mortar.

A narrow sub-floor conduit (formed by brick walls ***204, 205, 206*** and flagstone capping ***208***) ran diagonally north-west / south-east from flue *218* was also seen as integral to the boiler house arrangement. The walls were constructed in handmade brick and had been keyed-in to flue 218. Part of the structure housed steam pipes running from the boiler house, whilst another was linked to flue *218*. The structure almost certainly functioned as a conduit to channel exhaust gases, hot water and steam throughout the various parts of the building. The presence of drying furnaces and other heat related appliances in the laundry / wash house would have necessitated such a structure. Alternatively, it may have housed an economiser, utilising the heat from the flue exhaust gases to preheat the water feed for the boilers.

6.2.2.2 Phase 5 - 6 c.1872 – 1908

As laid out above (see: Section 2), much of the bathhouse had been updated in the later-19th and 20th Centuries, after the acquisition of the site by the Manchester Corporation in 1877, along with several other institutions including the baths and washhouses at Greengate and Leaf Street. Historical and archaeological evidence indicated that a considerable amount of work was undertaken at those newly acquired bathhouses. Probably the most significant changes at the site were the renovation of the swimming pools c.1877-1880 following the

purchase of the baths by the Manchester Corporation. Whilst the outer walls and foundations of pools ***225*** and ***226*** can be seen to date to the 1850s few of the original finishes, fixtures or fittings had survived *in-situ*.

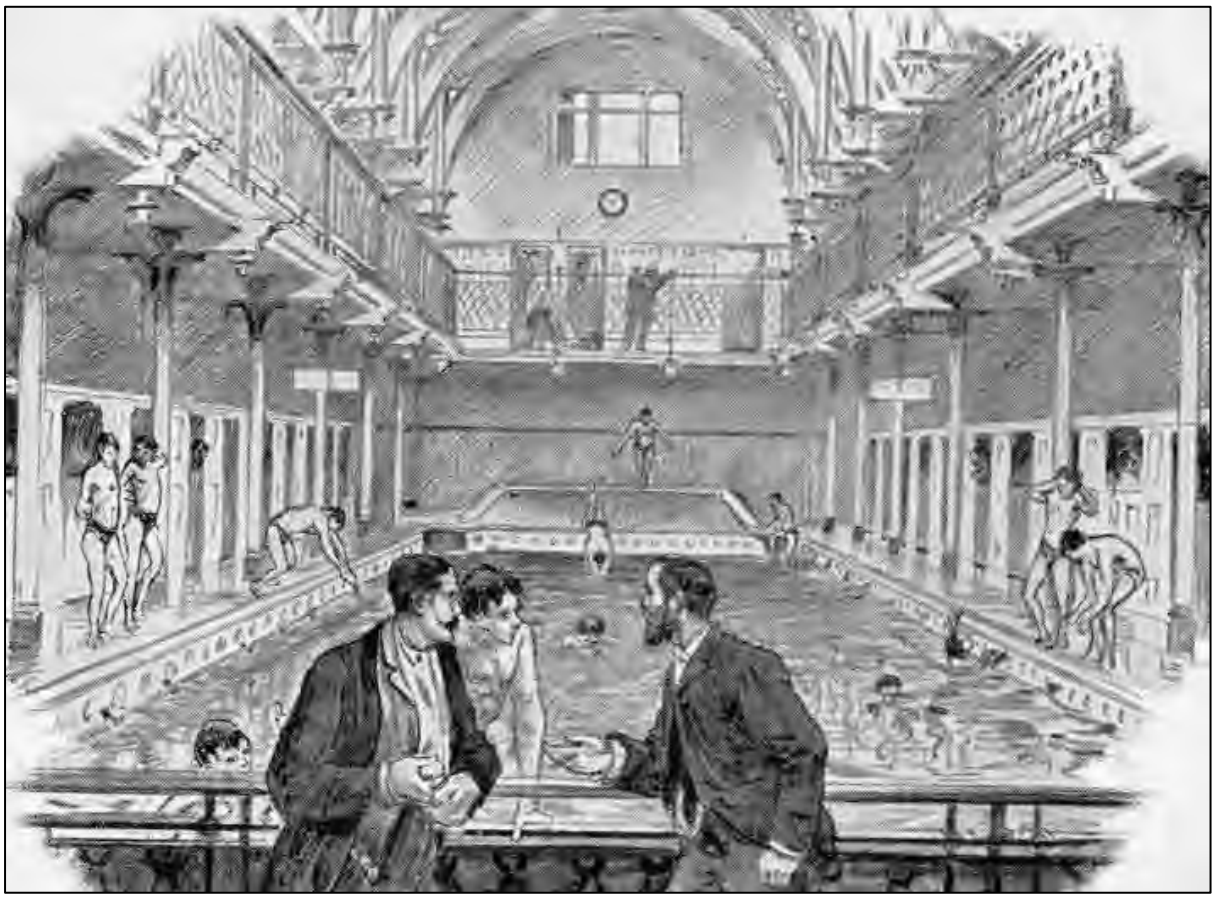


Plate 186: Leaf Street Baths drawn by H.E. Tidmarsh in 1880

It should be remembered that the Mayfield Baths were described in 1881 as in an 'unsatisfactory state' when purchased by the Corporation and that a total of £8,927. 4s. 5d. had been spent on 'improvements and alterations' at the Baths – around £400 more than what had been spent on the purchase itself. This was in addition to £2,263. 6s. 9d, which had been spent solely on the building's 'foundation'. It is with this in mind, that the relining and retiling of the pool are better understood.

Drawing on original plans from 1856 and an early print of the baths' interior from 1858 appearing in *The Builder,* it was possible to compare the intended and finished original interior with early 20th-century photography and the surviving physical remains to show how the building evolved over time. Whilst even the early renderings of the pools were easily relatable from the remains, there were notable differences between the excavated remains and historical sources. The geometric tiles shown in the print from 1858 were not encountered in the men's first-class pool and had evidently been replaced during the overhaul of the baths in 1877-9. Significantly, both types of Minton Hollins and Co. tile (discussed below) used in the men's first-class pool (***225***) at Mayfield were also found during the earlier excavation at the Leaf Street baths (Plate 188; Stitt, Reader, & Miller, 2016). It should also be noted that the tiles are visible in a drawing of the baths at Leaf Street from 1880 providing corroborative evidence for the retiling around this time. This reinforces the notion that the interior Leaf Street

Baths similarly underwent renovation, when it was acquired by the Manchester Corporation as part of a suite of bathhouse purchases and renovations in 1877.

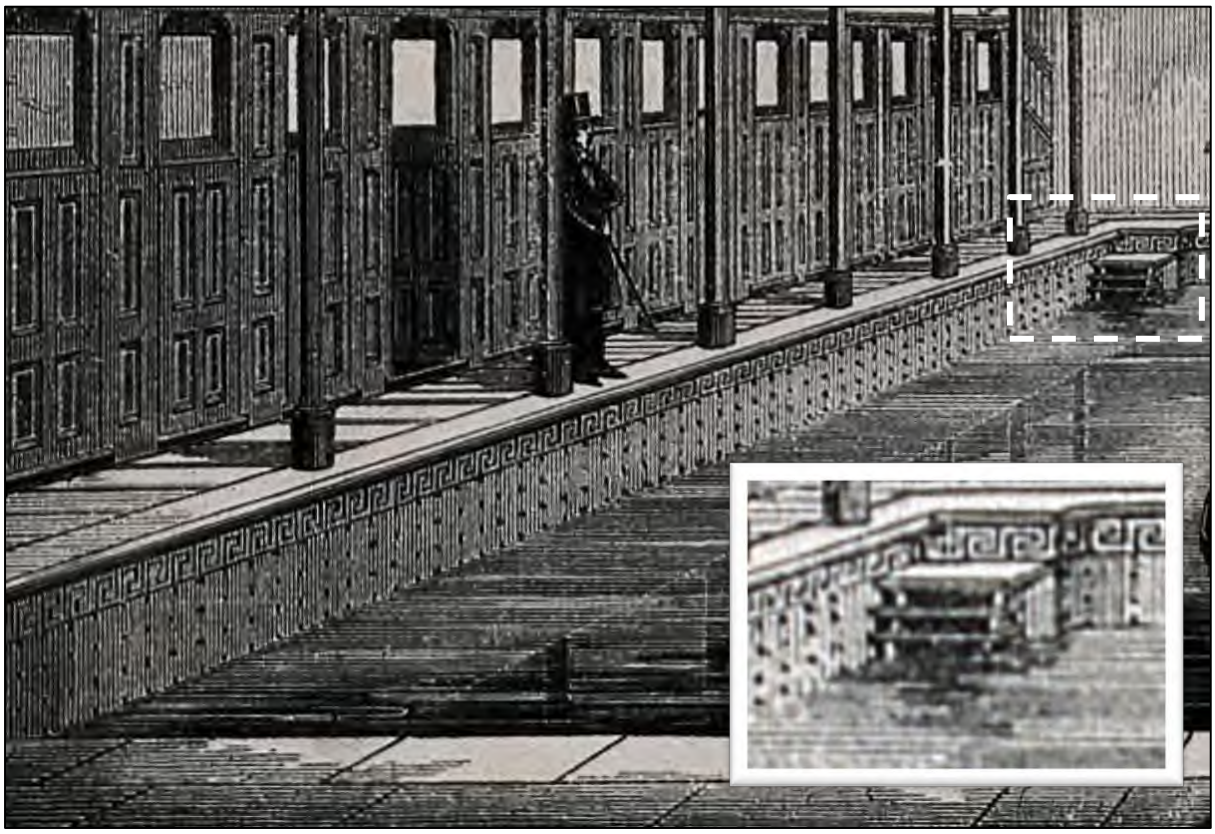


Plate 187: Extract from The Builder 1858 showing the original tiles and steps installed in the plunge pool of the first-class men's pool at Mayfield Baths (see inset for close-up)

According to an article released in the *Manchester Times*, 7th June 1879: 'the two plunge baths…[had] been re-laid with concrete, and the sides reset with tiles.' This statement provides clear evidence that the original finishes were replaced or covered over. The original foundations and flagstone surface of the second-class men's pool ***226*** were retained, but had been sealed beneath a later lining, atop which were laid black and white enamelled bricks. The bricks were produced by Gilmour & Co of Kilmarnock, Ayrshire, and were frogged, fire-clay bricks bearing their maker's mark likely date from *c.*1880. The black enamelled bricks were used to create three parallel lines running the length of the pool, in turn crossed by two shorter lines running widthways at either end of the pool. It is possible the lines were used to delineate swimming lanes within the pool.

Tiles were revealed on the walls in both pools ***225*** and ***226***. The majority were plain 6" (152mm) white earthenware tiles, although blue and white motif tiles were used within the first-class pool ***225***, providing distinction between the first and second-class areas. Both the plain and decorated tiles used during this phase of renovation were dust-pressed and printed and stamped 'Minton Hollins & Co of Stoke-on-Trent'. As such, they were mass-produced in the latter half of the 19th century, presumably following the breakaway of the tile-producers from Minton in 1869.

In pool ***225***, it was apparent that two variations of tile had been used. A repeating pattern of motif tiles, in three different designs were found above the waterline. These stylised floral

motifs were reminiscent of the cotton flower floor mosaics embellishing Manchester Town Hall that opened in 1877. The pool floor however was adorned with more simplistic blue motif tiles, which had also been used to patch up damaged areas of tiling, such as where later steps had been added. From this we might infer two sub-phases of renovation to the pools, using two separate batches of tiles.



Plate 188: Tiles of the men's first-class pool at the Leaf Street excavation, 2016.

It stands to reason that any original fixtures or fittings within the pool were removed during this phase of renovation. The steps revealed in both pools were not clearly integral to the pool's original construction; they were not the keyed-in to the main structure of the pool and were built atop the retiled floor and up to the tiled face of the walls. Comparison with Worthington's original design plan (Plate 181) and the 1858 engraving (Plate 187) show the tread and appearance of the steps differed from the later replacement.

6.2.2.3 Phase 7 c.1908 –

Key to the operation of the complex at Mayfield was its boiler-house. The partial remains of the two boiler-beds, ***220*** and ***221*** were of a plan, commonly encountered in late-19th century and early 20th century industrial contexts; they likely housed cylindrical steam-boilers. The boilers were fuelled with coal; remnants of the brick charging platform were revealed at the eastern end of the structures. Historical records indicate there was originally a bank of three boilers, drawing water from a rooftop tank that held approximately 3,000 gallons. After passing through the boilers the hot water and steam was used to supply the entirety of the premises with hot water for bathing and washing clothes as well as driving a variety steam-powered machinery. By the 20th century, it appears the original configuration was altered to operate with two steam boilers, shown in a photograph purportedly taken in 1902 (Plate 189).

The surviving boiler beds, ***220*** *and* ***221****,* and unobstructed flue ***217***, operational during the final years of the baths, were constructed using machine-made bricks and firebricks with concrete foundations, materials feasibly utilised during the documented renovation and improvement of the boilers in the 1923 and 1931-2.

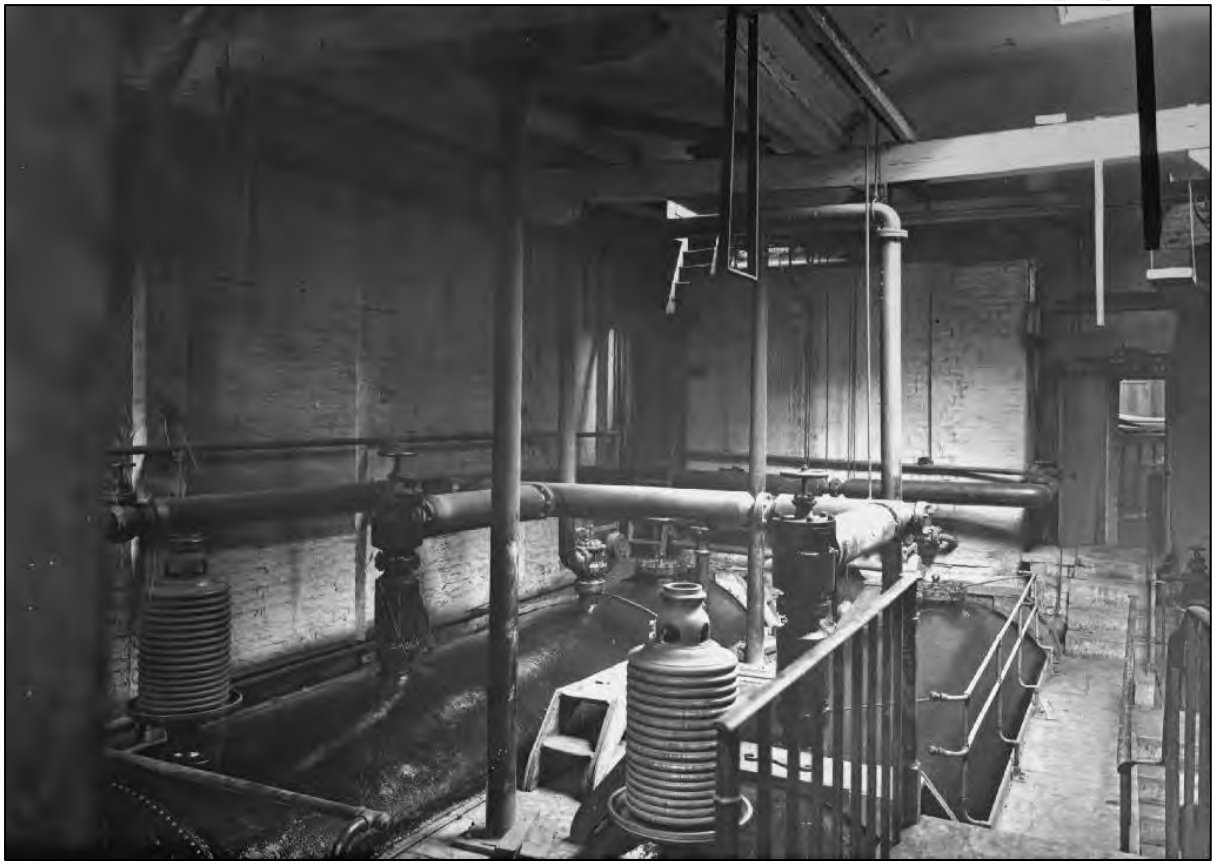


Plate 189: Photograph showing the two steam boilers at Mayfield Baths

The installation of a filtration system at Mayfield Baths was indicated by collared cast-iron pipes (102mm internal diameter) that were set into the lower portions of the wall adjacent to the steps at the deep ends of both pools. These pipes were presumably intended for pumping water out of the pools, whilst small brass grates revealed in the walls at the foot of the shallow-end steps marked the point where purified water was returned.

Further developments to the south of the boiler-house included the insertion of a concrete floor and two rectangular stone beds, ***216,*** fitted with threaded retraining bars (Plates 66 and 67). The specific machinery that was anchored to these machine beds was likely to have been compact. They may have been associated with the photographed 'calorifier' at the site (Plate 14), which appears to have been installed at some point in first few decades the 20th century. The photograph was reputedly taken in 1902, which would make this a very early example, although it seems more likely that the date attributed to the image is incorrect as this plant was developed in subsequent years. Company accounts for 1913-4 record large sums of money – £401 1s 2d in 1913 and £827 5s in 1914 – were expended on filtration plant, suggesting it may have been installed at that date.

Experimentation with filtration technology was in fact pioneered at Newton Heath Baths, Manchester, in 1903-4, using equipment developed by Salford-based engineer John Royle (Gordon and Inglis 2009 117). This plant pumped water from the deep end of the pool, aerated it via a large spray before filtering through sand and gravel, reheating and returning to the pool. In addition, the water was chlorinated on its return journey by forcing chlorine gas into the water at a point nearest the entry to the pool (Teasdale 1945 41). This allowed the same

water to be circulated, filtered and cleansed over a period of between four and eight hours, and dispensed with the need to empty the pool.

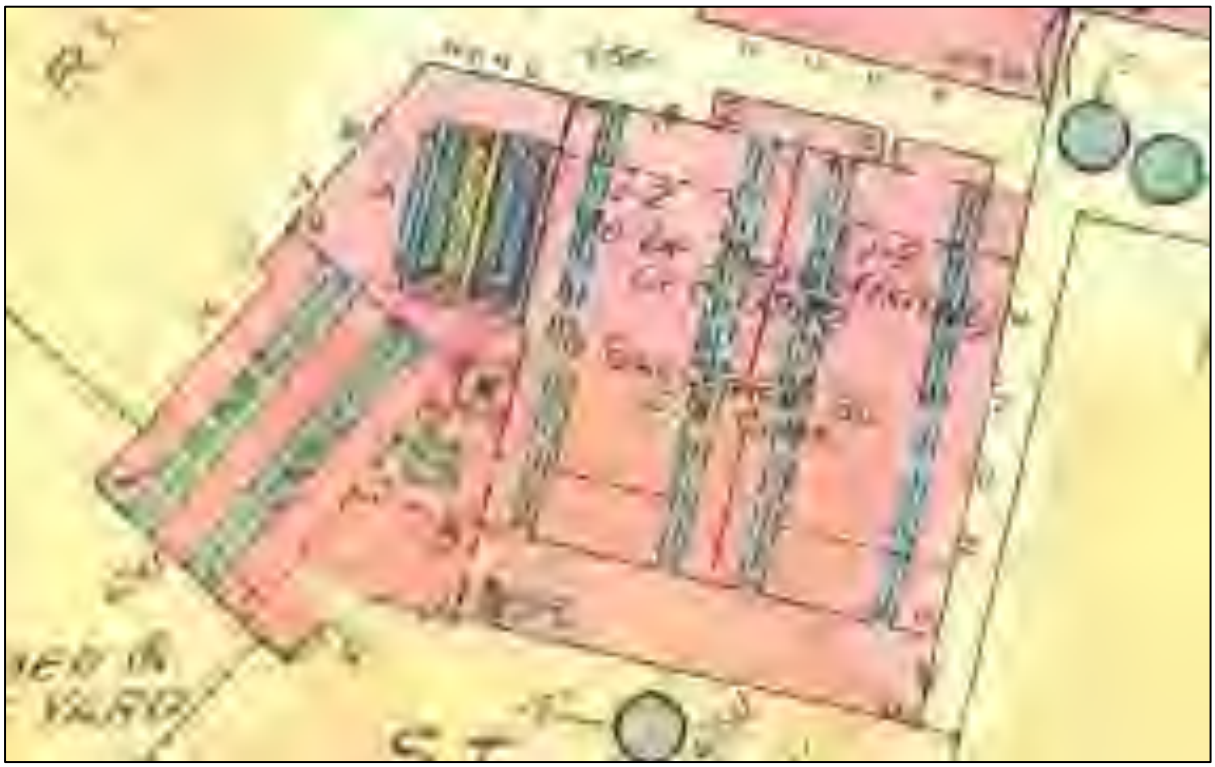


Plate 190: Extract from Goad's Insurance Plan showing the Mayfield Baths prior to its scheduled demolition in October 1942

6.2.2.4 Social Aspects of Bathing

The excavation also highlighted some social aspects of bathing and leisure in the 19th century. Perhaps the most significant were the different levels of adornment between the pools that were excavated. This was evident in the tiled

Through the 19th and 20th centuries, in addition to regular swimming the Mayfield pools were also used for various competitions and activities which included galas, lessons, water polo, racing, diving, and even exhibitions. Such events sometimes involved winnings; a swimming race of 12 lengths at Mayfield in 1859 bagged the winner the considerable sum of £10 (*Bell's Life in London and Sporting Chronicle,* 6th November 1859).

Deaths and injuries at the Mayfield baths were also not unheard of. As described above, a chlorine gas leak had hospitalised several bathers in the 1930s. In 1865, a 22-year-old man, James Humphrey, died from injuries sustained at the Mayfield baths when he climbed onto one of the changing boxes which surrounded the pool and sought to dive in, smashing his head (*Leicester Mail,* 23 September 1865). In 1910 a 22-year-old woman, Ann Dunkley, drowned in one of the upstairs baths (*Lancashire Evening Post,* 14th July 1910).

In 1857 it was recorded that the most expensive of the 1st Class baths cost a whole shilling as opposed to two pence for the 2nd Class baths. Entry into the 1st Class pool cost six pence while entry into the 2nd Class pool cost twopence (*Manchester Times*, 15th August 1857). In addition to this was the 3rd 'subscription-only' pool which was larger and likely considerably more

expensive than the Men's 1st Class. In the 1850-60s lower-paid workers might only receive around £30 *per annum* (Lindert & Williamson, 1983, 7-8). Generally, legislation such as the Baths and Washhouses Act of 1846 were intended to give access to washing facilities to all members of the general public,

The 1st Class pool were also likely better kept, which in part was due to fewer swimmers using it. An article from 1868 stated that 'the water in the first class [Mayfield pool is] very clear' but said nothing of the condition of the Second Class (*Ashton Weekly Reporter, and Stalybridge and Dukinfield Chronicle,* 8th August 1868). Earlier In 1857, the pool water had been described as 'deep brown' and 'muddy' in appearance, though it was considered a possibility that it was some lighting affect (*Manchester Times,* 15th August 1857).

The clearest differences between the men's first class and the men's second class were apparent in the building materials and aesthetics. The 2nd Class pool (***226***) was covered solely by glazed bricks and without any tiling. The pool was essentially undecorated bar three black stripes which were likely intended to be solely functional in swimming events. In comparison, the first-class men's pool was lined entirely with Minton – Minton, Hollins, & Co. – tiles. As stated above, many of these tiles were decorated with three different floral motifs. Similarly, the upstairs bathing facilities were historically recorded as similarly differentiated with the best first-class examples being lined with mahogany.

Both men and women could make use of the bath and wash facilities at Mayfield from the 1850s, though women's facilities were kept separate and there was some indication that a different entrance was used to the men's facilities. There was no female swimming at the site while it was operated by The Manchester and Salford Baths and Laundries Company. The women's pool at Mayfield opened sometime 1881-83 after the baths were acquired by the Manchester Corporation, likely after remodelling or rebuilding. What became the female swimming pool had previously been the members-only subscription pool. It was located in a separate detached building at the west of Baring Street (and outside of Area 2). Fewer details of that swimming pools are known in comparison to the men's, though it was likely close to twice the size of the men's first class; in 1879 it was described as holding 79,000 gallons of water versus then men's 40,000. The early-20th Century photography also suggested that the women's pool was considerably larger and also was much more highly decorated and tiled than even the men's first-class pool.

Records indicated that females made up only a small portion of the total number of swimmers across all of the Manchester Corporation pools well into the 20th Century. In 1900 it was recorded that 20,362 boys swam at the Mayfield Baths for free, while only 1,333 girls did. In 1913-14 in total only 8,958 female swimmers were recorded at the Mayfield Baths in comparison to 74,099 males (Love, 2003, 353-3). Similar figures were found across the various Corporation pools. At Victoria Baths, which admitted by far the most female swimmers, 40,435, they were still vastly outnumbered by men, some 123,462. In 1914 at the Philip Park open-air bath, the annual number of female swimmers was exactly 0 as the site was still entirely men-only (Love, 2003, 353).

The bathhouse continued in much the same way into the 1940s. At that time men and women were still swimming in separate pools at Mayfield. Accounts indicated that surprisingly swimming remained a popular leisure activity even during wartime despite the numbers of

people who were by then in uniform. The level of damage that the bathhouse sustained in 1940 was not known and no clear archaeological evidence for any such damage was established during the excavation. Likely the damage had been extensive as the baths were not used again during the war and were demolished soon after. The 1950 OS Map labelled the footprint of the Baths as 'Ruins' while aerial photography from the late-1940s showed that the main building of the bathhouse had been entirely cleared.



Plate 191: Oblique aerial view across the excavation of Mayfield Dye Works, looking east, showing the excavated portions of Buildings A, B and C and their main phases of development. Seven building phases were identified, each is colour-coded: 1 – purple; 2 – green; 3 – orange; 4 – yellow; 5 – blue; 6 – grey; 7 – pink. The River Medlock is visible in the rear of the shot.

6.2.3 Area 3: The Mayfield Dyeworks (Figures 9 – 17)

The Mayfield dyeworks was established on the fringe of Manchester in 1782 and remained in operation for around 115 years, only ceasing production when the company went into voluntary liquidation in c.1896-7. Over the course of its history, the works gradually increased in size and after sixty-years '[appeared] more like a small town than a single establishment' with 'many distinct and isolated buildings' forming 'one great workshop'. It was made up of multifarious departments and ancillary buildings, in which the full process of dye production and application, drying and finishing was carried out. Both chemicals and dyes were tested

and produced, and fabric was dyed and finished, all on the same site. Additional support was provided engineering and smiths' workshops, which ensured the upkeep of the various pieces of machinery incidental to the works. Plans produced in the mid- and late-19th century are particularly useful in determining the function of the various buildings and position of the power systems.

Three buildings (designated A, B and C) were subject to excavation (Figures 9, 10 and 11). A suite of structural remains including brick walls, floors, drains, dye-vat bases, machine and engine beds, boiler beds, flues, a chimney and part of the economising house were revealed across the excavated area. This represented a relatively small sample of the overall dyeworks but served to demonstrate how the works were expanded and altered over the course of a century (Plate 191).

6.2.3.1 Phase 1 c.1782 - 1800

The earliest cartographic representations of the dyeworks are provided by Laurent's map of 1793 and Green's map of 1794 (Plate 192), which show the extent of the premises approximately eleven to twelve years after the founding of the dyeworks. Even at this relatively early stage, the site was made up of at least ten separate buildings and five reservoirs, surrounded by tenterfields.

Buildings A and B:

All three buildings (A, B and C) in Area 3 originated in the late 18th century; the majority of Buildings A and B were constructed between c.1782-94 with only minor extensions in the subsequent periods.

Building A contained a series of external walls, ***3001-2***, ***3005-6***, which closely aligned with the early cartographic evidence and formed part of a long, three-storey building. The southern part of the building corresponds with Room 26 on the 1872 insurance plan, latterly used as white room with two print rooms and a disused block printing room above.

In the case of Building B, external walls ***3011, 3057, 3020, 3022, 3024*** and ***3026***, together with internal dividing walls ***3019, 3058*** and ***3041*** were integral to this phase of the build. Floor surfaces ***3017, 3028*****,** and ***3015*** the base of an internal stairwell formed by walls ***3012*** and ***3013*** were similarly ascribed to this phase of construction.

According to the 1872 Insurance Plan, the upper storeys of Buildings A and B had once housed block printing rooms. Block printing was one of the earliest printing techniques and had likely been the predominant method used during the late 18th century (Plate 193). Even as late as 1846, it was recorded that amongst the 128 firms operating in Lancashire, there were some 7187 block tables in use compared to 39 perrotines (block-printing machines) and 540 cylinder-printers (Ure *et al* 1878 669). It was around this time that the printworks had 156 block printers' tables (Wright, 2013). By 1872, some 90-years after the construction of Building A and B, the upper storey rooms were described as the 'old' or 'disused' block-printing rooms, suggesting that this activity had been eclipsed by mechanised processes. This followed a national decline in the industry in the 1860s as a result of mechanical printers.

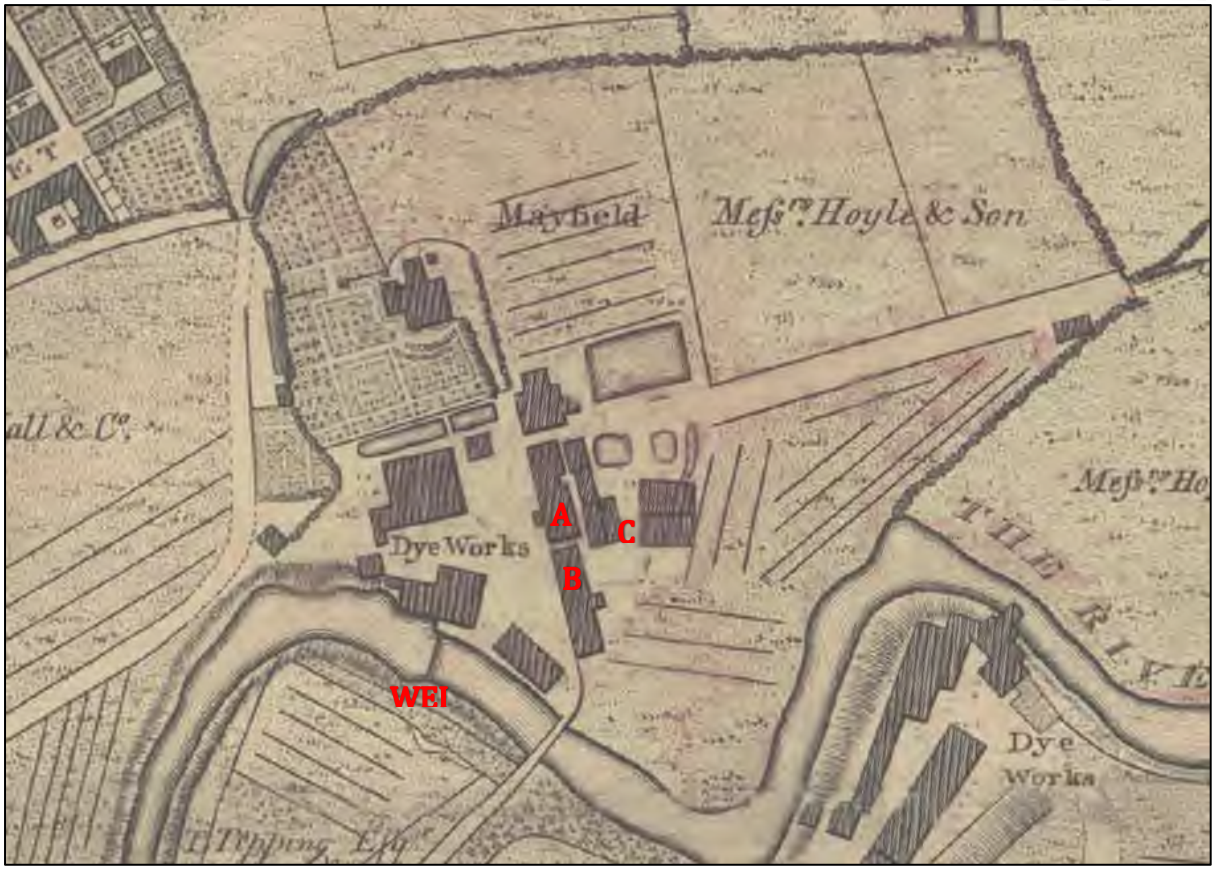


Plate 192: Mayfield dyeworks as shown on Green's map of 1794 with buildings A, B and C indicated

The sale of a water-wheel and pit wheel in 1795 – probably once installed in one of the buildings adjacent to a weir across the River Medlock – could signal the initial adoption of steam raising plant at the site and the application of steam-powered apparatus, which was pioneered in the late 18th and early 19th century.

The original function of the ground floor rooms in the buildings is however not readily apparent from the historic records. By the late 19th century, however most of the rooms in Building B were associated with dyestuffs or 'colour', including a colour room, shop and colour mixing rooms. These areas would have been used in the preparation of natural pigments, such as the grinding and preparation of madder. Given that a purpose-built colour shop – complete with colour mixing room, grinding room and laboratory – was built in the *Phases 3-4*, it seems plausible the rooms in Buildings A and B were the forerunners to this integrated building. The colour rooms' proximity to the block printing rooms seems conducive to an efficient factory model.



Plate 193: Block-printing a design onto a length of calico cloth

Building C:

Two buildings are shown on the 18th-century maps to the east of A and B. When the geo-rectified survey is superimposed to these and later maps, it was apparent that both buildings were later incorporated into Building C and that structural elements survived within the excavation area. Wall ***3078*** formed the southern wall of the westernmost building and was a relatively substantial structure, against which later steam engines had been built. Walls ***3115*** and ***3119*** were also ascribed to this phase and represent the southern and eastern extents of the larger easternmost building depicted on Green's 1794 map.

By the mid-19th century and survey of the OS 1849 Town Plan, these blocks housed the 'Bleaching Room' and 'Dye House' and were later recorded, in 1872, as functioning as the

'Soaping Room' (Room 65) with 'Print Washing Shed' (Room 68) and 'Extractor Drying Room' (Room 69). From this we can infer the function of this building altered quite considerably between the mid- and late-19th century and it is therefore unlikely its original function will be ascertained.



Plate 194: Extract of Swire's Map of 1824

6.2.3.2 Phase 2 c.1800 – 1831

The dyeworks complex altered little in the following decades and appears much the same from maps produced in the early 19th century, only undergoing significant expansion in the 1820s and '30s, as indicated by Swire's map of 1824 (Plate 194) and Bancks and Co.'s 1831 map (Plate 195). The 1831 map reveals an addition to the eastern side of Building B, Room 4, with more extensive changes made in the central part of the excavation area, with two extensions added, to the main floor of Building C, consolidating the former detached buildings into one large unit. An attached building, probably housing the early boiler house was situated north-east of the excavation area.

Building A:

Limited changes were detected within the southern half of Building. Three internal brick walls, ***3003, 3004*** and ***3008****,* abutted the inner face of the building's eastern *Phase 1* wall, ***3001****;* these were dated to the early 19th century. The intended function of the walls was not evident; they do not appear as internal divisions on the floorplan of the works produced in 1872. This suggests they may have been associated with the arrangement of installations within the building. By the third quarter of the 19th century, the majority of Building A functioned as a 'White Room'; its function of the room in the early 19th century is not acknowledged. The absence of any internal drains visible within the exposed footprint of the building do however suggest that it was not used for any wet processes, dyeing or washing during its initial use.

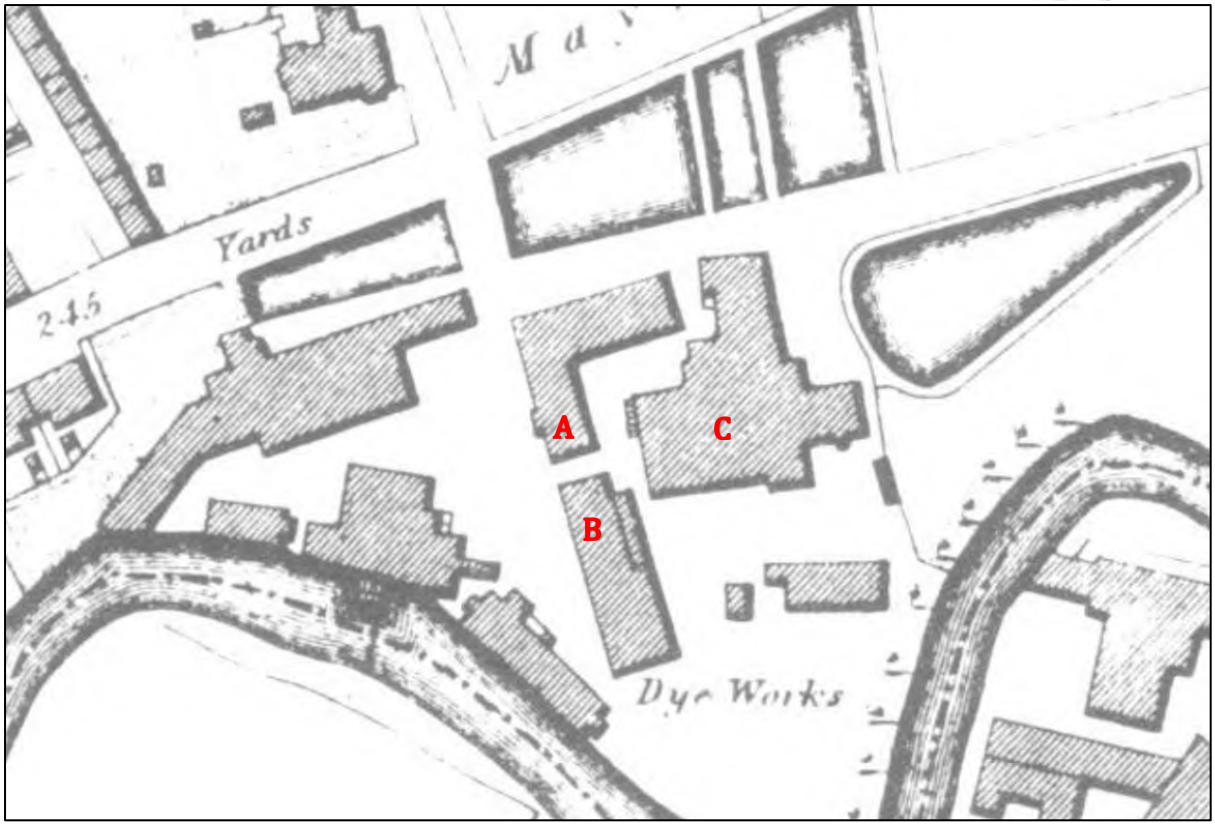


Plate 195: Extract from Bancks and Co's map of 1831 showing buildings A, B and C

Building B:

The early 19th century saw a two-storey extension added to the eastern side of the building, formed by walls ***3025, 3027*** and ***3028***. This is shown clearly on Bancks and Co's 1831 plan as attached but distinct from the *Phase 1* build. The construction of the eastern wall *3027* was intriguing as it incorporated a series of brick piers. Whether these fulfilled a structural role or were purely aesthetic is unclear. It is possible that these were the springing points for arches within the wall, into which were set windows, providing much-needed natural light. The southern wall of the building ***3025*** was constructed against an existing wall ***3024***. The northern wall ***3028*** was only partially revealed, having been built over when this room was extended.

Two internal drains ***3037*** and ***3038*** running alongside the eastern and western walls of the building provide some indication of the activities being carried out within the building. The side walls of the drains were originally capped with sandstone lintels, recessed to hold a cast iron grate above, which would imply wet activities taking place at ground level. Remnants of the collapsed metal grate were revealed in ***3038***, suggesting although covered, the drains were intended to channel surface water or run-off from processes in the building. Further clues were found in the interior of the drains and adjacent stone surfaces, which were stained with blue and purple substances, perhaps dyestuffs such as indigo. The presence of a series of upright iron rods set into the coping stones either side of the drain likely relate to installations in the works, perhaps used in the dye-processing. This accords well with the documentary evidence, namely the 1872 Insurance Plan that suggests by the late 19th century this room (Room 123) lay adjacent to a colour shop (Room 120) and colour mixing rooms (121 and 122). The actual function of Room 123 is not recorded.

Building C:

The expansion of the premises during this period resulted in the creation of a large factory floor, corresponding to Room 65 on the 1872 floorplan. This encompassed parts the earlier buildings shown on the late 18th century mapping and was defined in its extent by several existing walls (***3103, 3109*** and ***3115***) and remnants of a new southern wall ***3128***. Within this space were revealed a series of installations that directly relate to the processes within the works, the most obvious being four stone vat bases and a suite of associated drains.

Four simple slabs of stone (***3118, 3098, 3099*** *and* ***3104****)* were exposed within this space; they were interpreted as vat bases. They exhibited a shallow groove within the surface, running around the edge all four sides; the groove was presumably for the insertion of wooden or stone upright sections, since removed, that would have formed the sides of the vats or baths. A single circular aperture drilled in the corner of each stone served the function of a plughole, allowing liquid to be drained off; run-off was channelled into sub-floor drains connected to a larger east / west conduit ***3083*** running the width of the room (Room 65 on the 1872 insurance plan). The presence of lead piping running up to slab ***3118*** implies they were supplied with water, probably heated by a steam boiler and pumped to the dye house by means of an engine located to the north-east (Plate 196).

There are several possible uses for these installations, which can be correlated with the known function of the room subsequent decades of the 19th century. For instance, on the OS 1851 Town Plan, the northern half of Building C (Room 65 on the 1872 Insurance plan) is marked as a dye house, which would have housed a series of heated dye baths containing solutions of dye into which material dipped and exposed but never fully immersed (Knight 1858 127). It seems reasonable to suggest that the stone slabs or vat bases supported dye baths within the early 19th century dye house.

The expended dye and wastewater also needed to be drained away. This was evidently achieved by a series of interconnected drains exposed in the northern part of the building: ***3088, 3116, 3117, 3134, 3135*** and ***3137***. Most of these smaller drains fed directly into a large east / west conduit ***3083***. Based on a contemporary description of woollen dye house (cf. Gibson 1861 14-18) it is possible to understand how this would have been achieved. There would typically be one main sewer positioned lower than the dyeing stations into which conduct branches from each station would channel the exhausted dye liquid (*op cit* 15); in Building C, this was almost certainly fulfilled by conduit ***3083***, which may have also served as an open drain. Drains ***3088, 3116*** and ***3137*** represent the branches connecting the dye vats or baths to the main sewer.

Building C was also extended eastwards during this period by means of several adjoining buildings. The existing *Phase 1* building was abutted on its eastern side by a long range, corresponding to Rooms 71, 83 and the northern portion of Room 70 on the 1872 insurance plan. The building is evident on Bancks and Co's map of 1831. To the east of this was another building, which probably housed the original boiler house and is labelled as such on the 1851 OS Town Plan. Only a small portion of the *Phase 2* extension was subject to investigation. This included part of what would become Room 70 (Plate 196) delineated by walls: ***3120***, ***3106 3126*** and ***3127***. This extension abutted the eastern face of the *Phase 1* wall ***3119***. This had a surviving brick floor *3084* and was accessed to the south by a short flight of internal steps *3107*, leading down to a later cellar probably built in *Phase 3*. Room 70 eventually housed a cellar with packing room, boiler house and firing place, sorting and canroying room,

ammonia machine room. It is uncertain which elements of this were housed in this space in the early to mid-19th century.

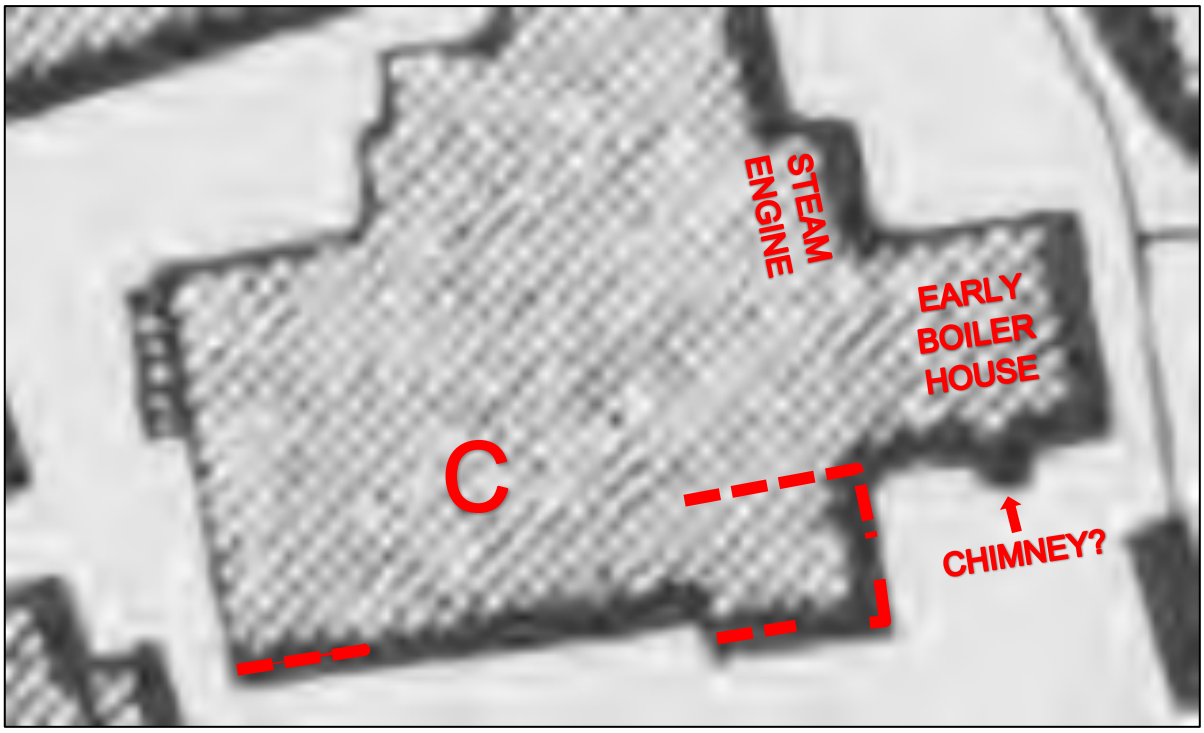


Plate 196: Extract from Bancks and Co's 1831 map showing the Phase 2 walls revealed in Area 3, Building C, together with the location of the early engine and boiler houses

6.2.3.3 Phase 3 c.1831 – 1849

The extent of development between 1831 and 1849 can be gleaned through a comparison of Bancks and Co's map of 1831 and the OS 1851 Town Plan (Plates 195 and 197). The overriding picture from OS 1851 Town Plan is the proliferation of boiler- and engine houses, signalling a widespread adoption of steam-powered apparatus within the works. A considerable number of new buildings were erected to the north and south of the excavation area, with almost all of the northern bank of the river occupied by workshops.

The archaeological and historical evidence indicates that within the confines of Area 3, Building C was subject to the most development during this period with several additional rooms built to the south of the existing building. This included a southward extension to the pre-existing boiler house, containing a new bank of four boiler beds and an associated charging floor. A free-standing chimney serving the southern boilers may also have been erected at this time. Previously, there may have been an attached chimney on the southern side of the former house, possibly indicated on Bancks and Co's map (Plate 196). Only minor additions and alterations were detectable within Buildings A and B during this period



Plate 197: Extract from the OS 1851 Town Plan showing the layout of the Print Works buildings

Buildings A and B:

Several additions were detected in the fabric of Buildings A and B, which could be related to changes captured on the historic mapping.

A semi-octagonal-shaped extension was added to the western side of Room A. This contained a cellar with three storeys above. The exposed footprint of the cellar within the excavation was defined by walls ***3053***, ***3006*** and ***3005***. The mapping indicates this was accessed by a flight of external steps built along the existing line of Building A, to the north. According to the 1872 Insurance plan, this part of the building had multiple uses, containing the gas meter, lumber and metal store, offices and a fent room, the latter presumably for storing unfinished or short end pieces of calico.

Both the OS 1851 Town Plan and 1872 insurance plan indicate the southern part of the *Phase 2* extension (Room 122 on the insurance plan) to be separated from the room to the north. Although this was not immediately evident during the excavation, an internal drain east / west aligned drain *3039* was found to differ in construction to those running the length of the room to the north (Room 123 on the insurance plan). Rather than having a brick base, the drain was lined with slate, a characteristic of the drains used in *Phase 4*.

The OS 1851 Town Plan also indicates the erection of a covered walkway between buildings A and B. This is described as a 'covered passage' (Room 124) in the insurance document from 1872. Although no floor surfaces survived within the passage, an additional wall was found along the northern side of Building B. Wall ***3010*** complete with an additional threshold

had been constructed parallel with the existing wall. It seems likely this supported a lean-to structure between the two buildings.

Internally, two rectangular brick pads ***3055*** and ***3056*** were exposed in the footprint of the *Phase 1* building (Room 120 on the insurance plan). These structures were of broadly similar dimensions. It is possible they fulfilled a structural role. Some evidence of subsidence was encountered within the building with both walls *3020* and *3027* displaying signs of movement. The construction of ***3056*** demonstrated that a threshold through wall *3027*, once providing external access or through access into the adjacent room (Room 123 on the insurance plan), had fallen out of use.

Adaptations were also made to the south-eastern side of Building B, located beyond the limit of excavation in the form of a distinct extension on the eastern side of the building (later functioning as a box washing shed) and a southerly extension with a curved southern wall (later used as the grey pasting room).

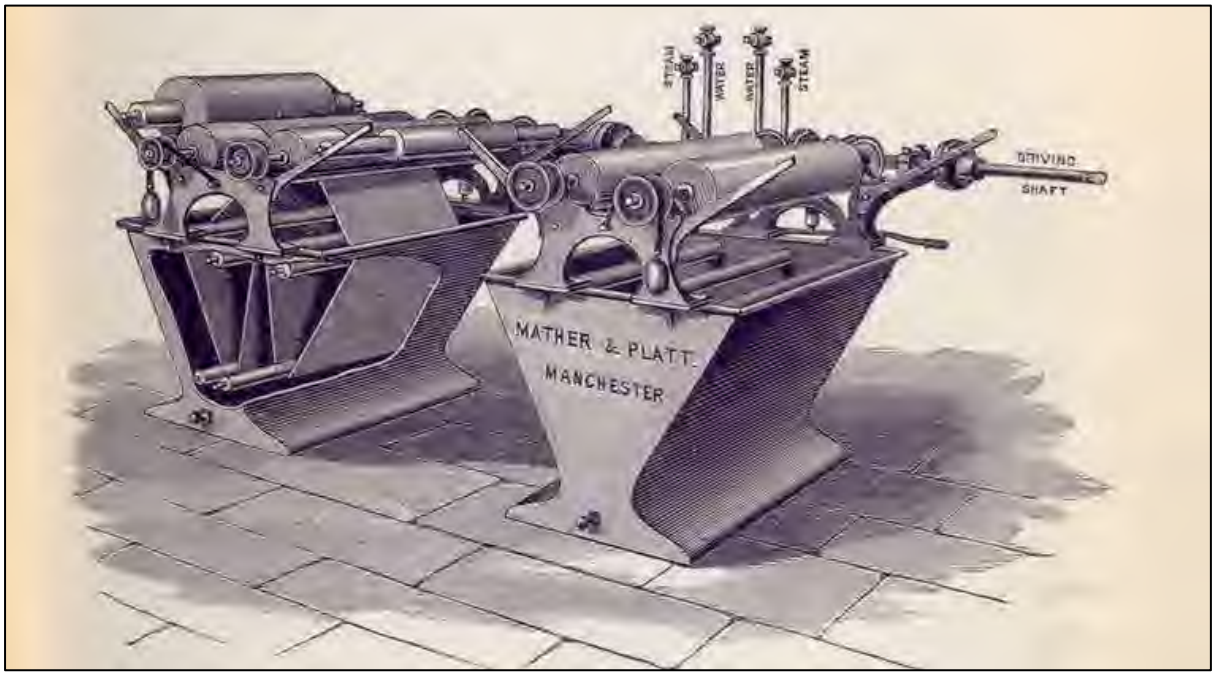


Plate 198: Dye jigger

Building C:

A great deal of development took place within Building C during *Phase 3*, *c.* 1831-49. This included the whole of the boiler house and the large extension (Rooms: 66 and 67 on the 1872 insurance plan) to the south of the existing dyehouse (Room 65), revealed across the south and central part of the excavation area. Internally, a number of features were ascribed to this phase of development on the basis of their construction, location and association with other elements within the building.

The large extension to the south of the dyehouse was bounded by the brick walls ***3077, 3130*** to the west, ***3076*** to the south and ***3082*** to the east. This is shown as a separate room to the 'dye house' to the north (Plate x), corresponding to Room 67 on the 1872 insurance plan.

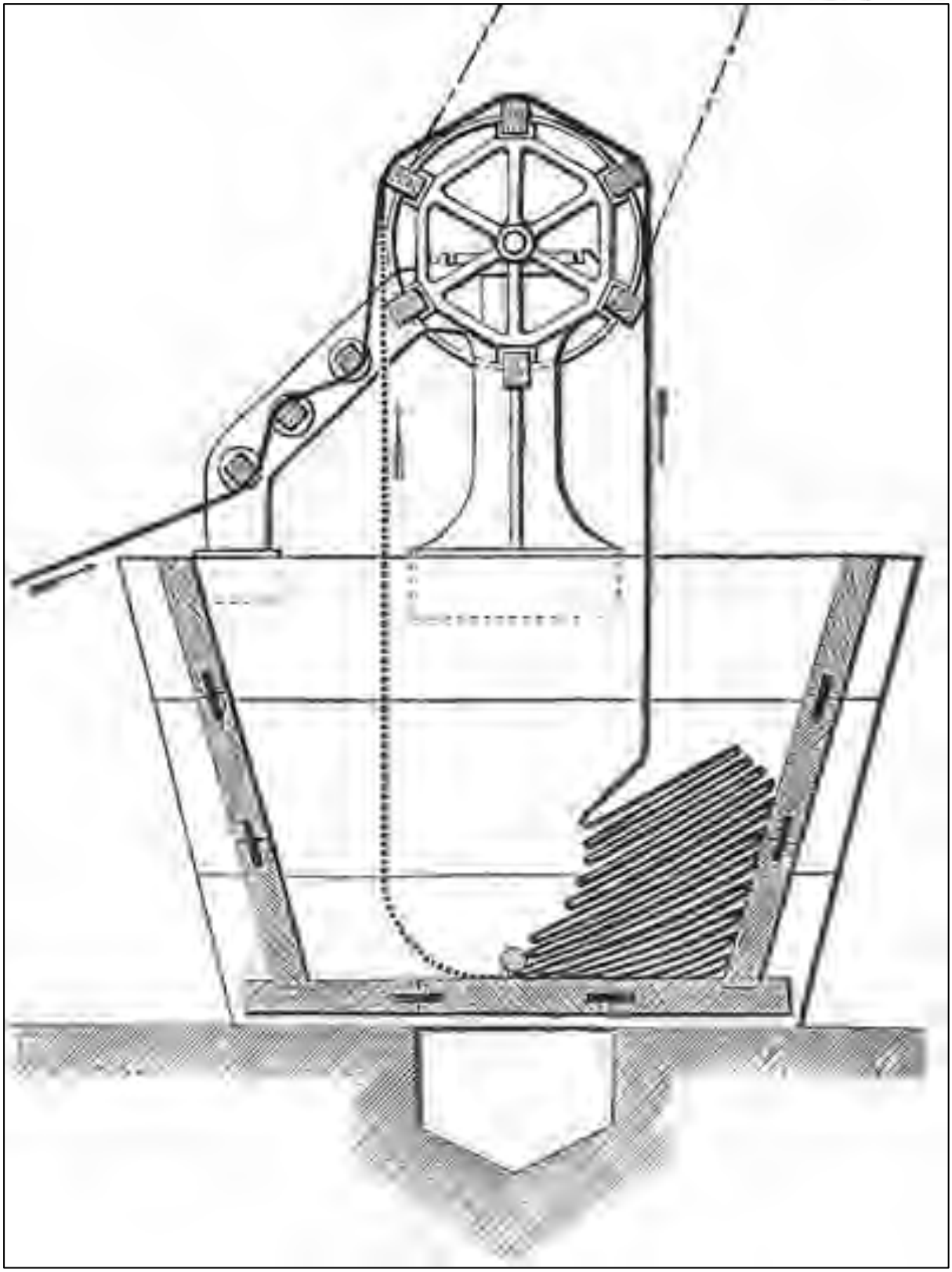


Plate 199: Diagram of a wince dye beck or dye digger

Several structures revealed within the southern half of Building C were not closely dated and may derive from activity in either Phases 2 or 3. The most important of these was drain ***3086*** ran north / south through the eastern half of the building appears to have acted as the main outbound drain for wastewater within building. Some elements of the structure are likely to

have been originally built as an external structure but were modified with the construction of later installations. For instance, a brick inspection chamber ***3108*** built against the southern wall ***3076,*** provided access into the drain, whilst within the building a series of later installations drained into ***3086***.

A narrow room, seemingly acting as a corridor (Room 66 on the 1872 insurance plan) had survived in part and was delineated by walls ***3143*** and ***3145*** together with ***3149*** and ***3150***. The southern side of the corridor was marked by a row of column bases ***3110, 3111, 3112, 3113*** and ***3114*** distributed across the east / west axis of the building between walls ***3130*** and ***3082***. This space appears to have been accessible from the east, with an opening shown on the 1872 floorplan through wall ***3082***.



Plate 200: Dye house in Messrs Worrall's works, Manchester

The construction of a long conduit ***3090 = 3092*** along the southern side of the building appears to mirror structure ***3083*** and likely served a similar function in channelling surface water or waste liquids from the dyeing or finishing processes. This particular part of the building is not labelled on the OS 1851 Town plan, however by the time of the 1872 insurance plan this part of the building was used for a range of processes: soaping, orange-raising and washing, all of which utilised large quantities of water.

'Orange-raising' otherwise known as 'chroming' was a treatment used together with the processes of 'ageing' and 'steaming' to fix or develop the colour after printing (Cole Collection of Chemistry 1877 663). An instruction for orange-raising published in 1876 by Mr G. H Underwood of Manchester recalls the process was carried out in the 'fancy dye house' and that orange pieces of fabric were immersed in small becks with small winces (winches) fixed across them (O'Neill 1876 206), otherwise known as 'wince dye becks' or 'dye jiggers' (Plates

198 and 199). The becks were filled with solution of chrome salt, caustic or dry slaked lime and water, heated by steam and kept at a continual boil (ibid). After being raised the fabric was wound round the wince to remove the chroming liquid before being drained and placed in water (*op cit* 207).

Soaping and washing were both important operations connected with the final cleansing of dyed and printed fabrics. At Mayfield there were at least two washhouses, a washing room and roller washing room, the latter probably housing row upon row of machines (Plate 200). Soaping served to remove some of the colouring matter and to make the white areas of the fabric bright and clear from dye (Anon 1880 170). This process was carried out using apparatus similar to a dye bath, in which the material is passed into a solution of soapy water (ibid). This was repeated multiple times, with sometimes up to six immersions. Although no such installations were revealed in the southern half of the building, it remains a possibility that the stone slabs found to the north, within the earlier parts of Building C, were utilised for this purpose. Other becks or baths may have once existed but owing to the lack of surviving floor surfaces had since been removed. The process of soaping was mechanised in the 19th century and within the Mayfield works, an entire room was dedicated for soaping machines; this room however lay beyond the limit of excavation and was located to the south-west of Building B (Room 43).

To the east, in an area between the dyehouse and boiler house was built another addition (corresponding to Room 70 on the 1872 insurance plan). This element of the complex was however only subject to partial excavation due to the presence of asbestos-containing-material, which were encountered during the initial machining. Excavation was terminated and only a few details can be gleaned about the construction of this area. It was possible to confirm the presence of a cellar to the east of wall ***3082***, which was accessible to the south via steps ***3068*** and a short flight of steps integral to wall ***3120***.

The Boiler House:

None of the original boiler house, presumably located to the north was exposed during the excavation of Area 3. Whilst the exact form the original boiler house took is uncertain, references are made to several furnaces being taken down around 1830 (Armstrong and Bourne 1856 93) and an experimental chimney and boiler being erected *c.*1835 (Armstrong 1839 169-70). From this we might infer a range of steam boilers being adopted during this period.

The boiler house exposed in Area 3 appears to represent a southern extension to this existing structure constructed during *Phase 3* was however largely revealed in the eastern half of the excavation. This part of the boiler house was delineated by ***3070*** to the east and ***3071*** to the west with an open-fronted southern façade formed by four freestanding brick piers (depicted on the 1872 insurance plan), interpreted as the springing points for a series of arched openings. The front wall of boiler houses typically incorporated a series of openings often round-arched and large enough to allow the installation of pre-fabricated machinery (boilers) and to facilitate the provision of coal (cf. Giles and Goodall 1992 148).

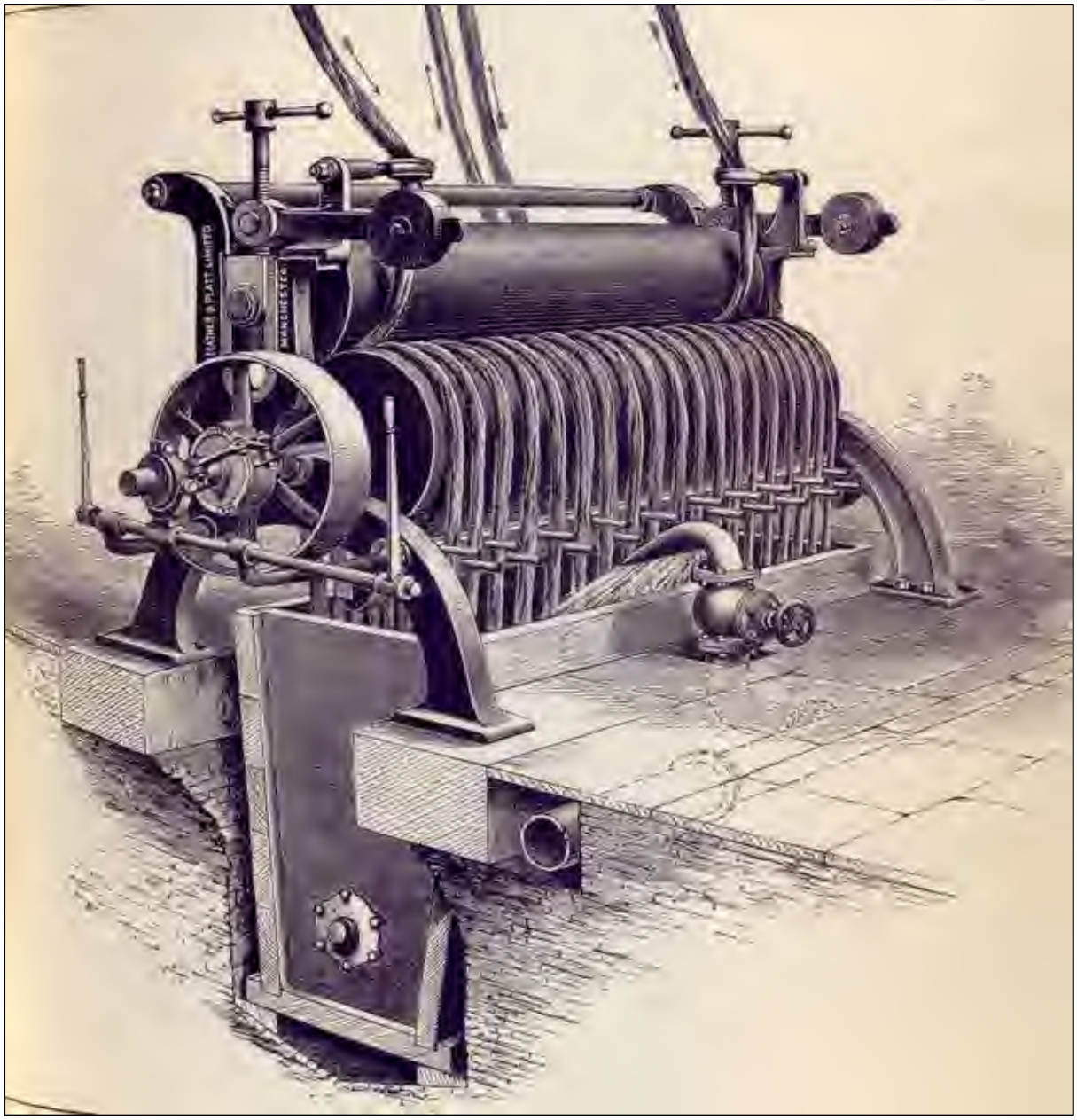


Plate 200: Improved roller washer machine

The boiler house contained a bank of four boilers, which were survived by a series of brick and firebrick boiler beds ***3060 – 3063***, side flues, a maintenance or access tunnel ***3069*** and rear flue ***3064***. The boiler beds were of a typical T-shaped form in plan, set back from the front wall to create a stoking or charging floor, situated to the south (Plate 201). The boiler beds were of a form that could have supported either Cornish, Lancashire or Galloway boilers; the latter two were adopted widely the during second of the 19th century. Lancashire- and Galloway boilers were patented by Fairbairn and Hetherinton in 1844 and William and John Galloway in 1851, respectively. The exact date the boiler house was built is not known but it was certainly in existence by 1849, making it a strong probability that Lancashire boilers were the first to be installed. Two types of boiler were listed in the winding-down sale in the 19th century, including four of Galloway boilers and three Lancashire boilers.

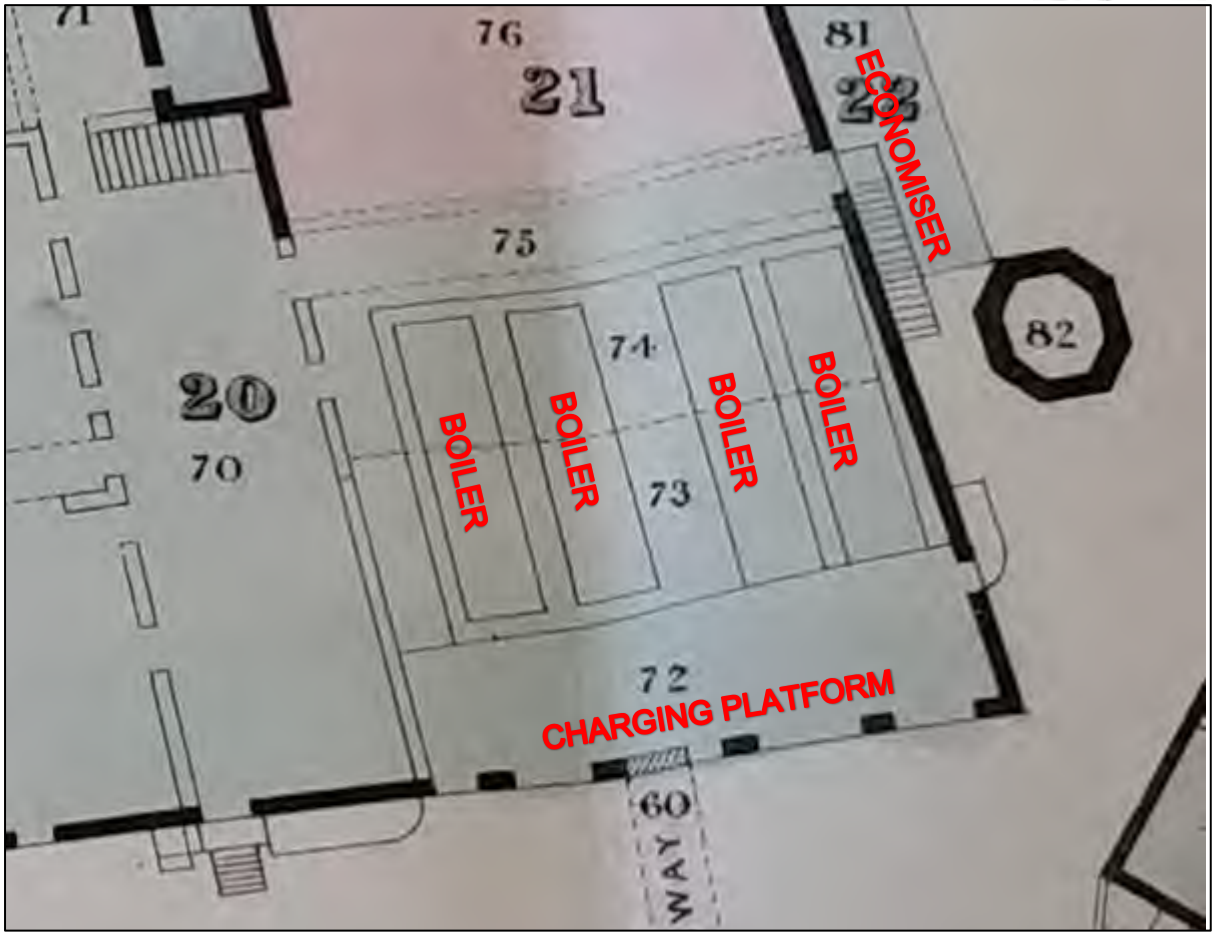


Plate 201: Extract from the 1872 insurance plan showing the internal layout of the boiler house

Three successive floor surfaces were revealed in the boiler house, indicating the prolonged use and adaptation of the building throughout the 19th century. The earliest charging floor ***3172*** was formed of stone flags and was revealed in a sondage in the south-west of the boiler house but likely extended across the width of the building.

A freestanding brick chimney was constructed to the east of the boiler house and north of a range of riverside buildings; it is shown on the 1851 Town Plan and Adshead's map of 1850 and was evidently constructed in the period 1831-49. Although the chimney was not revealed during the works, the partial remains of a brick flue ***3180*** leading to the chimney were revealed along the eastern limit of excavation. The orientation of the flue suggests the chimney served the excavated boiler house as well as other furnaces to the south.

The proliferation of boiler and engine houses within the dyeworks demonstrates the immense requirement for steam and water within the dye and printworks. Moreover, it signals the change from manual to mechanised processes within the industry, with an increased number of machines used within the works.

6.2.3.1 Phase 4 c.1849 – 1872

The dye and print works at Mayfield did not expand significantly beyond the core buildings shown on the mid-19th century mapping. The configuration on the 1851 OS Town plan is easily relatable to the more detailed floorplan produced for insurance purposes in 1872. Despite this, several key changes can be gleaned from these maps for Buildings B and C.

Building A

Although no structural remains within the limited exposure of Building A were ascribed to *Phase 4*, based on the known use of the building at this time, it is possible to reconstruct the activities taking place here. The majority of the ground floor space was given over to a white room. According to Pacy (1873 58-9), who was well acquainted with Hoyle's print works and those of other leading calico printers, 'white rooms' were 'large and lofty' spaces where 'calico pieces were measured, numbered and stamped by the Excise' often with the assistance of a 'staff of girls' who helped to measure the pieces. The use of children within this department is corroborated by *Reports to the Commissioner on the Employment of Children*, which records the work of 'hooking' the task of 'laying the clean and printed calico in folds' and 'lashing out' whereby lengths of cloth would be struck against a frame to remove creases.

Building B

An extension was added to the north-east corner of Building B, formed by walls ***3031*** and ***3032***, adding an additional footprint of 12m^2 to the building. As both existing drains were extended in this period and as similar fixing points were apparent in surfaces either side of the drains, it seems likely these represent the location of installations within the building.

Building C

A series of internal and external changes were made to Building C during this period.

Perhaps the most relevant to our understanding of the building were three stone engine beds, revealed along the northern limit of excavation: ***3095, 3140*** and ***3141***. Based on their compact size it is likely these were used to mount horizontal engines, which are known to have been used within the works in the late 19th century. The engines were probably used to power various machines, winches and other mechanical devices in the dyehouse.

The alteration of access and movement within the building was evident from an abutment to the western side of the building, in the form of wall ***3101***. This corresponds with a the position of a stairwell shown on the 1872 insurance plan and likely provided access to the upper storeys of the building.

In the exposed southern half of the building were three stone column bases; ***3146, 3147*** and ***3148***. These were of irregular size and form, featuring recesses of different shapes and sizes. All had clearly been used to support upright iron columns and were distributed along the east / west axis of the building. It is possible these were added in response to structural problems within the building.

Boiler House

Several key advancements can be inferred from structural changes and cartographic evidence. A new charging floor was laid to the south of the boilers ***3065***, which was raised above the original stone surface. This abutted a new sloping wall ***3072=3074*** constructed

along the front of the building, facilitating the provision of coal, which could now be discharged with ease.

The flue system was also adapted and extended, presumably with the addition of a boiler to the west of the boiler house. The westward extension ***3189*** was constructed with a firebrick lining. Flue ***3064*** was also relined with firebrick; the southern side of the rebuilt flue cut off walkway ***3069***, to the south. The obsolescence of the walkway is also evident in the sealing up of a doorway, represented by ***3177*** and the truncation of part of the structure during the construction of wall ***3178***.

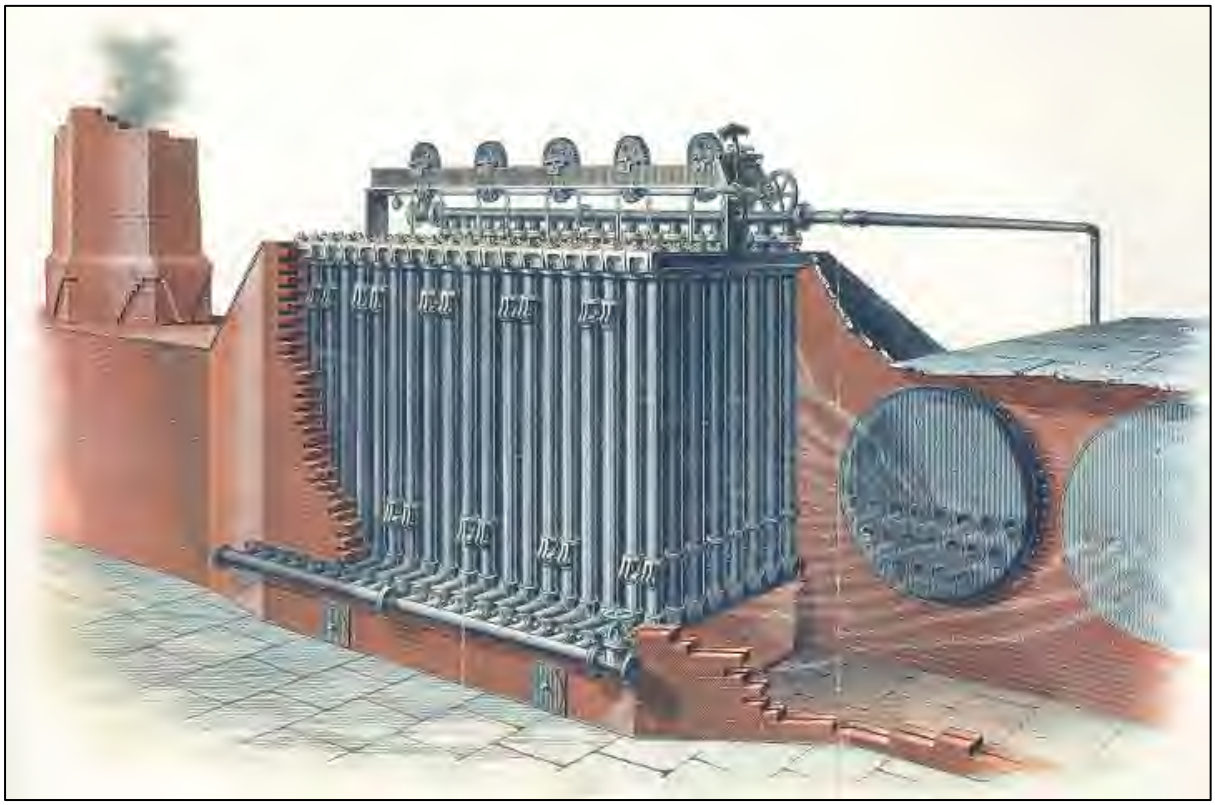


Plate 202: Green's patent fuel economiser

Broadly contemporary with these changes was another key development which improved the efficiency of the steam-boilers. This came in the form of an economising house, partially exposed in the north-east corner of the excavation. This excavated portion was represented by walls: ***3181, 3183*** and ***3186*** and incorporated several brick floors ***3182*** and ***3185***, and a brick-built flue ***3184***. The flue was aligned east / west and ran in the direction of an existing octagonal chimney. A rock-cut long conduit housing a cast iron pipe ran alongside the western side of the boiler house. This building would have housed an economiser, which utilised the residual heat in the exhaust gases from the boiler furnace to pre-heat the water feed to the boiler. Internally it was made up of a series of metal pipes arranged within the flues between the chimney and boiler. The latest configuration of the economising house at Mayfield was likely 'Green's economiser with 192 pipes', which was recorded in the winding-down sale of 1897 (Plate 202). Economisers were first developed by Green in Yorkshire in the 1840s and widely adopted in the second half of the 19th century.

6.2.3.2 Phase 5 c.1872 – 1891

The complex developed at a slower pace in the last quarter of the 19th century, although internally a number of installations and features were ascribed to this phase of activity. The dye and prints of Thomas Hoyle and Son then styled themselves as 'calico printers' with a greater emphasis on this element of manufacture. It was probably during this period that the many mechanical aids and machine printers – recorded in the 1897 sale – were introduced to the works.

Building A

Three structures associated with Building A were assigned to Phase 5: ***3192*****,** ***3009*** and ***3007*** and can be related to changes shown on the OS 1891 Town Plan. From the 1891 town plan it is evident that Building A was extended eastwards with a new wedge-shaped block, the eastern side of which mirrored the alignment of Building C. The curved south-eastern corner of the building corresponds with a section of wall ***3192*****.** This was in turn respected by drain ***3007***, evidently running on the inside of this extension, exiting the building to the south and following the existing southern wall of Building A to the west. As the drain had been inserted through wall *3002*, it clearly represents a late addition to the building sequence.

It was uncertain what function structure ***3009*** fulfilled. It was positioned in the south-east corner of the Phase 1 building. The absence of any connecting flues and lack of soot on the interior faces of the brickwork also suggest it was not used as a chimney. It probably functioned as an inspection chamber and may have connected to deeper drains situated below the buildings.

Building B

There were few signs of activity within Building B that could be ascribed to this phase. From the evidence supplied by the 1872 insurance assessment, much of the space within the building was redundant and no longer used for printing. The only change noted within the building was the blocking of a threshold (***3059****)* between walls *3040* and *3023.* This ultimately cut off movement between the southern and northern parts of the original building, perhaps implying whatever processes or tasks taking place therein were unrelated.

Building C

Slightly more activity was evident in Building C. Here the truncation of the floors or upstanding structures by modern activity had left only sunken or sub-floor structures giving the impression of masses of open space in the building. This is unlikely to reflect the reality of the building's configuration during its use.

The proliferation of drains below the building by this period provides some indication of the sorts of activities taking place. Two brick built open channels ***3085*** and ***3087*** or drains were revealed in the southern half of the building. The outer walls of these structures were relatively substantial and could feasibly have supported machinery at ground level, whilst providing drainage below. It is worth noting both structures were connected to pre-existing drains, *3086*

and *3044* respectively. Within structure *3085* were vestiges of a white soapy substance, perhaps a remnant of soap or lime used in either the soaping or orange-raising processes. The mechanisation of soaping saw the development of the 'open soaper' (Plate 203), which consisted of a range of adjoining 'watertight boxes…fitted with rollers at the top and bottom' and filled with hot soapy solutions and 'hot or cold water' (Cole 1911 706); it also featured 'a series of "spirt pipes" to better wash out the soap' (ibid). One of the exposed structures, ***3085*** was abutted by an additional structure ***3153***. ***3153*** was sited directly over a drain ***3086***.

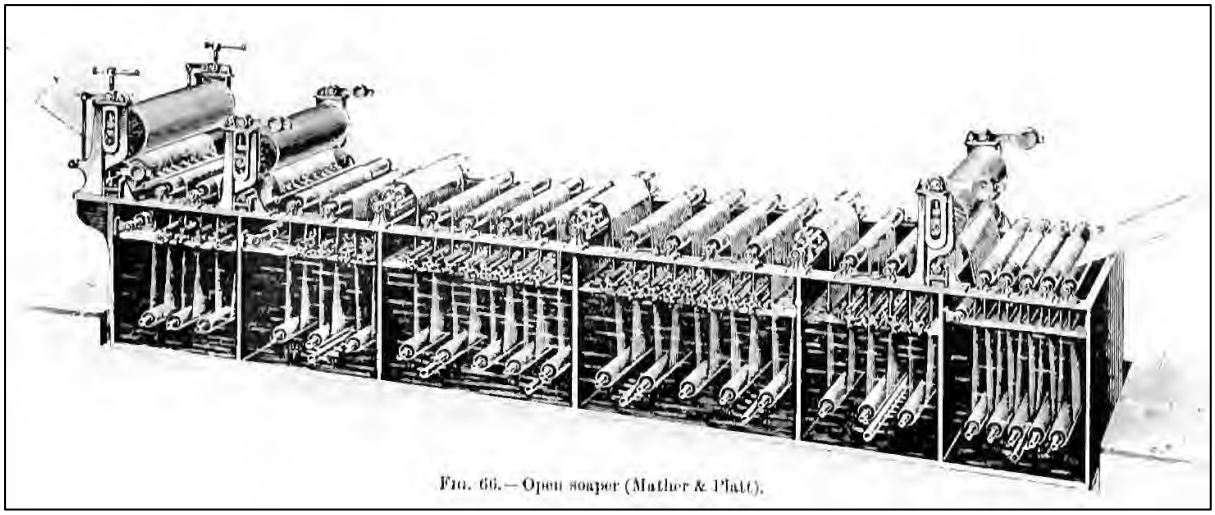


Plate 203: An open soaper similar to the models produced by Furnival and Co. and Hawthorn and Co used at Mayfield dye and print works

The introduction of greater numbers of mechanical dyeing washing and finishing machines within this building is implied by the insertion of two additional stone beds, exposed in the southern half of the building. Both were interpreted as late additions to the building and were probably installed in either Phase 5 or 6. ***3097*** had been built above the eastern end of structure *3090,* whilst *3156* truncated the existing drain *3092* and was situated above the denuded walls and against the exterior wall *3076*. Both were built to house small compact engines, quite possibly of the diagonal or horizontal type. The fabric of both these structures was consistent with that of ***3085*** and ***3087*** suggesting the two groups of structures were contemporary.

An opening within the western wall of the building, between *3077* and *3130* was sealed-up during this period by the insertion of wall ***3094***. The fabric of the wall was nearly identical to that used in the construction of ***3085 / 3087***.

A small extension built to the south of Building C and visible on the 1890 OS, suggesting it was added during this phase of development. Although very little of this structure was revealed during the excavation, a section of wall ***3154*** was revealed to the south of wall *3076*.

Boiler House

The efficiency of the steam raising plant was drastically improved with the installation of automatic feeders and a purpose-built chimney attached to the economising house.

The introduction of automatic feeders to the boilers was inferred from several adaptations in the southern half of the boiler house. The floor alongside the southern wall of the boiler house was raised up. The elevated surfaces (***3066*** and ***3174***) presumably allowed the hoppers, positioned at the top of each boiler door, to be filled with ease from above. Around the same time, a series of walls were constructed along the front of the building perhaps signifying the construction of a coal store or related structure. Walls *3071* and *3073=3173* together formed a diagonal extension across the previously open-fronted boiler house. Reconfiguration of the access, in the form of a ramped floor ***3168*** leading into the boiler house may also have been added.



Plate 204: An example of a bank of Lancashire boilers, some fitted with automatic feeders (hoppers

The 1891 OS Town Plan reveals the chimney associated with the boiler house was moved during this phase to the north of the economising house. The reconstruction of this element of the steam-raising plant probably signals further improvements to the operation of the economiser.

6.2.3.3 Phase 6 c.1891 – 1908

Structures from this phase of the works' development were limited to a series of internal modifications exclusively revealed within Building C. This suggests that whilst Buildings A and B were standing at this time, their size and layout were not conducive to the installation of large dyeing and printing machinery. Structures ascribed to this phase were characterised by the use of machine-made bricks, black ash mortar or Portland cement. Several floor surfaces within these later structures were covered with a concrete screed. These were differentiated by structures associated with *Phase 7* by their alignment and stratigraphic relationships to the existing structures.

Building C

Four rectilinear brick structures revealed in the southern half of the building: ***3080, 3081, 3091*** and ***3109***. These were found in the south-west corner of the building probably relate to

machinery or equipment installed and used in the buildings' final years of use. All the structures were associated with existing drains and could feasibly have supported machines used in the dyeing, chroming, soaping or washing processes.

Boiler House
A small group of structural remains within the eastern part of the boiler house were assigned to Phase 6: *3189, 3191 and 3195*. These constitute blockings within the eastern wall.

6.2.3.4 Phase 7 c.1908 –

The foundations associated with the rubber works buildings were planned on a different axis to the dye works buildings. The majority of the previous buildings were levelled and removed, except for a portion of the eastern elevation of the riverside buildings, which was incorporated into the exterior walls of storehouses within the India Rubber works.

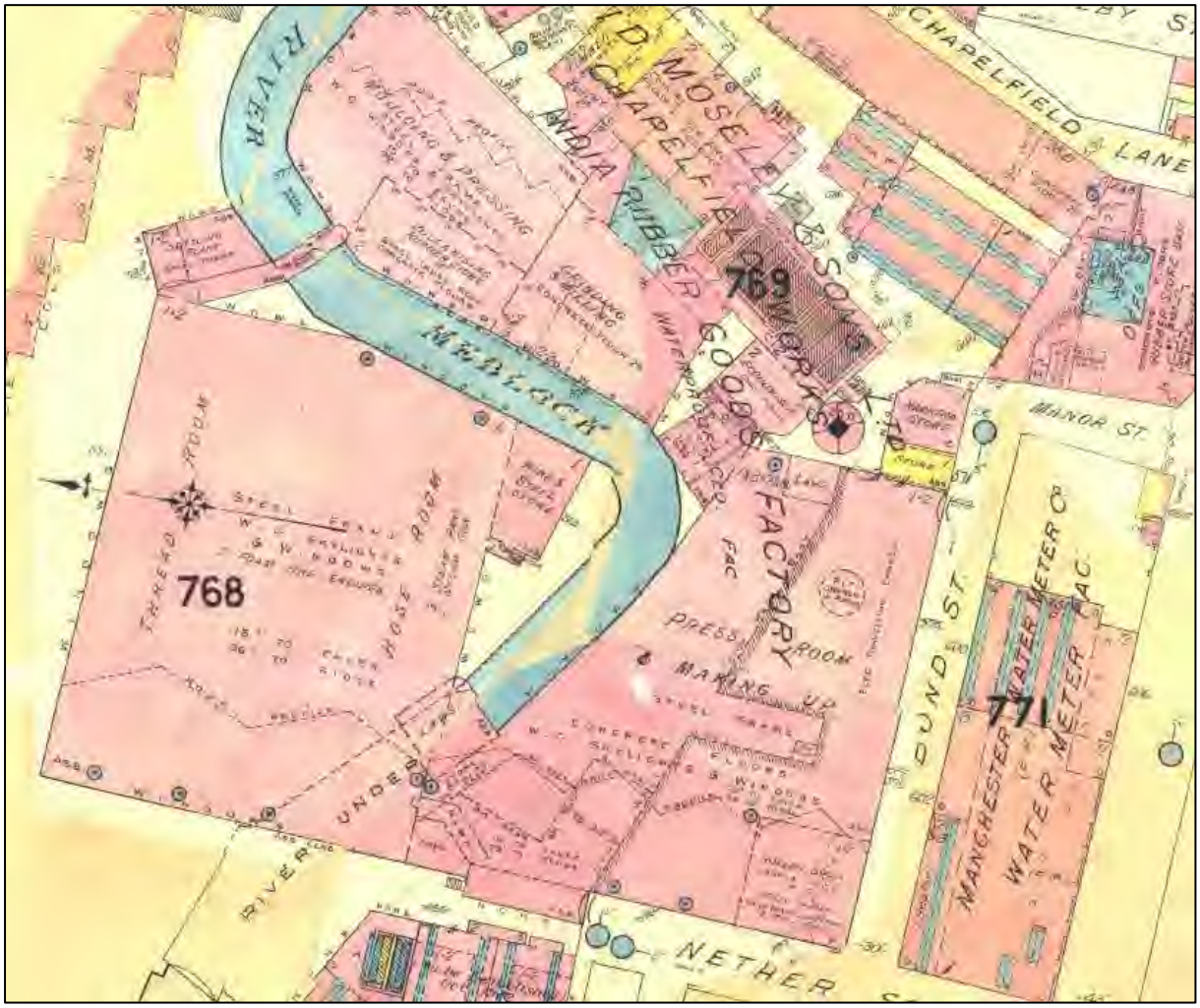


Plate 205: Goad's map revised 1942 showing the extent of David Moseley's Chapelfield Works

Those foundations revealed during the excavation visibly truncated the earlier structures and were built primarily from reinforced concrete and machine-made brick. As such, these were considered of limited archaeological importance.



Plate 206: Extract from Laurent's map of 1793 showing the early components of the dyeworks

6.2.4 Area 4: The Ardwick and Chapelfield Dyeworks (Figures 18 – 24)

The initial evaluation trenches (Trenches 16, 17, 18 and 19) and the subsequent excavation Area 4 uncovered various remains associated with the 18th and 19th century dyeworks, later manufactories and India Rubber works.

A dyeworks was established on the opposite bank of the river to the Mayfield Dyeworks in the late 18th century. This enterprise was initially owned and ran by Thomas and John Beswick, first in partnership as Edge and Beswick and latterly Beswick and Holt. The first references to the dyers were made in 1781 in the *Manchester Directory*. The works remained under family control until around 1810, when John Beswick sold on the contents of the dyehouses and the premises. These were subsequently divided in two and managed separately; only the southern part of the complex was run as a dyeworks, whilst the northern range of buildings was put to use by various concerns: stiffeners, machine-makers before eventually being returned to a dyeworks. Both the Ardwick and Chapelfield works changed hands multiple times during the 19th century, only being brought together again as part of a single complex when incorporated into the Chapelfield India Rubber Works in the second half of the 19th century.

The complicated history of this part of the site and its adaptation and alteration over the course of a century were reflected in the structural remains encountered during the excavation. The final occupation of the site by the rubber works and more modern prefabricated buildings had inevitably resulted in truncation to the earlier structures. Any such remains were considered 20th century in date lay beyond the remit of the archaeological investigation and are not reported in any depth. Greater emphasis was placed on understanding the early development of the early industrial site and illustrating how the buildings were expanded and adapted.

6.2.4.1 Phase 1

Elements of two buildings (designated Buildings A and B) once formed part of the 18th century dyeworks. These were revealed in the southern half of the excavation (Plate 206). The location and alignment of the outer walls correspond to the position of buildings shown on Laurent's map of 1793 and Green's map of 1794 (Figure 17). The materials used during this period were consistent with those found in the earliest buildings exposed across the river at Thomas Hoyle's dyeworks. Moreover the scale and form of the buildings as depicted on the mapping mirrors that of contemporary dyeworks in the area.

This first phase of activity can be linked to the ownership and management of the dyeworks under the partnerships of Edge and Beswick and Beswick and Holt between 1781 and 1810. Very little documentary evidence survives to shed light on the operation of the works during this time, although it seems likely that during their ownership the majority of the processes were carried out by hand. Whether or not the site utilised the power of the river is certainly a possibility, especially given the detail of a projecting arm of the building extending out over the river. A water wheel was used for generating power at the adjacent Mayfield works and was auctioned in 1795. Its application may have been for powering a logwood mill, in which would have been housed machines for chipping and grinding dyewoods. The inclusion of 'a quantity of oak bark' in the 1810 sale of equipment from the site suggests this may have also been the case at the nearby works.

Building A

Several internal and external walls consistent with the northern end of Building A were exposed. These included walls ***402, 403, 437, 438*** and ***448,*** together with surface ***404***. The proportions and shape of the building correspond with Buildings A and B revealed within the Mayfield Dyeworks. From historical records we know the ground floors of these buildings housed the colour preparation and mixing rooms. It is possible similar processes were carried out in Building A during this period, although no internal features could be directly linked with the dyeing process.

Building B

Broadly contemporary with Building A were the remains assigned to Building B, which corresponds to the southern portion of an irregular shaped building shown on the 18th century mapping. Three walls ***406, 409*** and ***410*** and three associated surfaces ***405, 408*** and ***411*** appear to represent original elements of the building.

6.2.4.2 Phase 2 1800-1831

The early 19th century development of the site was largely drawn from cartographic and documentary evidence. Around 1810-12, the works were sold and divided. Buildings A and B formed part of the Ardwick Dyeworks, which continued to grow during this period. It was during this time the premises were run by first by the partners Beswick and Holt and latterly by Peter and James Longsdon.

An extension to Building A was delineated to the north by wall ***431***. This appears to have housed a boiler house with a heat-affected surface ***432***, likely forming the base flue of a boiler bed.

It was also during this period that the two buildings were connected by means of an additional structure: Building C. A number of structural features and part of an early flue provide further evidence of the application of steam-powered plant during this period. Boilers would have been necessary not only for heating water and providing steam, both used in the dyeing and processing of fabric but also the powering of steam-engines for driving any belt-driven machinery within the works.

6.2.4.3 Phase 3 1831-1849

Few remains were easily ascribed to this phase of activity. A substantial early concrete engine bed ***433*** revealed in Building A was however ascribed to this phase of activity and corresponds to an engine house shown on the mid-19th century OS Town Plan.

6.2.4.4 Phases 4-5 1849-1891

The development of the site during the second half of the 19th century saw various additional elements of the power-systems of the Ardwick and Chapelfield Dyeworks become established. Although it remains hard to place these in the relative chronology of the site, the earliest components probably include the chimney and its initial flue system. This was in turn post-dated by the engine house and wheel pit exposed along the northern limit of excavation. This was housed in an extension shown within the Chapelfield works on the 1891 OS Town Plan. The construction of the engine house resulted in the truncation of an existing flue connected to the chimney ***421 / 422***. ***426*** represents the last operational flue attached to the chimney. The south-eastern extent of the flue passage (within Building C) was modified and redirected away from the probable boiler (associated with structural remains ***431*** and **432**). The redirected flue ran up to an internal structure within Building A, ***428***, which could constitute part of a later arrangement.

The engine house and wheel pit ***434*** and associated external walls ***435*** and ***436*** probably supported a compact horizontal engine used for driving machinery within the India Rubber works. This had taken over much of the Chapelfield Works during this period and by the end of the 19th century incorporated all of the Ardwick Dyeworks and adjacent tannery. Nearly all the processes in rubber production were mechanised and this engine was probably one of several that were operational within the factory in the 19th and early 20th century.

6.2.4.4 Phases 6-7 1891-

The general configuration of the site remained the same during the first few decades of the 20th century but was subsequently overhauled during a period of reconstruction that saw many of the antiquated buildings replaced with large, open factory buildings. The extent of change is particularly evident from aerial photograph of the site taken in 1949.



Plate 207: Aerial photograph of the site area, looking northeast, 1949, after most of the 19th century buildings had been cleared.

6.2.5 Dyeing and Printing in Ardwick

Numerous dyeworks are attested in Manchester in the second half of the 18th century. Many are known from historical and cartographic sources to have been located along the River Medlock.

The companies engaged in this industry were profitable and well renowned. Thomas Hoyle's Mayfield works was perhaps the most famous of these manufactories and was frequented by dignitaries and ambassadors, who commented on the scale and ingenuity of the printing techniques. The contemporary Ardwick Dyeworks also led the way in certain fields, particularly in the production and finishing of cotton velvet, examples of which were worn by Queen Victoria. Although this site did not remain in the hands of a single company, it nevertheless operated almost continually for over a century and together with the Mayfield works employed a large number of individuals.

Both sites present a case study for the development of the dyeing and printing industries, which were influenced by a range of factors. The archaeological remains have demonstrated commonalities in the early architecture of the dye works with long linear ranges present on both sides of the river. The expansion of both sites in the 19th century presented evidence for the adoption of steam-powered technology, indicated by the appearance of engine beds and installations at Mayfield and elements of flue systems across the river at Ardwick Dyeworks.

The dyeing and printing industry fared less well in the second half of the 19th century and early 20th century, mirroring the general decline of the textile industry, which was eventually overshadowed by overseas production in India and the Far East. The incorporation of a large swathe of the site into David Moseley's India Rubber Works reflects this economic shift.

7. Conclusion

7.1 Summary

The results obtained from the evaluation and excavation helped to shed further light on the development of Mayfield, Ardwick between the late 18th and early 20th century. The excavation was particularly significant for its scale and scope – it uncovered considerable remains relating to industry, leisure, and housing. It is unusual for a single excavation to investigate this range of assets, forming part of a contemporary townscape where people lived and worked. The most significant remains were revealed in Areas 2 and 3.

The significance of the fieldwork can be assessed at different scales. It allowed an investigation into the way the urban landscape developed, whilst offering more nuanced and in-depth case studies of individual premises.

Investigation into three buildings making up the Mayfield Dyeworks reveal how this industrial site was expanded and altered over its extended use. Upscaling of the steam-raising plant (boilers and chimneys) shows how the original boiler house needed to be improved as machinery in the dyeing and printing workshops was refined and advanced. This was also evidenced by the suite of structural remains revealed across Buildings A, B and C, which revealed several areas where dye and dyeing processes were carried out in the 18th or early 19th century. The newer elements of the complex contained larger drains and brick-built foundations hinting at the increased number of machines installed within the works.

Less evidence was found that could be directly related to the processes carried out at the Ardwick or Chapelfield dyeworks. Nevertheless, the excavation area encompassed parts of both sites and provided evidence for the power systems within the works as well as clear evidence for how the works were initially adapted when incorporated into the India Rubber works.

While the practise of tanning is well-understood archaeologically, most excavations have tended to investigate earlier site examples, and the excavation of the Ardwick Tannery allowed for some further light to be shed on the power-systems utilised in a 19th century works, of which few have been excavated. Together with the documentary research it is possible to reconstruct how the motive power was utilised within the works.

Similarly, while various 19th century bathhouses have been archaeologically excavated, including within Manchester, the excavation at the Mayfield Baths uncovered particularly well-preserved remains of two plunge pools, together with part of the boiler house. Combined with the surviving documentary evidence, this has highlighted how the amenities at the baths were adapted and improved over their 90-year use. Moreover, it has provided a tangible physical connection to a once much needed social amenity embedded in the working-class community. The provision of these facilities to the urban poor indicate the evolving social attitudes to class, gender, and hygiene in the late 19th and early 20th century.

8. Archive

7.1 Archive

The results of the archaeological investigation will form the basis of a full archive to professional standards and current CIfA guidelines updated 2017. 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. As part of the archiving process, the on-line OASIS (On-line Access to Index of Archaeological Investigations) form will be completed.

Salford Archaeology will make arrangements for the deposition of the site archive with the MOSI and all documents, artefacts and any other material associated with the project will be marked with a unique site code (to be confirmed with MOSI) during fieldwork and a museum accession number will be issued once the fieldwork has been completed. Following completion of the fieldwork preparation of the site archive will follow *Conditions for Depositing Archaeological Archives* (HAGM 2016) regarding deposition.

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Appendix 1: Context List

Context Number	Trench	Description
0100	Trench 1	***Demolition material***
0101	Trench 1	***Brick structure***
0200	Trench 2	***Demolition material***
0201	Trench 2	***Brick and flagstone drain***
0202	Trench 2	***Firebrick flue***
600	Trench 6	***Made ground***
601	Trench 6	***Brick wall***
602	Trench 6	***Sloped brick flue/chimney***
700	Trench 7	***20th Century brick wall***
701	Trench 7	***Brick flue***
120	Trench 12	***Flagstone floor***
121	Trench 12	***Flagstone floor***
122	Trench 12	***Single-course brick wall***
123	Trench 12	***Single-course brick wall***
124	Trench 12	***Demolition material***
140	Trench 14	***Demolition material***
141	Trench 14	***Brick structure***
151	Trench 15	***Modern brick structure***
101	Area 1	***Linear cut of drain feature***
102	Area 1	***Brick drain structure of 101***
104	Area 1	***Flagstone floor***
105	Area 1	***Three-course brick wall***
106	Area 1	***Flagstone floor***
107	Area 1	***Brick stanchion base***
108	Area 1	***Brick wall***
109	Area 1	***Brick stanchion base***
110	Area 1	***Brick and stone chimney***
111	Area 1	***Boiler bed***
112	Area 1	***Boiler bed***
113	Area 1	***Brick structure***
114	Area 1	***Four-course brick wall***
115	Area 1	***Three-course brick wall***
116	Area 1	***Brick and concrete wall***
117	Area 1	***Double-course brick wall***
200	Area 2	***Three-course brick wall***

201	Area 2	***Three-course brick wall***
202	Area 2	***Brick wall***
203	Area 2	***Brick wall***
204	Area 2	***Brick wall***
205	Area 2	***Four-course brick wall***
206	Area 2	***Brick wall***
207	Area 2	***Four-course brick wall***
208	Area 2	***Flagstone floor***
209	Area 2	***Brick wall of boiler house***
210	Area 2	***Brick wall***
211	Area 2	***Brick wall***
212	Area 2	***Brick wall***
213	Area 2	***Three-course brick wall***
214	Area 2	***Brick wall and doorway***
215	Area 2	***Concrete floor***
216	Area 2	***Stone engine beds***
217	Area 2	***Firebrick flue***
218	Area 2	***Brick flue***
219	Area 2	***Brick chimney***
221	Area 2	***Firebrick boiler bed***
222	Area 2	***Firebrick boiler bed***
223	Area 2	***Brick wall***
224	Area 2	***Brick structure***
225	Area 2	***Men's 1st class pool***
226	Area 2	***Men's 2nd class pool***
227	*Area 2*	***Three-course brick wall***
228	*Area 2*	***Brick structure associated with steam injection pipework***
3001	*Area 3*	***Building A brick wall***
3002	*Area 3*	***Building A brick wall***
3003	*Area 3*	***Building A brick wall***
3004	*Area 3*	***Building A brick wall***
3005	*Area 3*	***Building A brick wall***
3006	*Area 3*	***Building A brick wall***
3007	*Area 3*	***Building A drain***
3008	*Area 3*	***Building A brick wall***
3009	*Area 3*	***Building A brick chamber***
3010	*Area 3*	***Building B brick wall***
3011	*Area 3*	***Building B brick wall***
3012	*Area 3*	***Building B brick wall***
3013	*Area 3*	***Building B brick wall***

3014	*Area 3*	***Building B brick wall***
3015	*Area 3*	***Building B brick floor***
3016	*Area 3*	***Building B brick floor***
3017	*Area 3*	***Building B brick floor***
3018	*Area 3*	***Building B brick walled drain***
3019	*Area 3*	***Building B brick wall***
3020	*Area 3*	***Building B brick wall***
3021	*Area 3*	***Building B external stone gully alongside 3027***
3022	*Area 3*	***Building B brick wall***
3023	*Area 3*	***Building B brick wall***
3024	*Area 3*	***Building B brick wall***
3025	*Area 3*	***Building B brick wall***
3026	*Area 3*	***Building B brick wall***
3027	*Area 3*	***Building B brick wall***
3028	*Area 3*	***Building B brick floor***
3029	*Area 3*	***Building B brick wall***
3030	*Area 3*	***Building B brick wall***
3031	*Area 3*	***Building B brick wall***
3032	*Area 3*	***Building B brick wall***
3033	*Area 3*	***Building B flagstone floor***
3034	*Area 3*	***Building B flagstone floor***
3035	*Area 3*	***Building B flagstone floor***
3036	*Area 3*	***Building B drain***
3037	*Area 3*	***Building B drain***
3038	*Area 3*	***Building B drain***
3039	*Area 3*	***Building B drain***
3040	*Area 3*	***Building B brick wall***
3041	*Area 3*	***Building B brick wall***
3042	*Area 3*	***Building B brick wall***
3043	*Area 3*	***Building B flag floor***
3044	*Area 3*	***Drain***
3045	*Area 3*	***Drain***
3046	*Area 3*	***Drain***
3047	*Area 3*	***External drain from Building B to 3048***
3048	*Area 3*	***External drain connected to Building C, 3083***
3049	*Area 3*	***External north/south drain joining 3093***
3050	*Area 3*	***External drain to the south of 3049***
3051	*Area 3*	***L-shaped returning brick wall***
3052	*Area 3*	***External drain to the south-east of Building B***
3053	*Area 3*	***Building A brick wall***

3054	*Area 3*	***Building A brick floor***
3055	*Area 3*	***Building B brick pad***
3056	*Area 3*	***Building B brick pad***
3057	*Area 3*	***Building B brick wall***
3058	*Area 3*	***Building B brick wall***
3059	*Area 3*	***Building B blocking***
3060	*Area 3*	***Building C Boiler House boiler bed***
3061	*Area 3*	***Building C Boiler House boiler bed***
3062	*Area 3*	***Building C Boiler House boiler bed***
3063	*Area 3*	***Building C Boiler House boiler bed***
3064	*Area 3*	***Building C flue***
3065	*Area 3*	***Building C Boiler House brick floor***
3066	*Area 3*	***Building C Boiler House brick floor***
3067	*Area 3*	***Building C brick floor***
3068	*Area 3*	***Building C brick wall***
3069	*Area 3*	***Building C Boiler House vaulted walkway***
3070	*Area 3*	***Building C Boiler House brick wall***
3071	*Area 3*	***Building C Boiler House brick wall***
3072	*Area 3*	***Building C Boiler House brick wall***
3073	*Area 3*	***Building C Boiler House brick wall***
3074	*Area 3*	***Building C Boiler House brick wall***
3075	*Area 3*	***Building C brick wall***
3076	*Area 3*	***Building C brick wall***
3077	*Area 3*	***Building C brick wall***
3078	*Area 3*	***Building C brick wall***
3079	*Area 3*	***Culvert***
3080	*Area 3*	***Building C brick wall***
3081	*Area 3*	***Building C brick wall***
3082	*Area 3*	***Building C brick wall***
3083	*Area 3*	***Building C conduit / drain***
3084	*Area 3*	***Building C brick floor***
3085	*Area 3*	***Building C open drain / conduit***
3086	*Area 3*	***Building C drain***
3087	*Area 3*	***Building C open drain / conduit***
3088	*Area 3*	***Building C drain***
3089	*Area 3*	***Building C drain***
3090	*Area 3*	***Building C brick conduit / drain = 3092***
3091	*Area 3*	***Building C brick wall***
3092	*Area 3*	***Building C brick conduit / drain = 3090***
3093	*Area 3*	***Building C drain***

3094	*Area 3*	***Building C blocking, between 3077 and 3130***
3095	*Area 3*	***Building C masonry bed***
3096	*Area 3*	***Building C masonry bed***
3097	*Area 3*	***Building C masonry bed***
3098	*Area 3*	***Building C vat base***
3099	*Area 3*	***Building C vat base***
3100	*Area 3*	***Building C drain***
3101	*Area 3*	***Building C step foundations***
3102	*Area 3*	***Building C flagstone floor south of vat 3098***
3103	*Area 3*	***Building C brick wall***
3104	*Area 3*	***Building C vat base***
3105	*Area 3*	***Building B blocking at the southern end of 3023***
3106	*Area 3*	***Building C brick wall***
3107	*Area 3*	***Building C steps***
3108	*Area 3*	***Building C brick chamber***
3109	*Area 3*	***Building C brick wall***
3110	*Area 3*	***Building C brick and stone column base***
3111	*Area 3*	***Building C brick and stone column base***
3112	*Area 3*	***Building C brick and stone column base***
3113	*Area 3*	***Building C brick and stone column base***
3114	*Area 3*	***Building C brick and stone column base***
3115	*Area 3*	***Building C exterior brick wall***
3116	*Area 3*	***Building C drain***
3117	*Area 3*	***Building C drain***
3118	*Area 3*	***Building C vat base***
3119	*Area 3*	***Building C brick wall***
3120	*Area 3*	***Building C brick wall***
3121	*Area 3*	***Building C Boiler House brick pier***
3122	*Area 3*	***Building C Boiler House brick pier***
3123	*Area 3*	***Building C Boiler House brick pier***
3124	*Area 3*	***Building C Boiler House brick pier***
3125	*Area 3*	***Building C Boiler House brick pier***
3126	*Area 3*	***Building C brick wall***
3127	*Area 3*	***Building C brick wall***
3128	*Area 3*	***Building C brick wall***
3129	*Area 3*	***Building C brick wall***
3130	*Area 3*	***Building C brick wall***
3131	*Area 3*	***Building C drain associated with 3136***
3132	*Area 3*	***Building C drain (south of 3083 extension, north of 3128)***
3133	*Area 3*	***Column base – presumably moved from original location***

3134	*Area 3*	***Building C drain***
3135	*Area 3*	***Building C drain***
3136	*Area 3*	***Building C Square inspection hole ass. with drains***
3137	*Area 3*	***Building C drain***
3138	*Area 3*	***Building C flagstone surface adj to 3118***
3139	*Area 3*	***Building C flagstone surface adj to 3118***
3140	*Area 3*	***Building C masonry bed***
3141	*Area 3*	***Building C masonry bed***
3142	*Area 3*	***Building C floor surface ass. with 3095/3096***
3143	*Area 3*	***Building C east/west wall ass with corridor?***
3144	*Area 3*	***Building C north/south wall ass with corridor?***
3145	*Area 3*	***Building C east/west wall ass with corridor?***
3146	*Area 3*	***Building C southern half stone column base***
3147	*Area 3*	***Building C southern half stone column base***
3148	*Area 3*	***Building C southern half stone column base***
3149	*Area 3*	***Building C east/west wall ass with corridor?***
3150	*Area 3*	***Building C east/west wall ass with corridor?***
3151	*Area 3*	***Building C brick footing of ramp***
3152	*Area 3*	***Building C wall situated between 3151 and 3068***
3153	*Area 3*	***Building C extension to 3085***
3154	*Area 3*	***Building C wall abutting 3076***
3155	*Area 3*	***Building C northern return of wall 3125***
3156	*Area 3*	***Building C stone engine bed***
3157	*Area 3*	***Building C firebrick structure***
3158	*Area 3*	***Building C brick chamber / drain***
3159	*Area 3*	***Building C brick chamber / drain***
3160	*Area 3*	***Building C brick wall***
3161	*Area 3*	***Building C brick chamber / drain***
3162	*Area 3*	***Building C drain to the south of 3153***
3163	*Area 3*	***Building C brick wall***
3164	*Area 3*	***Building C Boiler House wall abutting 3155***
3165	*Area 3*	***Building C Boiler House doorway***
3166	*Area 3*	***Building C Boiler House wall abutting 3124***
3167	*Area 3*	***Building C Boiler House apsidal wall***
3168	*Area 3*	***Building C Boiler House concave floor surface / ramp***
3169	*Area 3*	***Building C Boiler House wall parallel with 3166 abuts 3123***
3170	*Area 3*	***Building C Boiler House wall abuts northern side of 3123***
3171	*Area 3*	***Building C Boiler House western wall***
3172	*Area 3*	***Building C Boiler House flag floor***
3173	*Area 3*	***Building C Boiler House = 3073 brick wall***

3174	*Area 3*	***Building C Boiler House = 3066 brick floor***
3175	*Area 3*	***Building C Boiler House brick wall***
3176	*Area 3*	***Building C Boiler House brick pier***
3177	*Area 3*	***Building C Boiler House blocked doorway to tunnel***
3178	*Area 3*	***Building C Boiler House extension to 3171 built over southern wall of 3069 (vaulted walkway)***
3179	*Area 3*	***Building C Boiler House drain under floor 3168***
3180	*Area 3*	***Building C External flue associated with boiler house***
3181	*Area 3*	***Building C Economising House outer walls***
3182	*Area 3*	***Building C Economising House brick floor***
3183	*Area 3*	***Building C Economising House wall keyed into 3181***
3184	*Area 3*	***Building C Economising House flue***
3185	*Area 3*	***Building C Economising House brick floor adjacent to 3184, associated with external steps***
3186	*Area 3*	***Building C Economising House external step foundation wall***
3187		***Building C Economising House wall for pipe conduit***
3188		***Building C Economising House rock-cut conduit***
3189	*Area 3*	***Building C Boiler House extension to flue 3064***
3190	*Area 3*	***Building C Boiler House bedding layer of cinders for floor surface 3065***
3191	*Area 3*	***Building C Boiler House blocking of doorway in 3070***
3192	*Area 3*	***Building A curved corner wall adjacent to 3007***
3193	*Area 3*	***Building C Boiler House Build-up of cinders above 3065 and below 3174***
3194	*Area 3*	***Building C Boiler House Build-up of cinders above 3065 and below 3066***
3195	*Area 3*	***Building C Boiler House blocking around steam pipe in wall 3070***
3196	*Area 3*	***Building C brick wall***
3197	*Area 3*	***Building C brick wall***
400	*Area 4*	***Gravel overburden***
401	*Area 4*	***Destruction rubble***
402	*Area 4*	***Building A brick wall***
403	*Area 4*	***Building A brick wall***
404	Area 4	***Building A brick surface***
405	Area 4	***Building B brick surface***
406	Area 4	***Building B brick wall***
407	Area 4	***Building B brick wall***
408	Area 4	***Building B brick surface***
409	Area 4	***Building B brick wall***
410	Area 4	***Building B brick wall***
411	Area 4	***Building B brick surface***
412	Area 4	***Building C***

413	Area 4	***Building C***
414	Area 4	***Building C brick surface***
415	Area 4	***Building C brick surface***
416	Area 4	***Building C internal brick wall***
417	Area 4	***Building C brick wall***
418	Area 4	***Building A brick wall***
419	Area 4	***Building C pillar base***
420	Area 4	***Building C pillar base***
421	Area 4	***Flue***
422	Area 4	***Flue***
423	Area 4	***Brick wall cap to Flue 422***
424	Area 4	***Chimney***
425	Area 4	***Flue***
426	Area 4	***Flue***
427	Area 4	***Blue grey silty deposit below destruction rubble 401***
428	Area 4	***Building A brick wall***
429	Area 4	***Building A brick wall within Flue 426***
430	Area 4	***Building A brick wall within Flue 426***
431	Area 4	***Building A brick wall***
432	Area 4	***Building A heat affected brick and firebrick surface***
433	Area 4	***Possible engine house ?***
434	Area 4	***Engine house in the north-east of the excavation***
435	Area 4	***Wall to wheel pit 434***
436	Area 4	***Wall to wheel pit 434***
437	Area 4	***Internal wall within Building A, running parallel to wall 403***
438	Area 4	***Building A brick wall***
439	Area 4	***Building A brick structure***
440	Area 4	***Building A brick structure***
441	Area 4	***Building A brick structure***
442	Area 4	***Building A brick wall***
443	Area 4	***Building A brick wall***
444	Area 4	***Building A brick wall***
445	Area 4	***Building A brick wall***

Appendix 3: Figures

Figure 1: Location plan within Greater Manchester

Figure 2: Location of Evaluation Trenches Superimposed onto Modern Mapping

Figure 3: Location of Excavation Areas Superimposed onto Modern Mapping

Figure 4: Area 1 (Ardwick Tannery) Showing Remains

Figure 5: Area 1 Excavated remains superimposed onto the 1:1056 Town Plan of 1851

Figure 6: Area 1 Excavated remains superimposed onto the 1:500 Town Plan of 1891

Figure 7: Area 2 (Mayfield Baths) showing remains

Figure 8: Area 2 Excavated remains superimposed onto the 1:500 Town Plan of 1891

Figure 9: Area 3 (Mayfield Dye Works) Showing Remains

Figure 10: Area 3 Building A

Figure 11: Area 3 Building B

Figure 12: Area 3 Building C

Figure 13: Area 3 Boiler House

Figure 14: Area 3 Excavated remains Superimposed onto Greens's map of 1787-94

Figure 15: Area 3 Excavated remains Superimposed onto Bancks & Co's Map of Manchester & Salford 1831

Figure 16: Area 3 Excavated remains Superimposed onto the 1:1056 Town Plan of 1851

Figure 17: Area 3 Excavated remains Superimposed onto the 1:500 Town Plan of 1891

Figure 18: Area 4 (Chapelfield Dye Works) showing remains

Figure 19: Area 4: Northern half of the excavation

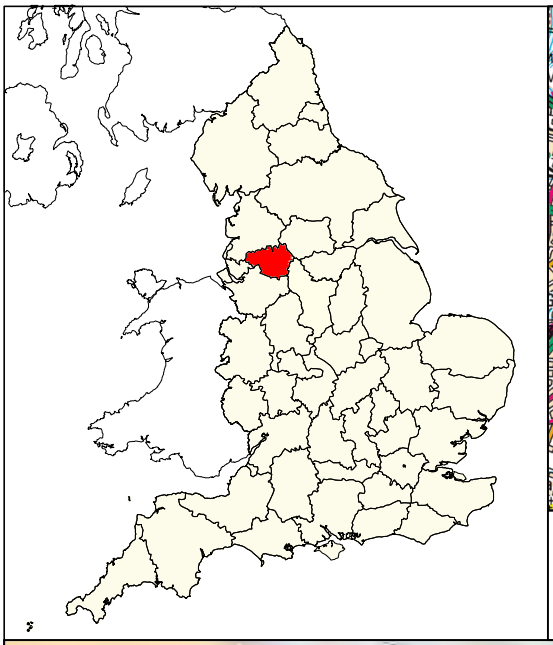
Figure 20: Area 4: Southern half of the excavation

Figure 21: Area 4 Excavated remains superimposed onto Green's map of 1787-94

Figure 22: Area 4: Excavated remains Superimposed onto Bancks & Co's Map of Manchester & Salford 1831

Figure 23: Area 4: Excavated remains Superimposed onto the 1:1056 Town Plan of 1851

Figure 24: Area 4: Excavated remains Superimposed onto the 1:500 Town Plan of 1891



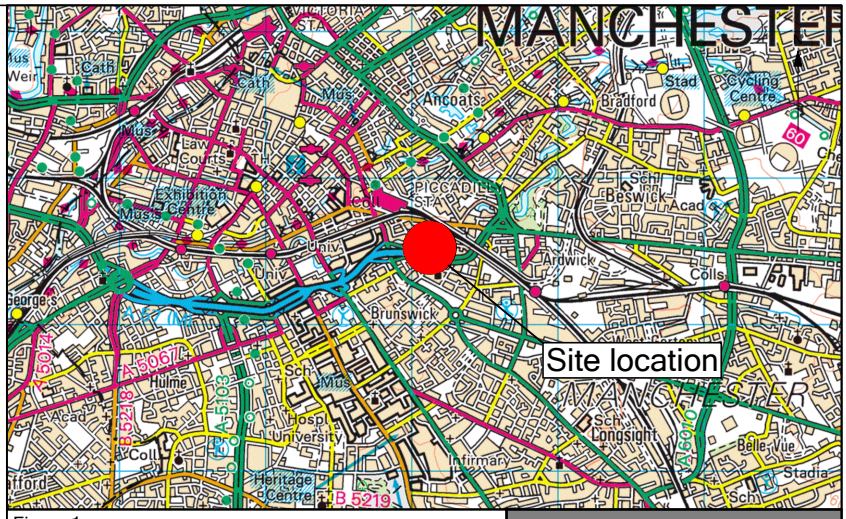


Figure 1:

Site Location

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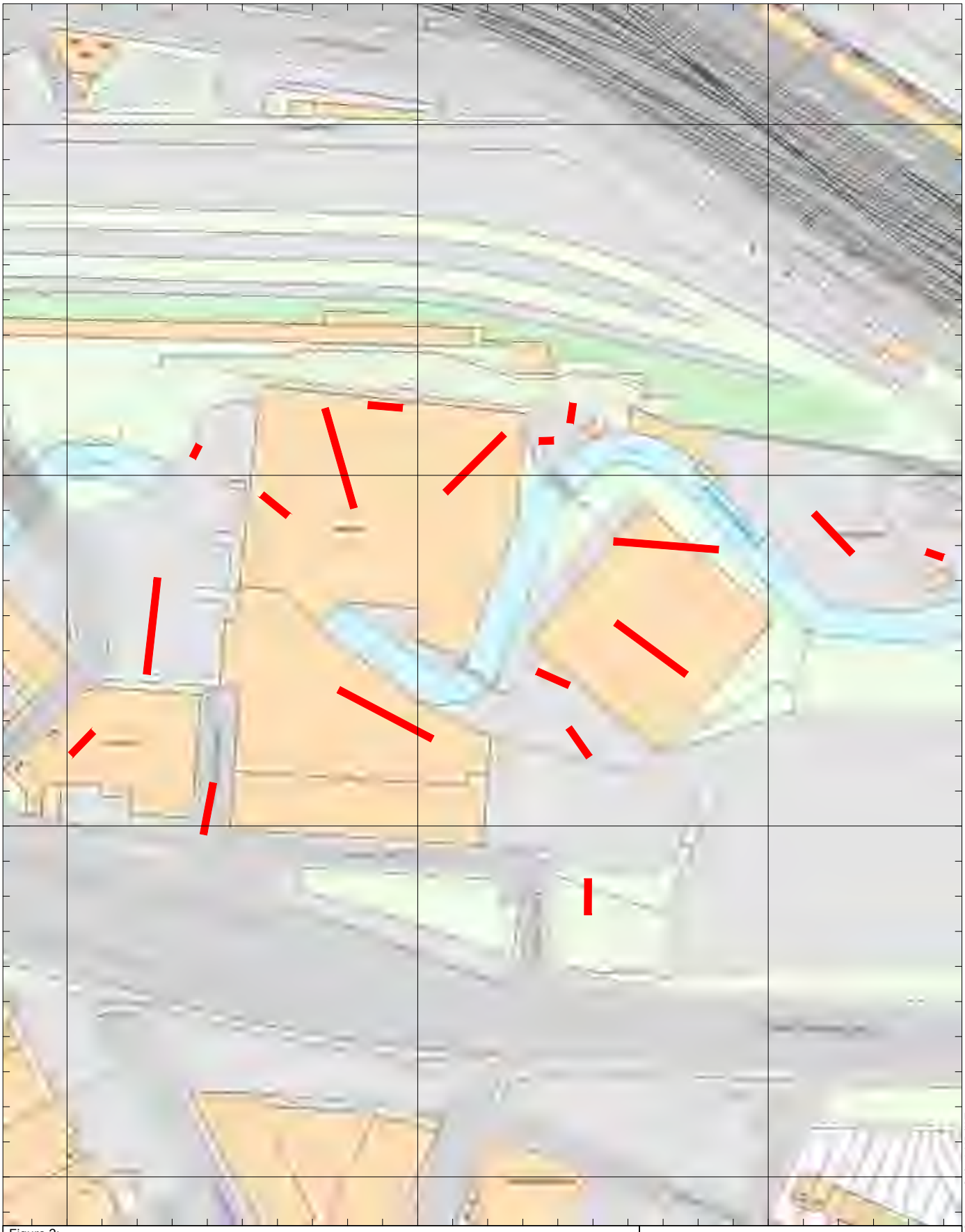


Figure 2:

Location of Evaluation Trenches Superimposed onto Modern Mapping

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N

0 50 m

Scale at A4 1:1500

Key:

Location of Trenches

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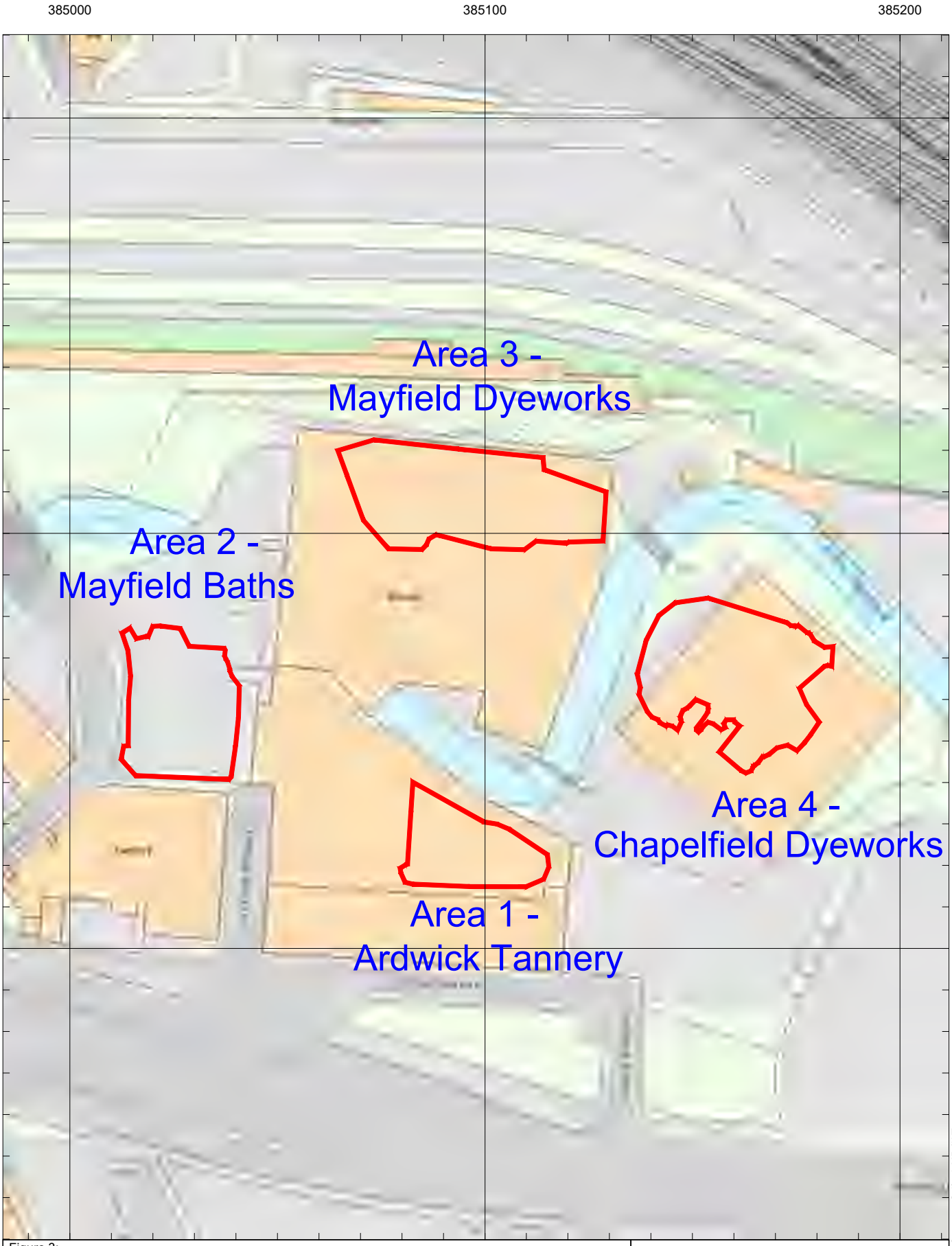


Figure 3:

Location of Excavation Areas Superimposed onto Modern Mapping

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N

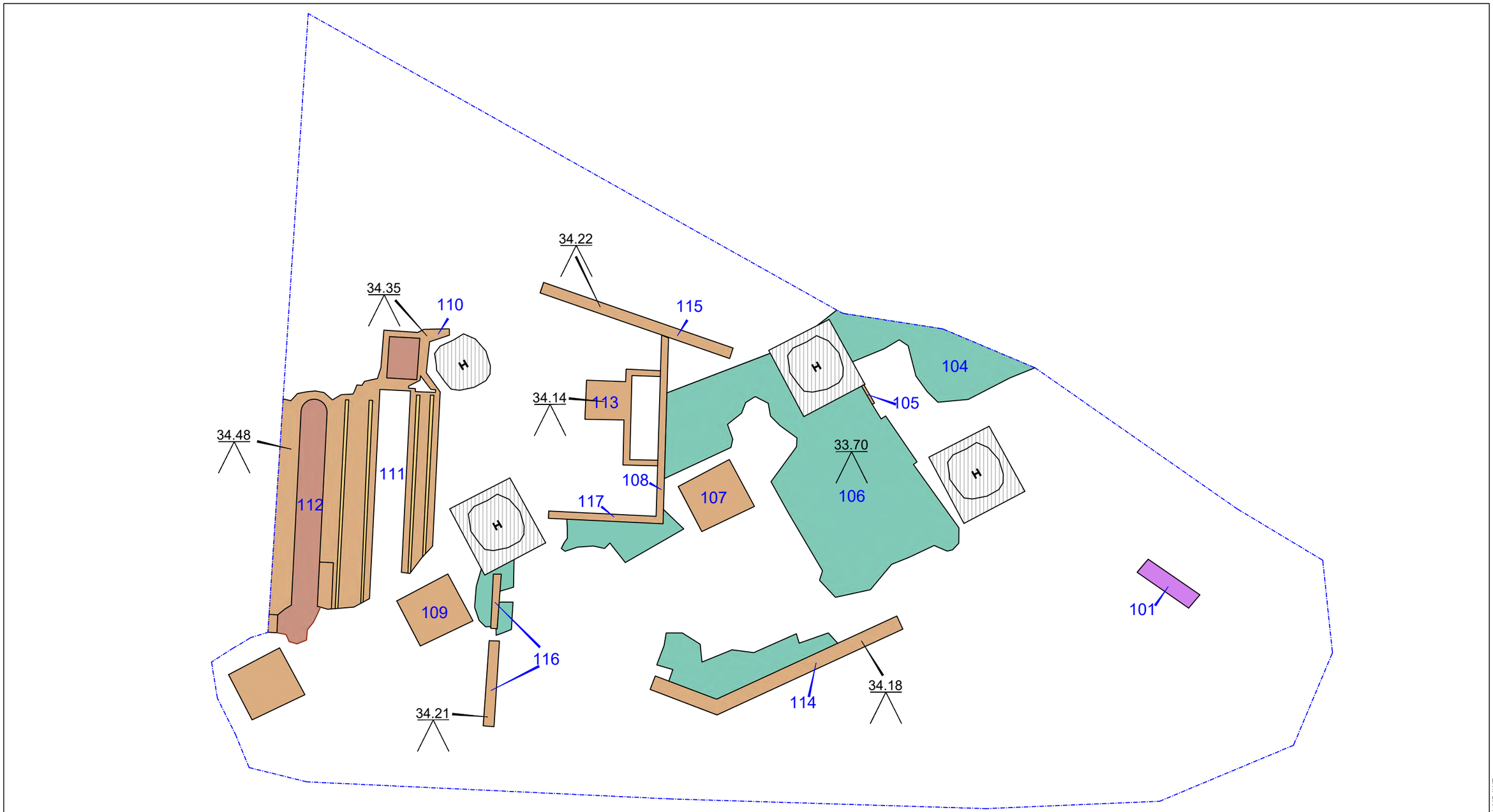
0 50 m

Scale at A4 1:1250

Key:

Location of Excavation Areas

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT



0 5 m

Scale at A3 1:125

Figure 4:

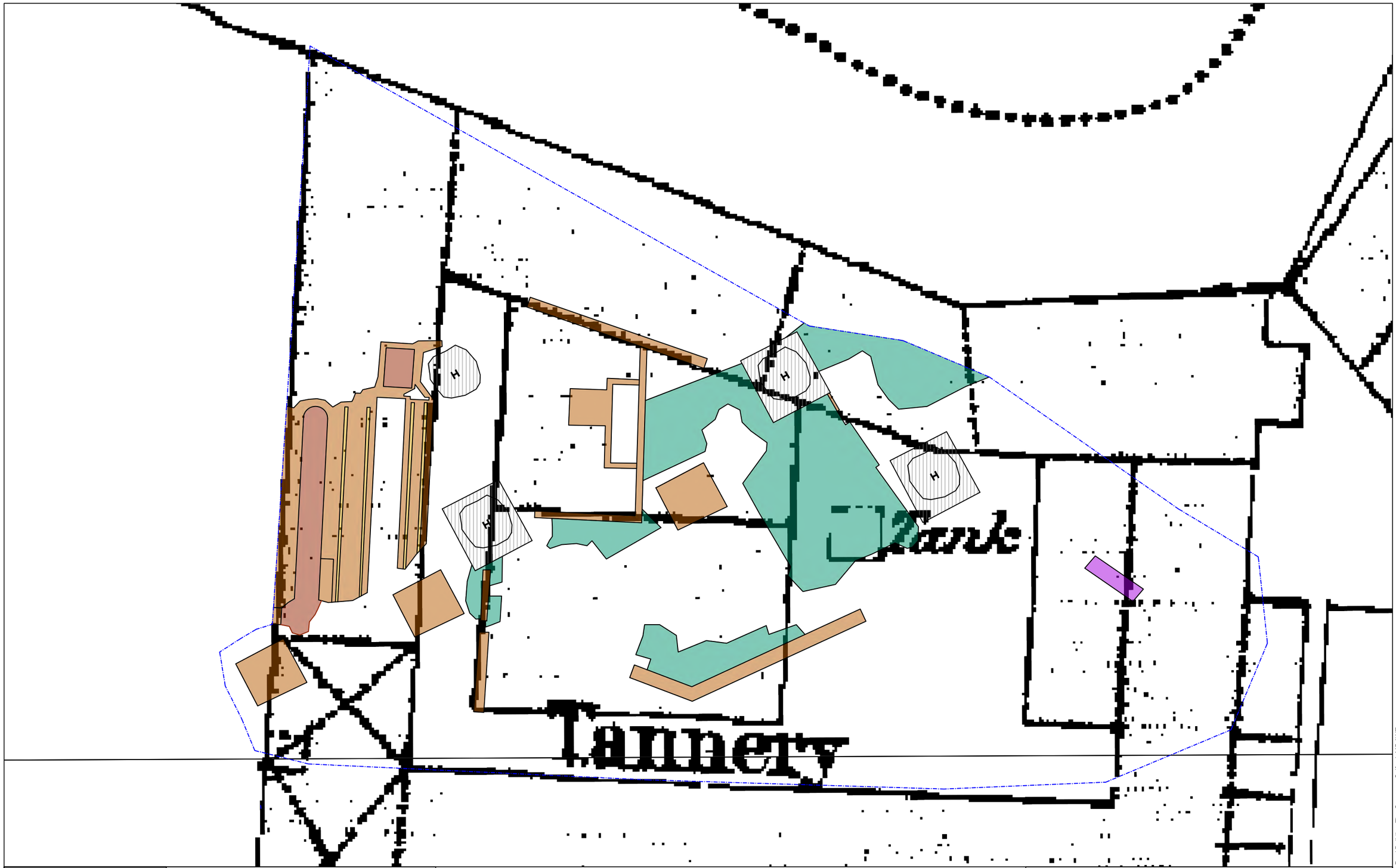
Area 1 (Ardwick Tannery) Showing Remains

N

Key:

- Brick
- Stone
- Brick Surface
- Concrete
- Pipe/drain
- Metal
- Limit of Excavation

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT



0 5 m

Scale at A3 1:125

Figure 5:

Area 1 Excavated remains superimposed onto the 1:1056 Town Plan of 1851

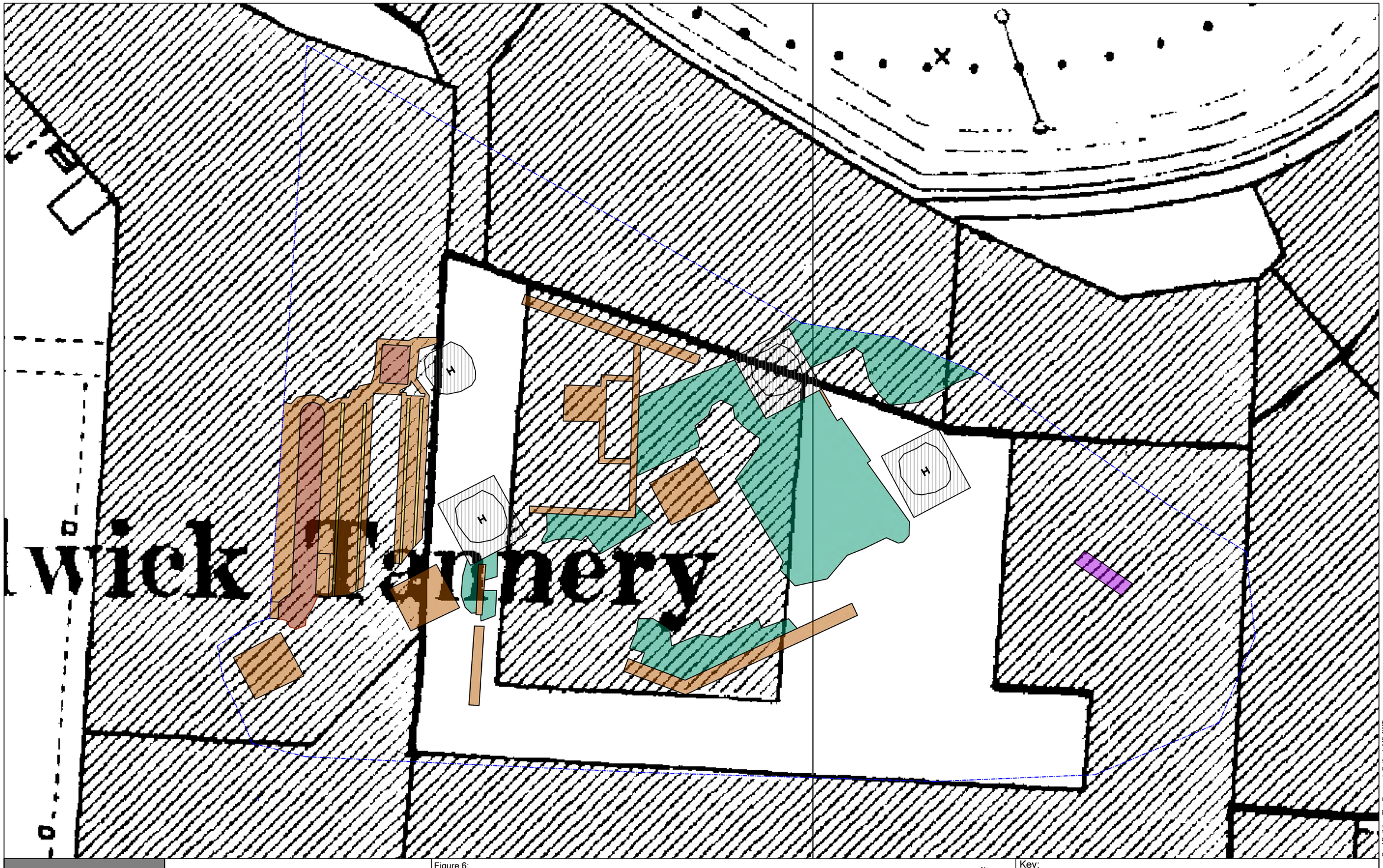
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N

Key:

- Brick
- Stone
- Brick Surface
- Concrete
- Pipe/drain
- Metal
- Limit of Excavation

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT



0 5 m

Scale at A3 1:125

Figure 6:

Area 1 Excavated remains superimposed onto the 1:500 Town Plan of 1891

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N

Key:

- Brick
- Stone
- Brick Surface
- Concrete
- Pipe/drain
- Metal
- Limit of Excavation

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT

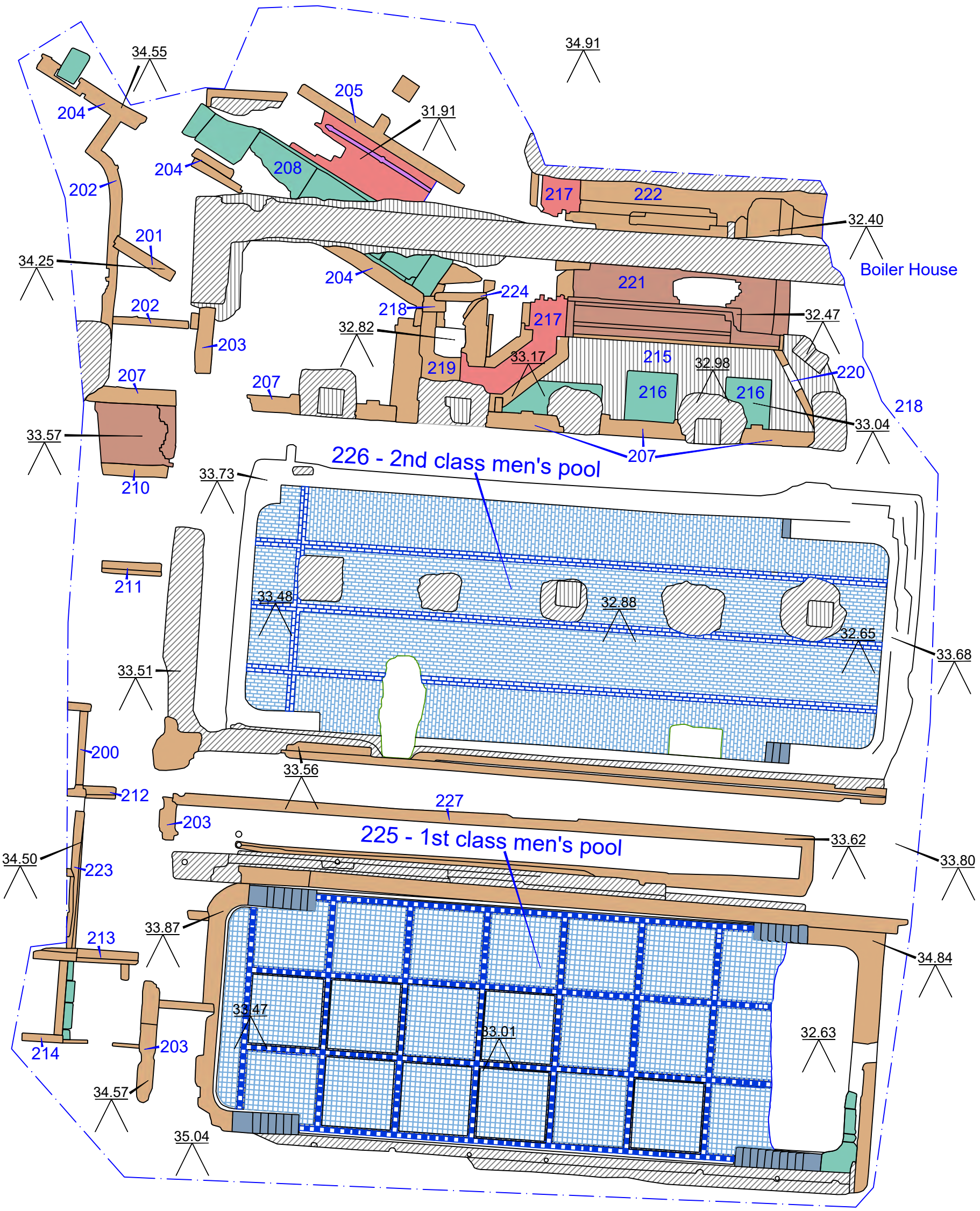


Figure 7:

Area 2 (Mayfield Baths) showing remains

0 5 m

Scale at A3 1:125

Key:

- Brick
- Brick Surface
- Stone
- Flue Surface
- Steps
- Pipe
- Tile 1
- Tile 2
- Concrete
- Limit of Excavation

N

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT

Figure 8:

Area 2 Excavated remains superimposed onto the 1:500 Town Plan of 1891

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0 5 m

Scale at A3 1:125

Key:

- Brick
- Brick Surface
- Stone
- Flue Surface
- Steps
- Pipe
- Tile 1
- Tile 2
- Concrete
- Limit of Excavation

N

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT

Building A

Boiler House

Building B

Building C

0 10 m

Scale at A3 1:200

Figure 9:

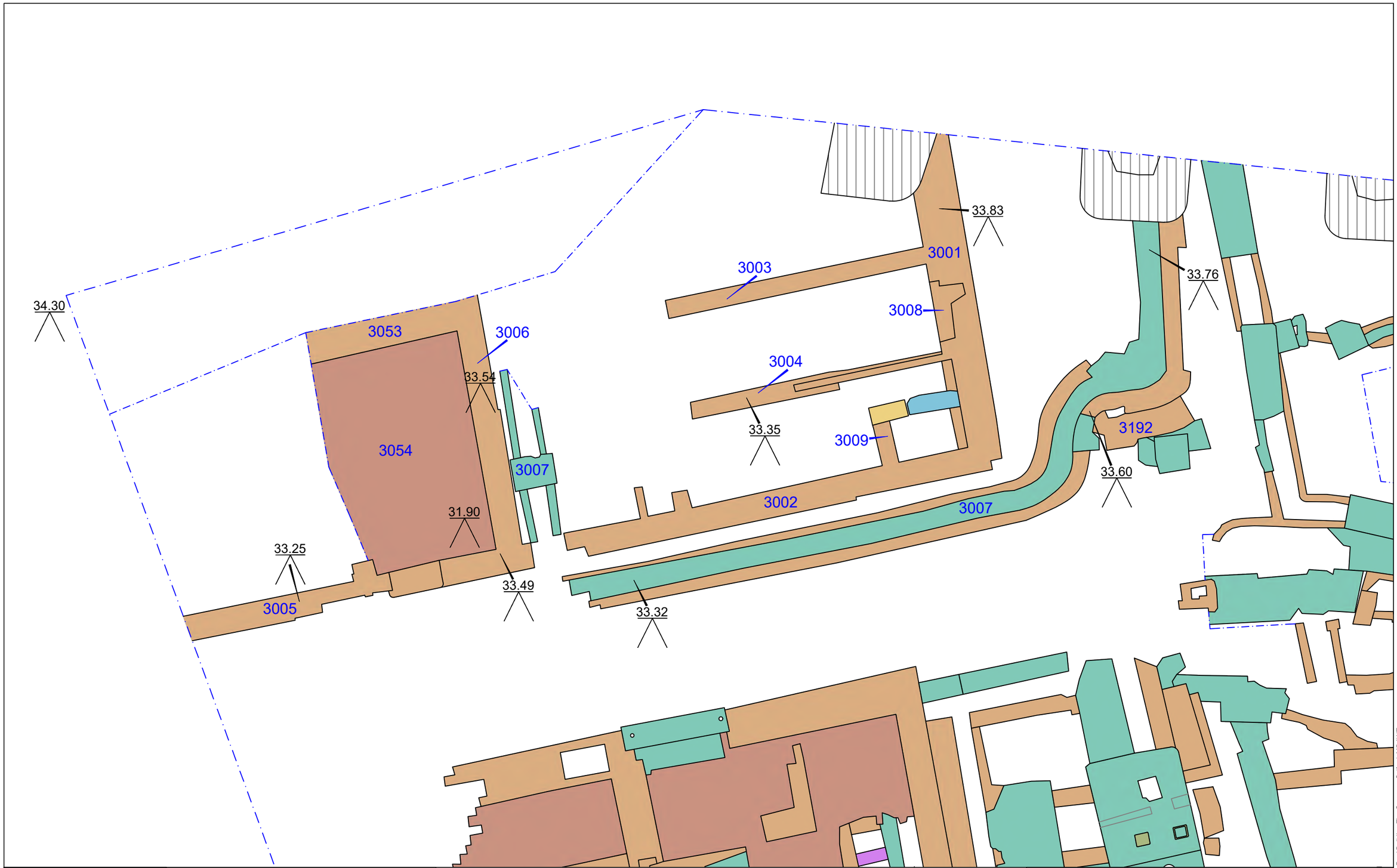
Area 3 (Mayfield Dye Works) Showing Remains

N

Key:

Brick
Brick Floor
Stone/Flag
Concrete
Brick Flue Surface
Steps
Fire Brick
Metal
Mortar
Pipe
Slate
Limit of Excavation

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT


34.30
3053
3006
33.54
3054
3007
31.90
33.25
3005
33.49
3003
3001
33.83
3008
3004
33.35
3009
3002
33.32
3007
3192
33.60
33.76
0
2 m
Scale at A3 1:50
Figure 10:
Area 3 Building A
N
Key:
Brick
Concrete
Fire Brick
Pipe
Brick Floor
Brick Flue Surface
Metal
Slate
Stone/Flag
Steps
Mortar
Limit of Excavation
Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT

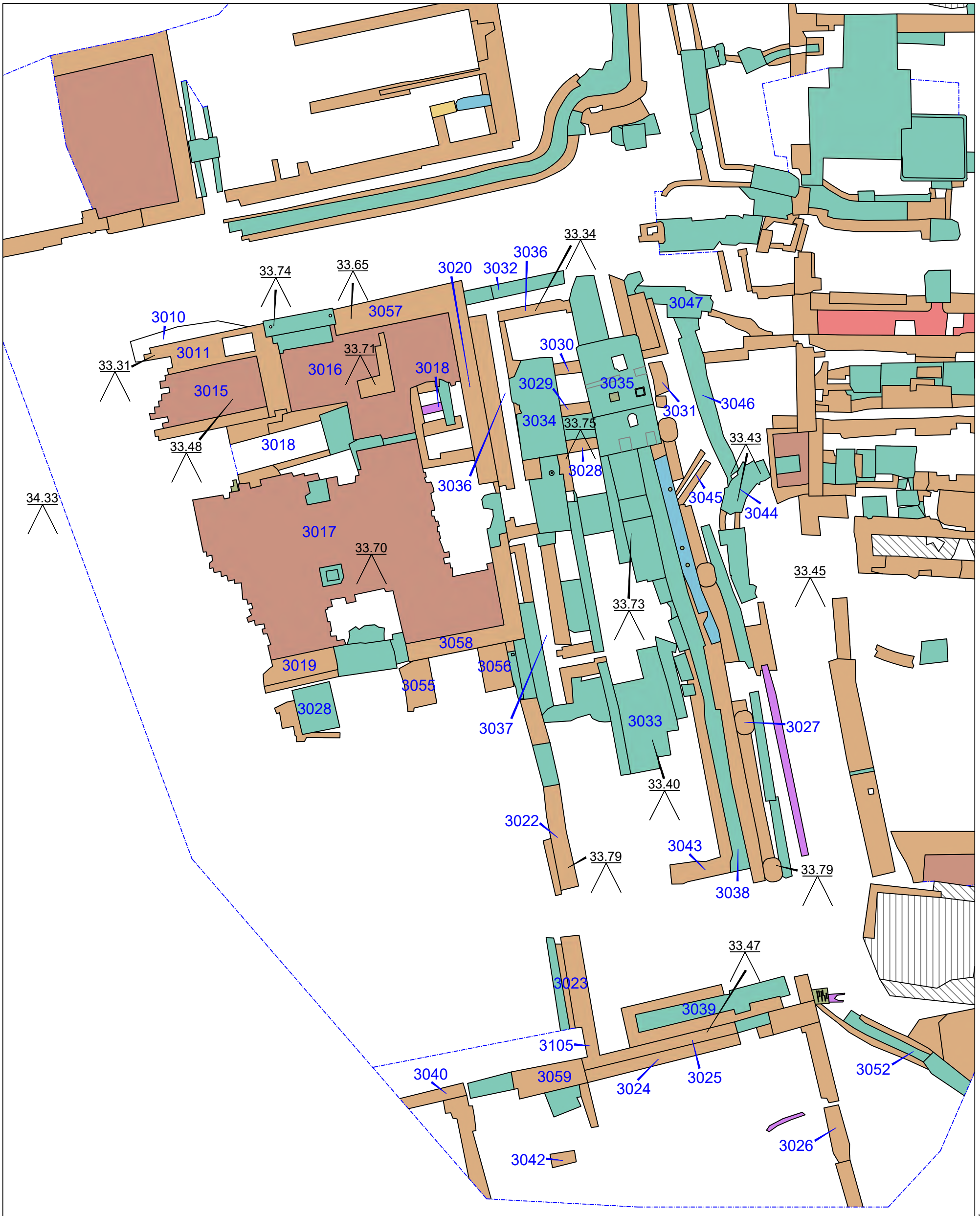


Figure 11:

Area 3 Building B

0 5 m

Scale at A3 1:75

Key:

Brick, Brick Floor, Stone/Flag, Concrete, Brick Flue Surface, Steps, Fire Brick, Metal, Mortar, Pipe, Slate, Limit of Excavation

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT

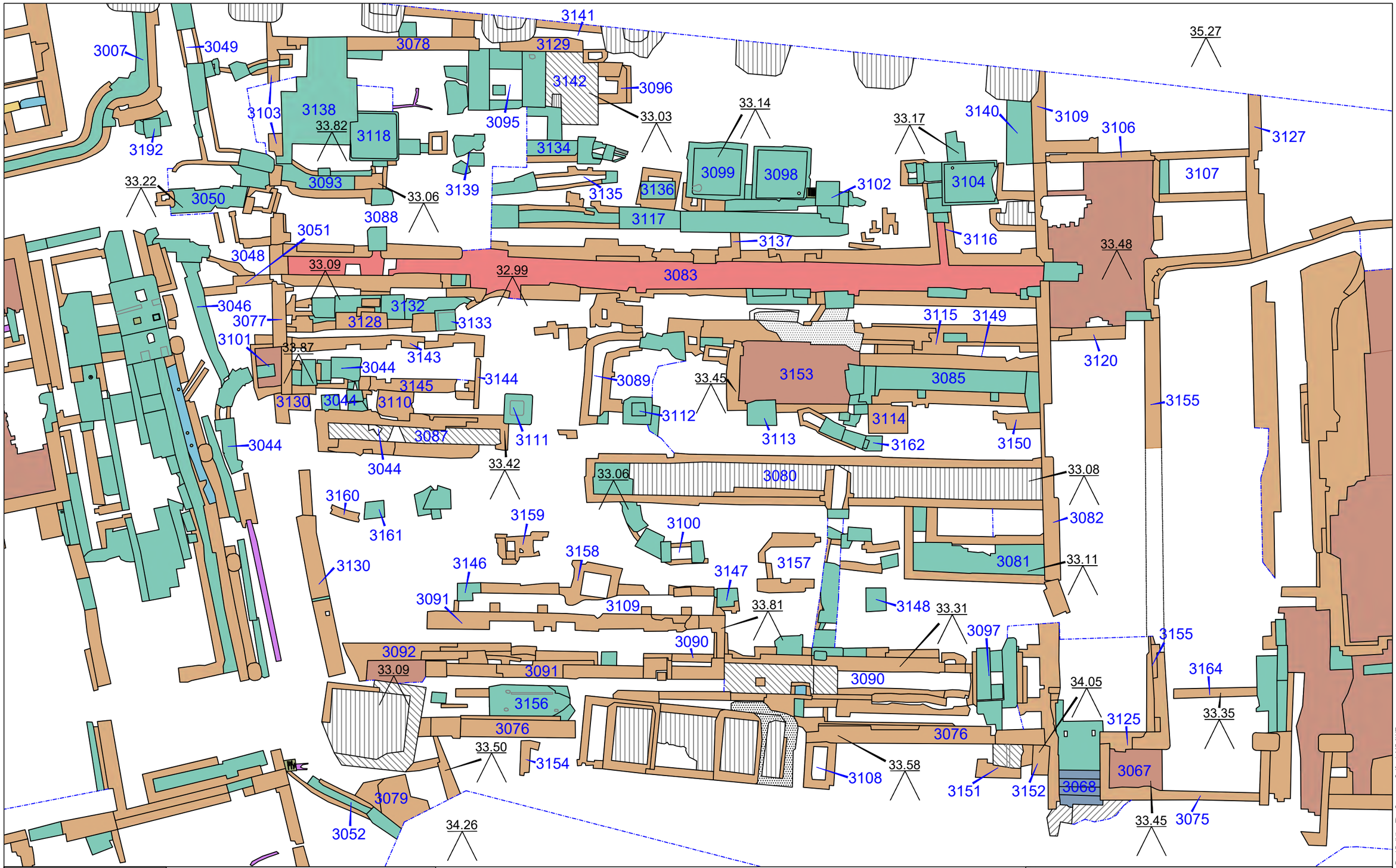
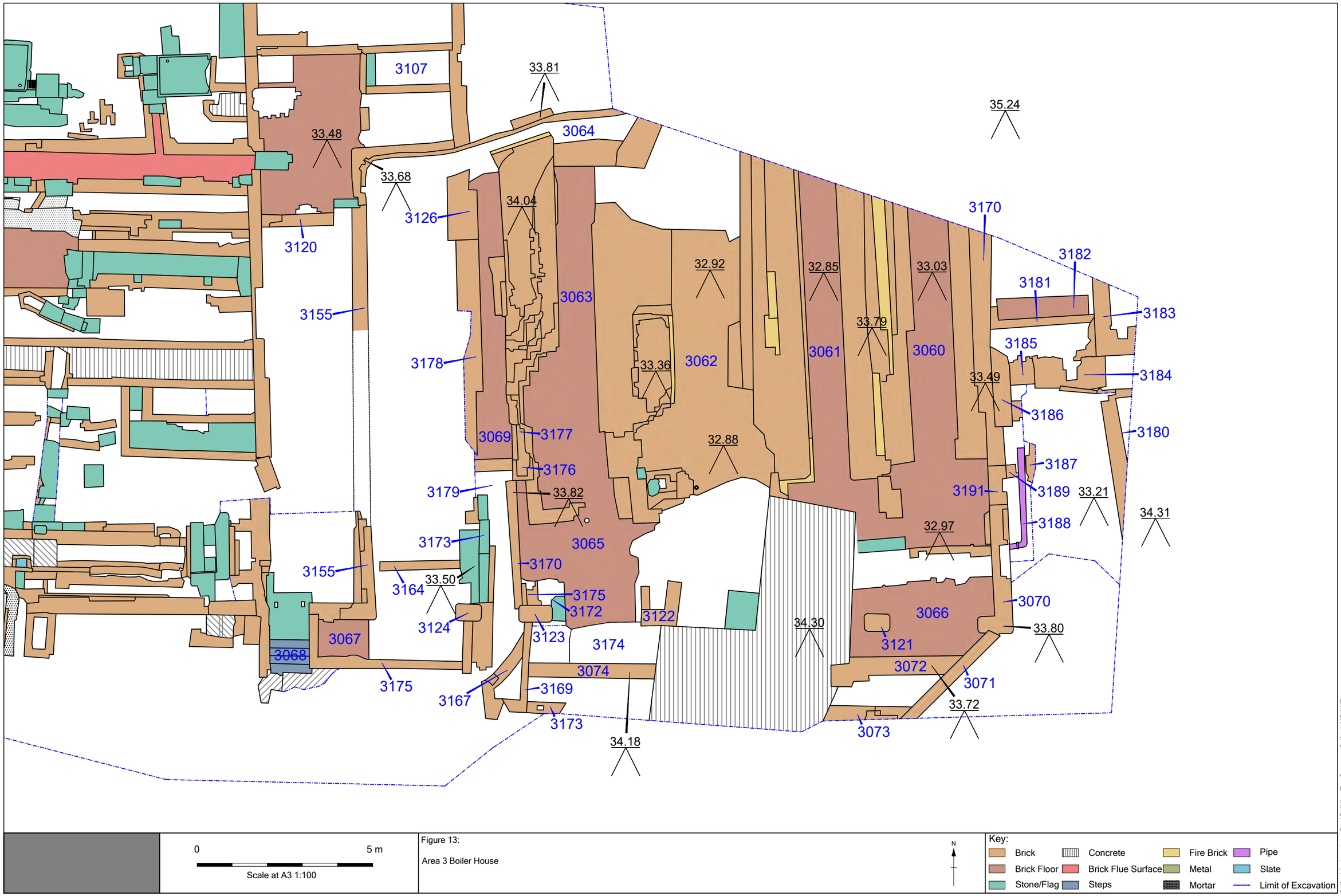


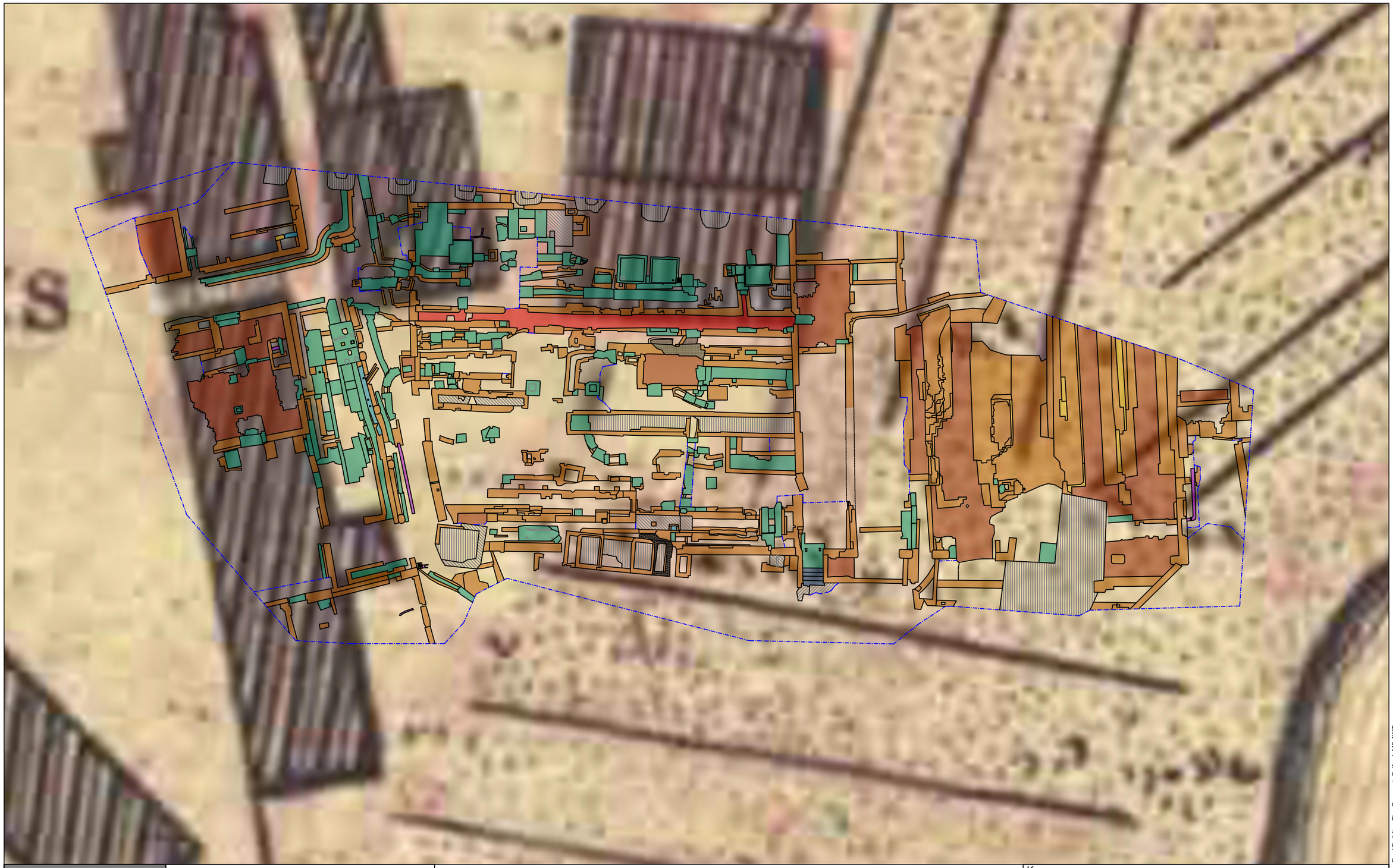
Figure 12:

Area 3 Building C

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0 10 m

Scale at A3 1:200

Figure 14:

Area 3 Excavated remains Superimposed onto Greens's map of 1787-94

N

Key:

- Brick
- Brick Floor
- Stone/Flag
- Concrete
- Brick Flue Surface
- Steps
- Fire Brick
- Metal
- Mortar
- Pipe
- Slate
- Limit of Excavation

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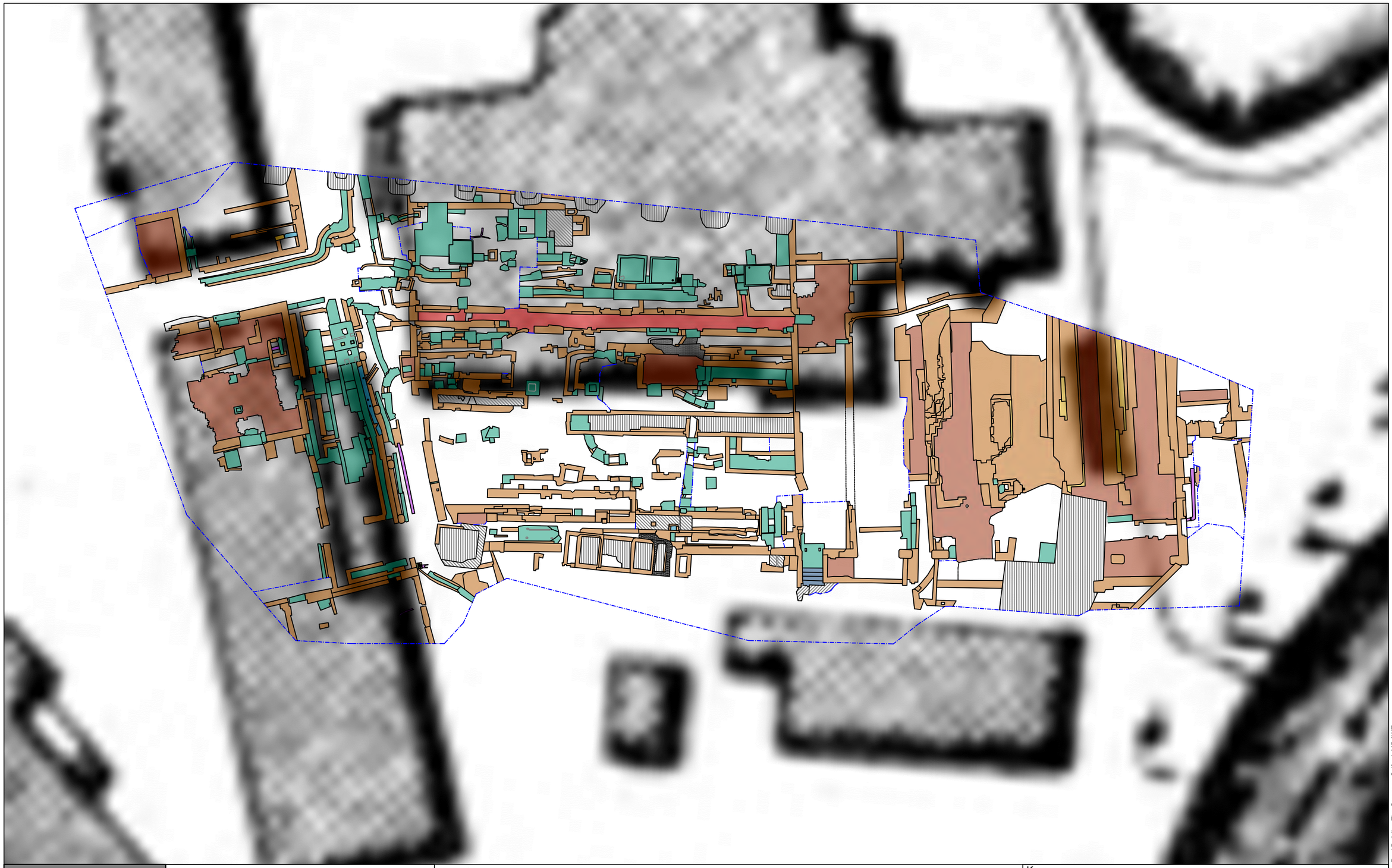


Figure 15:

Area 3 Excavated remains Superimposed onto Bancks & Co's Map of Manchester & Salford 1831

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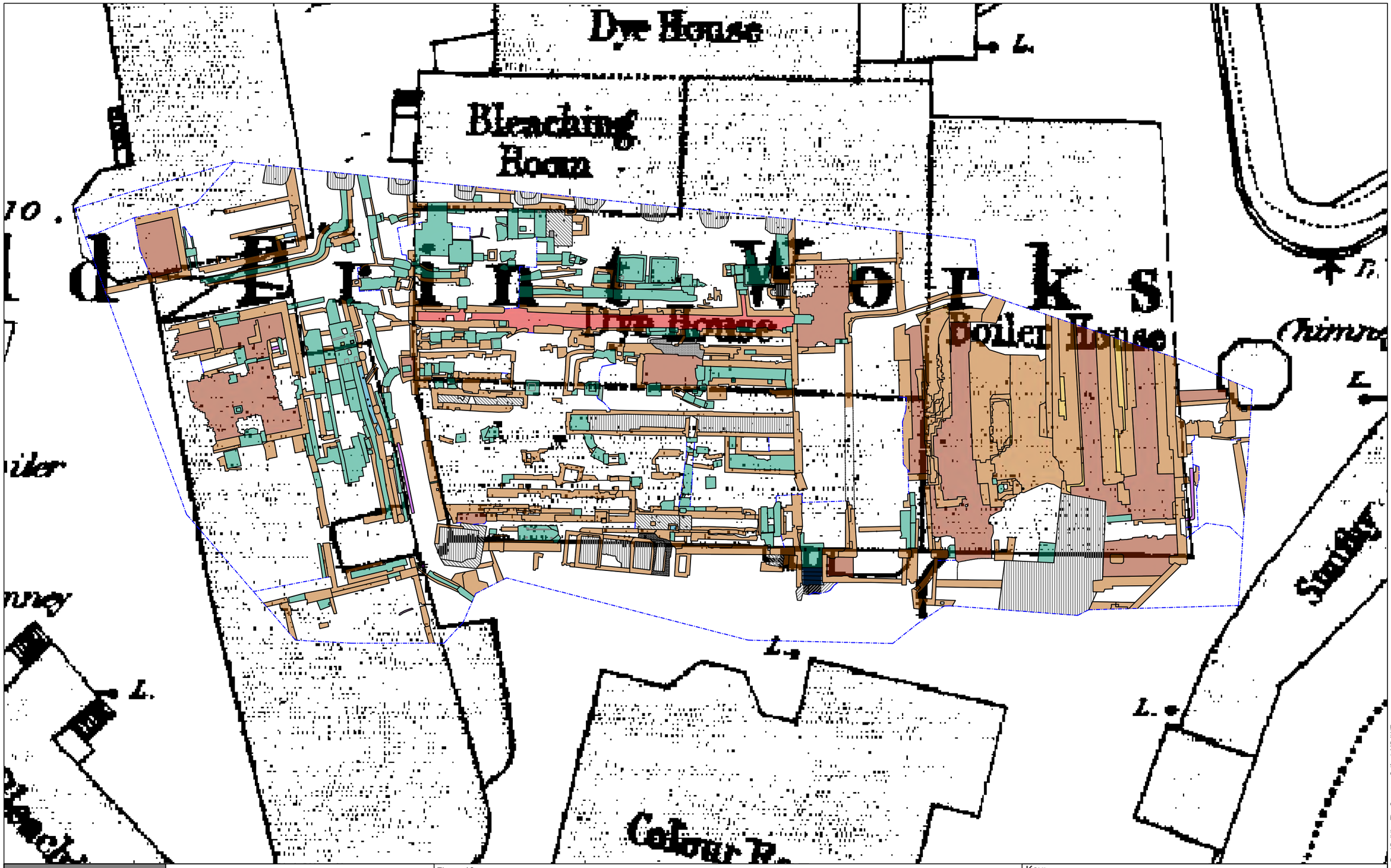


Figure 16:

Area 3 Excavated remains Superimposed onto the 1:1056 Town Plan of 1851

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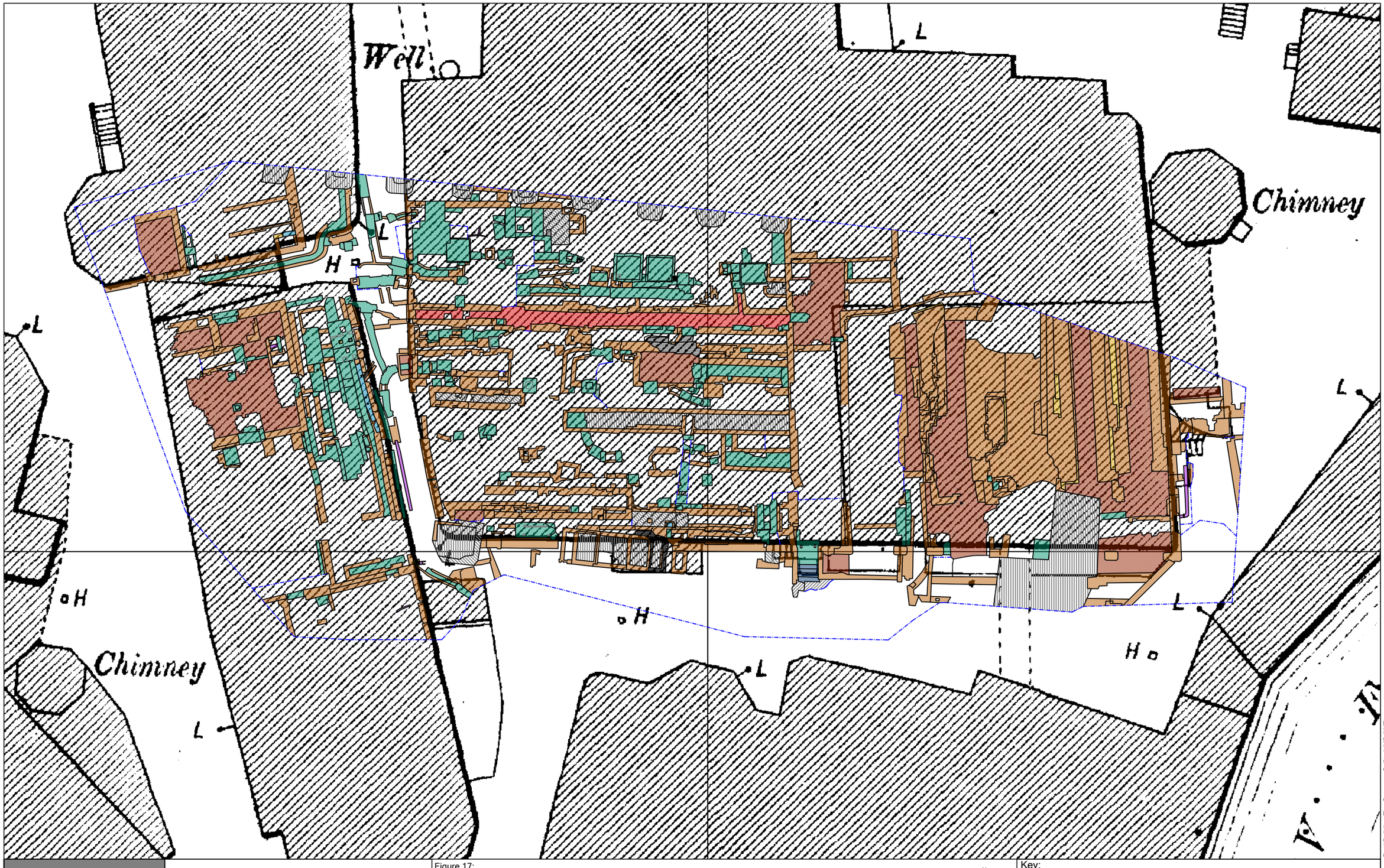


Figure 17:

Area 3 Excavated remains Superimposed onto the 1:500 Town Plan of 1891

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0 10 m

Scale at A3 1:200

Figure 18:

Area 4 (Chapelfield Dye Works) showing remains

N

Key:

- Brick
- Brick Floor
- Stone/Flag
- Concrete
- Brick Flue Surface
- Fire Brick
- Pipe
- Metal
- Limit of excavation

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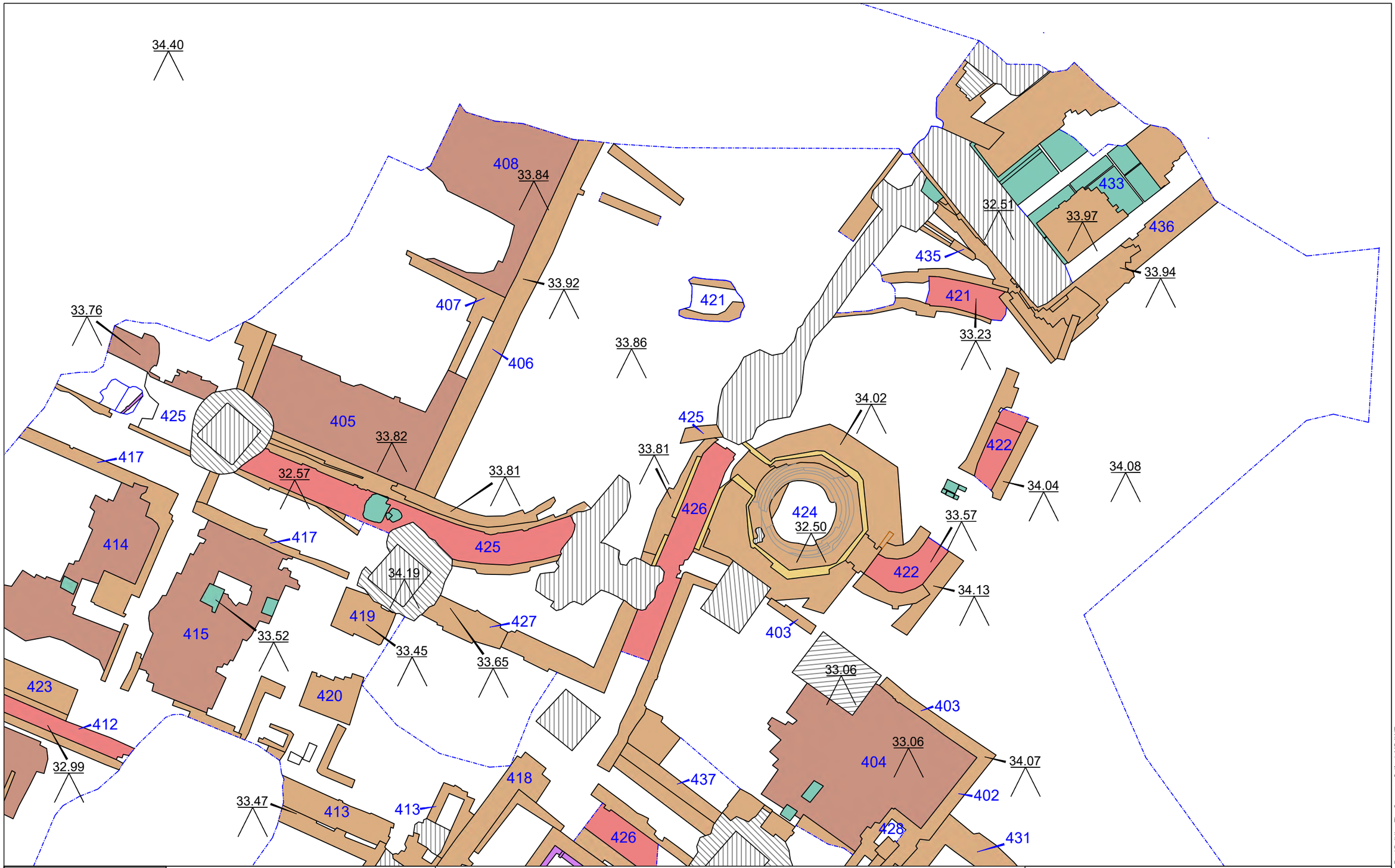
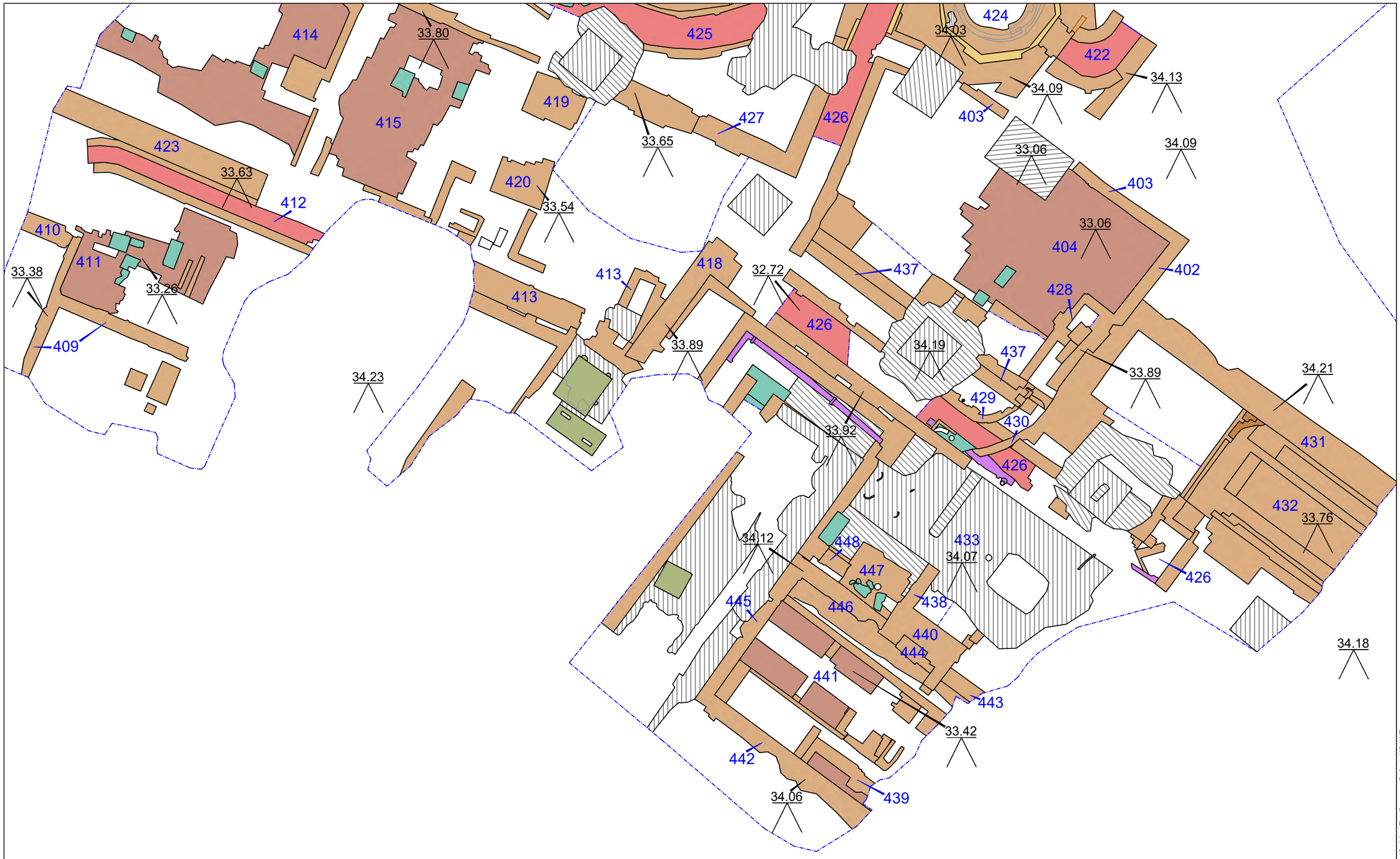


Figure 19:

Area 4: Northern half of the excavation

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0 5 m

Scale at A3 1:100

Figure 20:

Area 4: Southern half of the excavation

N

Key:

- Brick
- Brick Floor
- Stone/Flag
- Concrete
- Brick Flue Surface
- Fire Brick
- Pipe
- Metal
- Limit of excavation

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT



0 10 m

Scale at A3 1:200

Figure 21:

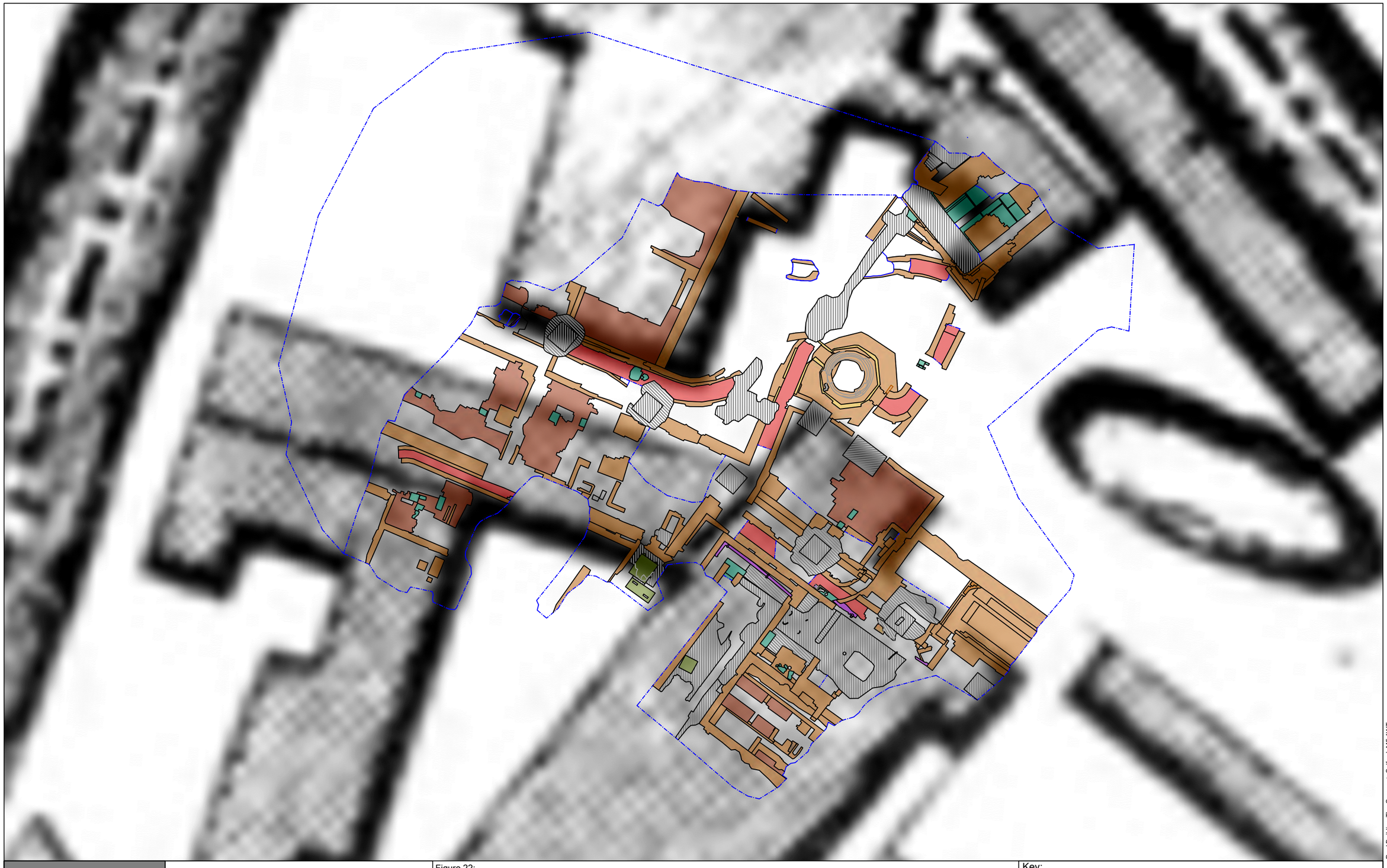
Area 4 Excavated remains superimposed onto Green's map of 1787-94

N

Key:

- Brick
- Brick Floor
- Stone/Flag
- Concrete
- Brick Flue Surface
- Fire Brick
- Pipe
- Metal
- Limit of excavation

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT



0 10 m

Scale at A3 1:200

Figure 22:

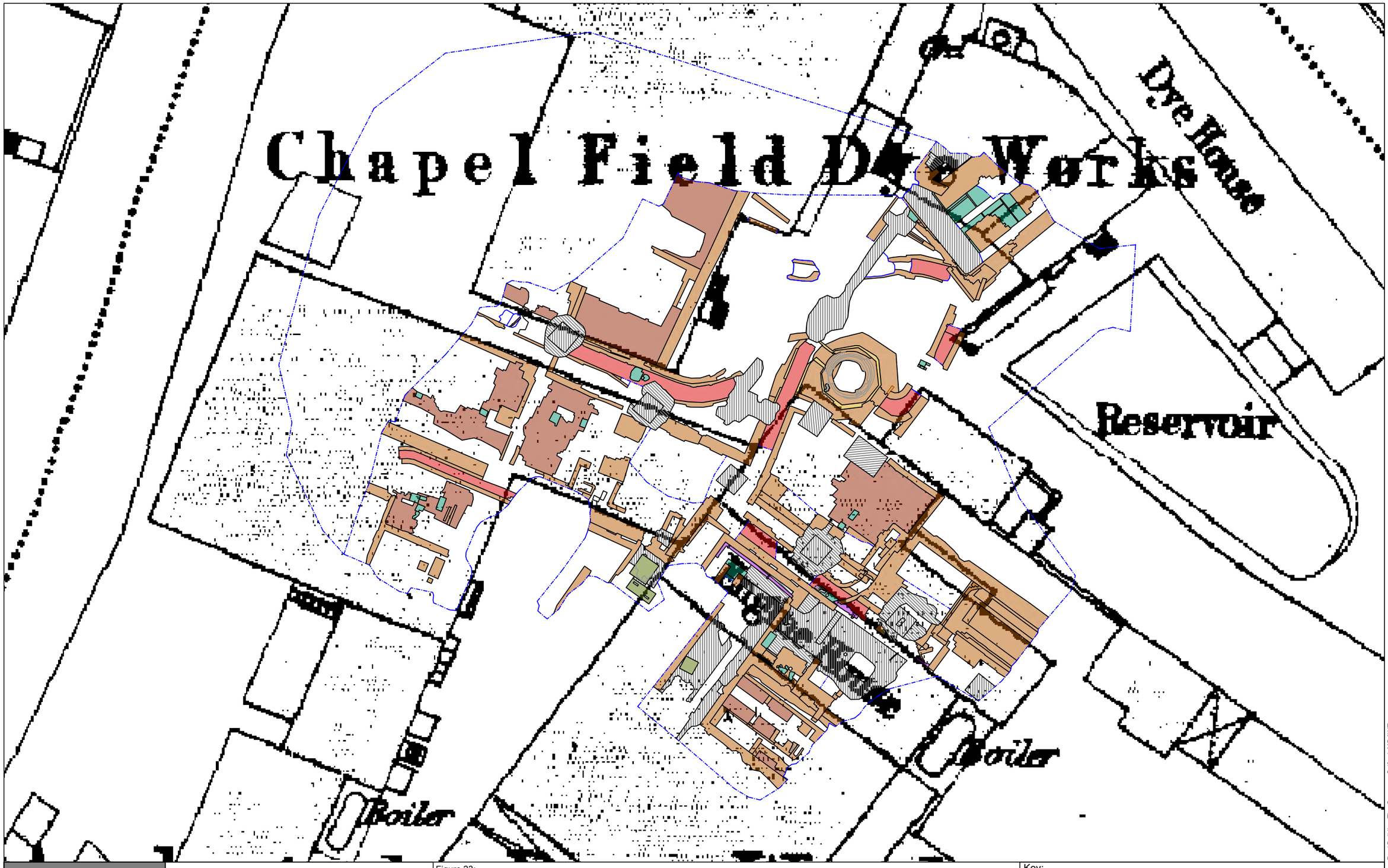
Area 4 Excavated remains superimposed onto Bancks & Co's map of 1831

N

Key:

- Brick
- Brick Floor
- Stone/Flag
- Concrete
- Brick Flue Surface
- Fire Brick
- Pipe
- Metal
- Limit of excavation

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0 10 m

Scale at A3 1:200

Figure 23:

Area 4 Excavated remains superimposed onto the 1:1056 Town Plan of 1851

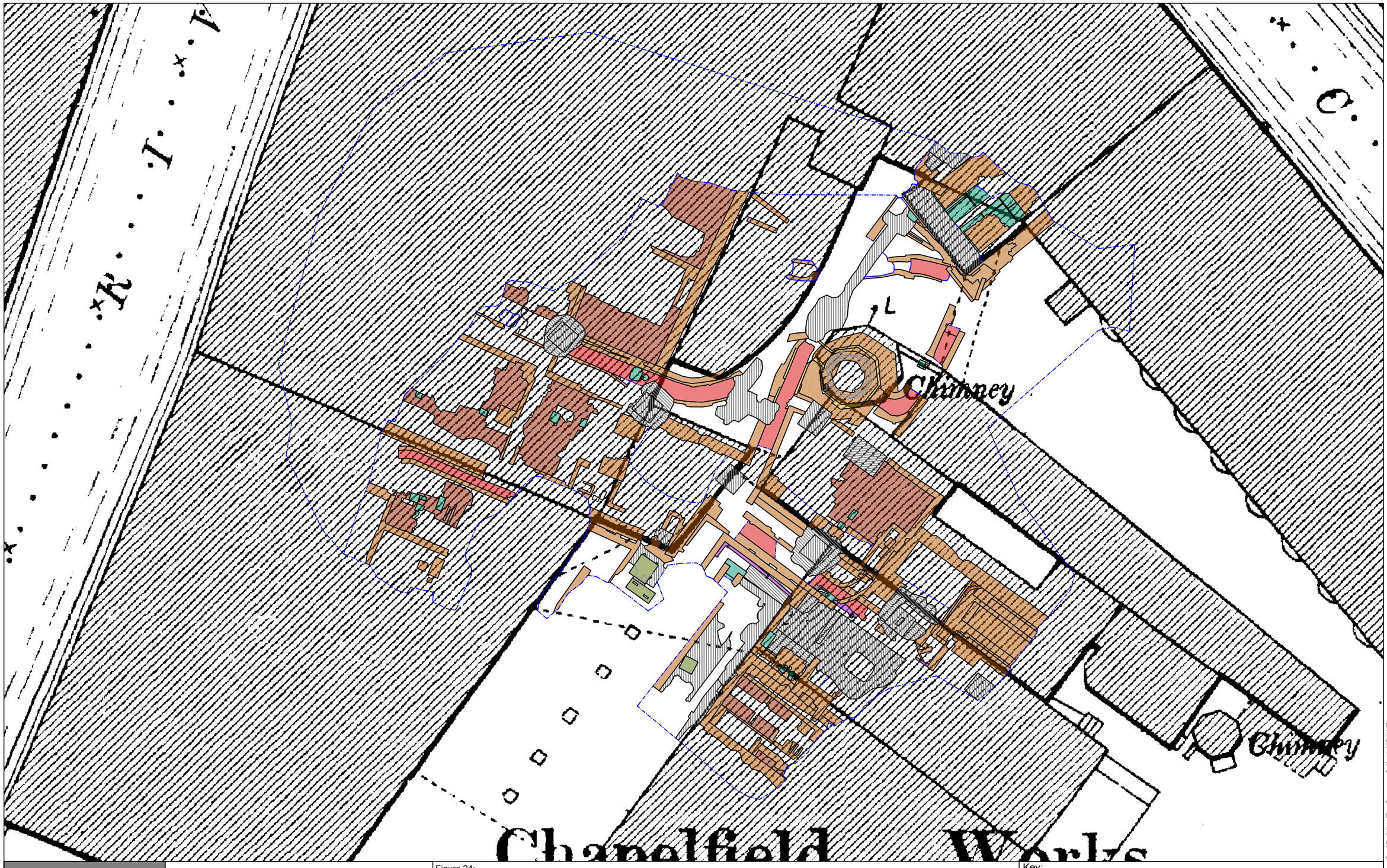
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N

Key:

- Brick
- Brick Floor
- Stone/Flag
- Concrete
- Brick Flue Surface
- Fire Brick
- Pipe
- Metal
- Limit of excavation

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT



0 10 m

Scale at A3 1:200

Figure 24:

Area 4 Excavated remains superimposed onto the 1:500 Town Plan of 1891

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N

Key:

- Brick
- Brick Floor
- Stone/Flag
- Concrete
- Brick Flue Surface
- Fire Brick
- Pipe
- Metal
- Limit of excavation

Salford Archaeology, Peel Building,The Crescent, Salford, M5 4WT