



# **Kennedy's Mill, Pollard Street, Ancoats**

**Manchester**

## **Archaeological Investigation**



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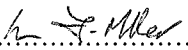
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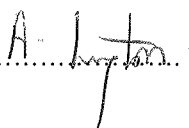
**National Grid Reference:** SJ 8539 9807

Prepared by: Sean McPhillips  
Position: Project Officer  
Date: November 2010

Checked by: Ian Miller  
Position: Project Manager  
Date: November 2010

Signed.....

Approved by: Alan Lupton  
Position: Operations Manager  
Date: November 2010

Signed.....

**Oxford Archaeology North**

Mill 3  
Moor Lane Mill  
Moor Lane  
Lancaster  
LA1 1GF  
t: (0044) 01524 541000  
f: (0044) 01524 848606

w: [www.oxfordarch.co.uk](http://www.oxfordarch.co.uk)  
e: [info@oxfordarch.co.uk](mailto:info@oxfordarch.co.uk)

**© Oxford Archaeology Ltd (2010)**

Janus House  
Osney Mead  
Oxford

OX2 0EA  
t: (0044) 01865 263800  
f: (0044) 01865 793496

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## SUMMARY

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The Royal London Exempt Property Unit Trust has proposed to redevelop land on the corner of Pollard Street and Great Ancoats Street in the Ancoats area of Manchester (centred on SJ 8539 9807). In consideration of the development proposals, Manchester City Council attached a condition to planning consent that required an appropriate scheme of archaeological investigation to be carried out in advance of development. In the first instance, an archaeological desk-based assessment of the site was undertaken, which concluded that the site merited physical investigation prior to redevelopment (UMAU 2006). In particular, the footprint of a large cotton mill that had been established on the site in 1803-04 was considered to be of especial archaeological interest.

In the light of the conclusions drawn by the desk-based assessment, the County Archaeologist for Greater Manchester recommended that a programme of archaeological evaluation was carried out. It was recommended that this comprised the excavation of seven trenches, with a total combined length of some 135m, intended to establish the presence or absence of buried remains and assess their significance. The trenches were targeted on elements of the mill's former steam-power plant, an infilled canal basin immediately to the rear of the mill, and other buildings that formed part of the early mill complex. In March 2010, Oxford Archaeology North (OA North) was commissioned to carry out this scheme of work.

During the evaluation significant archaeological deposits were located across the site. As a result of these findings, two areas of the site were extended forming a single area of excavation, centred within the footprint of the proposed development. This phase of work followed immediately on from the evaluation, and was undertaken in April 2010.

Three clear phases in the development of the site was identified. The earliest phase represented the early development of the site as a cotton mill, and the expansion of the building subsequently to incorporate at least two steam engines. The excavation allowed elements of this steam-power plant to be exposed and recorded. The surviving remains included a series of foundation beds for the steam engines, flues, and internal floors. However, the buried remains exposed during the excavation were dominated by structures that dated to the later nineteenth century, and represented the remodelling of the cotton mill by a railway company for use as a grain warehouse. The final phase of development dated to the twentieth century, when the site was used as a goods warehouse.

## ACKNOWLEDGEMENTS

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The excavations were undertaken by Sean McPhillips, with assistance from Elizabeth Murray, Charlotte Vallance, and Lewis Stitt. The report was compiled by Sean McPhillips and the drawings were compiled by Marie Rowland. The report was edited by Ian Miller, who was also responsible for project management.

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## 1. INTRODUCTION

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### 1.1 CIRCUMSTANCES OF THE PROJECT

- 1.1.1 The Royal London Exempt Property Unit Trust has proposed to redevelop land on the corner of Pollard Street and Great Ancoats Street in the Ancoats area of Manchester. In consideration of the development proposals, Manchester City Council attached a condition to planning consent that required an appropriate scheme of archaeological investigation to be carried out in advance of development. In the first instance, an archaeological desk-based assessment was required to identify the nature of the study area's archaeological resource.
- 1.1.2 In 2006, the University of Manchester Archaeological Unit was commissioned by CRE8 Management Ltd, acting on behalf of The Royal London Exempt Property Unit Trust, to carry out the required desk-based assessment. Research traced the development of the applications site from the late eighteenth century to the present day, and concluded that the site was likely to contain buried remains of regional significance (UMAU 2006). In particular, it was thought likely that the buried remains of the power systems associated with an early nineteenth-century steam-powered textile mill might survive *in-situ*. It was also considered probable that development of the site might have an archaeological impact on buried remains, involving their damage or destruction as a result of ground-reduction works. Whilst these remains were not considered to be of sufficient archaeological significance to merit preservation *in-situ*, it was concluded that a detailed archaeological record would be required to mitigate their ultimate destruction.
- 1.1.3 Following on from the desk-based assessment, the County Archaeologist for Greater Manchester, who provides planning advice on archaeological issues to Manchester City Council, recommended that a programme of intrusive investigation was undertaken in advance of the development of the site. In the first instance, the recommended programme of investigation comprised the excavation of seven trenches, with a total combined length of some 135m. The positions of the trenches were targeted on elements of the mill's former steam-power plant, an infilled canal basin immediately to the rear of the mill, and other buildings that formed part of the early mill complex.
- 1.1.4 In December 2009, CRE8 Management Ltd, acting on behalf of The Royal London Exempt Property Unit Trust, requested that Oxford Archaeology North (OA North) devise a Project Design for the required programme of archaeological evaluation. Following the formal acceptance of this Project Design, OA North was commissioned to carry out the work, which was undertaken in March 2010. This confirmed that well-preserved buried remains of archaeological interest survived *in-situ*. Following discussions held on site with the County Archaeologist for Greater Manchester, it was recommended that a programme of further targeted investigation, coupled with an appropriate level of post-excavation analysis, was carried out in advance of development, and in accordance with an Updated Project Design (*Appendix 1*).

## 1.2 SITE LOCATION AND GEOLOGY

- 1.2.1 The study area (centred on SJ 8539 9807) is situated within the Ancoats area of Manchester, which lies on the north-east side of the city centre (Fig 1). The site is bounded by Great Ancoats Street to the south-west and Pollard Street to the north-west. The site lies at a height of approximately 48.5m above Ordnance Datum (aOD), and was occupied until recently by two modern single-storey retail outlets and associated car parking (Plate 1).
- 1.2.2 Topographically, the Manchester Conurbation as a region lies within an undulating lowland basin, which is bounded by the Pennine uplands to the east and to the north. The region as a whole comprises the Mersey river valley, whilst the rivers Irwell, Medlock, and Irk represent the principal watercourses in Manchester (Countryside Commission 1998, 125). The topography of Ancoats, however, reflects the shallow valley of Shooter's Brook, a rivulet that flows westwards from Newton Heath, through Ancoats and into the river Medlock (Ashworth 1987, 22). Shooter's Brook was culverted during the early nineteenth century, and the topography of the valley has since been masked considerably by urban expansion.
- 1.2.3 The solid geology of the area comprises Carboniferous sedimentary material and a series of Permo-Triassic rocks, consisting mainly of New Red Sandstone. The overlying drift incorporates Pleistocene boulder clays of glacial origin, and sands, gravels, and clays of fluvial/lacustrine origin (Hall *et al* 1995, 8).



Plate 1: Recent aerial view of the study area

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## 2. METHODOLOGY

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### 2.1 INTRODUCTION

- 2.1.1 The fieldwork undertaken followed the method statement detailed in the approved Project Design (*Appendix 1*), and was consistent with the relevant standards and procedures provided by the Institute for Archaeologists (IfA), and their code of conduct.

### 2.2 EXCAVATION

- 2.2.1 The uppermost levels were excavated by a machine fitted with a toothless ditching bucket. The same machine was then used to define carefully the extent of any surviving walls, foundations and other remains, after which all excavations were undertaken manually.
- 2.2.2 All information was recorded stratigraphically with accompanying documentation (plans, sections and both colour slide and black and white print photographs, both of individual contexts and overall site shots from standard view points). Photography was undertaken with 35mm cameras on archivable black-and-white print film as well as colour transparency, all frames including a visible, graduated metric scale. Digital photography was extensively used throughout the course of the fieldwork for presentation purposes. Photographic records were also maintained on special photographic *pro-forma* sheets.

### 2.3 FINDS

- 2.3.1 **Artefactual procedures:** all finds recovered during the excavations were lifted, cleaned, bagged and boxed in accordance with the United Kingdom Institute for Conservation (UKIC) *First Aid For Finds* (1998). Recovery and sampling programmes were in accordance with best practice (current IfA guidelines) and subject to expert advice.

### 2.4 ARCHIVE

- 2.4.1 A full professional archive has been compiled in accordance with the Project Design, and in accordance with current IfA and English Heritage guidelines (English Heritage 1991). The paper and digital archive will be deposited with the Greater Manchester Historic Environment Record on completion of the project.

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### 3. HISTORICAL BACKGROUND

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#### 3.1 DEVELOPMENT OF ANCOATS

- 3.1.1 The origin of the name Ancoats is uncertain, although it is likely to have derived from the Old English *ana cots*, which may be translated as 'lonely cottage' (Cooper 2002, 13). It was an area of open land throughout the medieval period, considered by Swindells (1908, 19-26) to have been 'an almost idyllic rural backwater', and was recorded in a survey of 1320 to have formed one of eight hamlets within the township of Manchester (Harland (ed) 1861). It is likely that settlement comprised a few cottages and farmhouses along Ancoats Lane, Newton Lane and Butler Lane, although the most notable building in the area by the end of the medieval period was undoubtedly the timber-framed Ancoats Hall, which overlooked the river Medlock on the eastern fringe of the area (Miller and Wild 2007, 25).
- 3.1.2 The population of Manchester expanded at an unprecedented rate from the late eighteenth century, and resulted in the transformation of Ancoats into a key industrial suburb. This process of industrialisation began in the 1770s, when land owned by the Leigh family was sold to Thomas Bound, a builder, who then sold it on to others for development. The focus for initial development was at the corner of Great Ancoats Street and Oldham Road, and contemporary maps depict the main elements of the existing street plan laid out on former fields of the area. Building speculation then drove further expansion, with plots of land within a grid pattern of streets being sold for development.
- 3.1.3 The earliest factories in the area included several water-powered mills erected along Shooters Brook, to the south of Union (now Redhill) Street. However, in seeking a solution to the inadequate power supplied to their waterwheels from Shooters Brook, several firms experimented with steam power. A notable example was Salvins' Factory, where John Kennedy is reputed to have first applied steam power to one of his spinning mules in 1793 (Lee 1972, 9). In order to achieve this, Kennedy utilised a steam-powered pumping engine that delivered water to a waterwheel, which remained the primary source of motive power. Nevertheless, it was on the basis of a breakthrough in the application of steam power that created the explosion of factory building in Ancoats (Little 2004, 31).
- 3.1.4 The completion of the Ashton-under-Lyne Canal in 1796, and a proposal to construct the Rochdale Canal through the area, offered the potential of cheap and reliable transport for goods and materials to and from Ancoats. The completion of the Rochdale Canal in 1804 coincided broadly with the efficient application of steam power to cotton-spinning machinery, and a growth in the national demand for textiles. A small number of enterprising firms seized the opportunity presented by this combination of factors, resulting in the evolution of a new breed of steam-powered mill building in Ancoats, and the creation of the world's first industrial suburb based on steam power (Miller and Wild 2007).



### 3.2 DEVELOPMENT OF THE STUDY AREA

- 3.2.1 A detailed account of the study area has been presented previously in an archaeological desk-based assessment, which was carried out at an early stage in the present development (UMAU 2006). The following section is drawn largely from that account, although some additional evidence is presented. This background is intended to place the results obtained from the fieldwork into a local and regional context.
- 3.2.2 The study area is depicted to comprise two fields on William Green's map of 1794. This map also shows the course of two intended roads traversing the study area, one of which was known subsequently as Pollard Street; the second street was never actually built.
- 3.2.3 The next available map to show the study area is that published by Aston in 1804 (Plate 2). Whilst this map was produced as a small scale, and cannot be relied upon for analysing individual buildings, it is nevertheless clear that the study area had been at least partially developed by 1804, presumably by the steam-powered cotton mill that was to occupy the site for much of the nineteenth century. This is confirmed by the detail provided in a parliamentary paper dating to 1834, which states that this cotton mill was constructed in 1803 or 1804, with additional elements added between 1814 and 1824 (PP XX 1834 D1, 266).

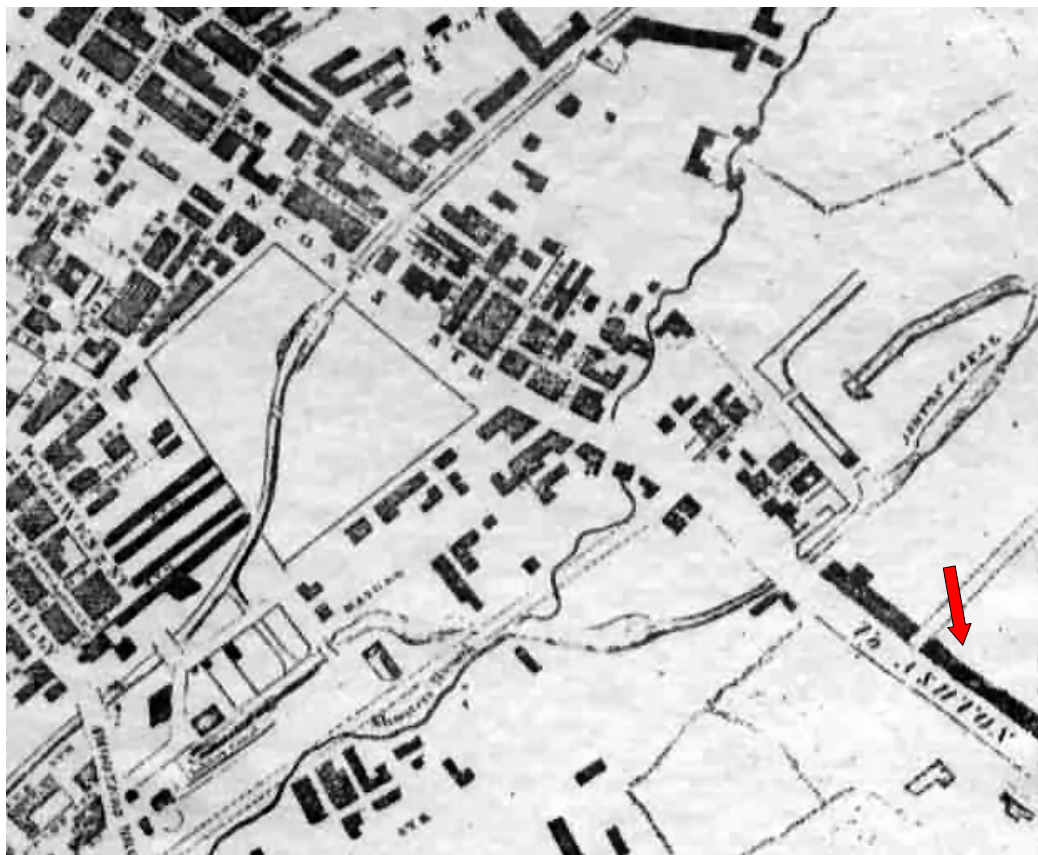


Plate 2: Extract from Aston's map of 1804

- 3.2.4 It is not known precisely who established the cotton mill originally, although entries in contemporary trade directories indicate that by 1811 it was occupied by James Kennedy (Pigot 1811). James Kennedy was one of a group of pioneering industrialists, which included his brother John Kennedy, James McConnel, Adam and George Murray, the Houldsworths and William Fairbairn, all of who had migrated to Lancashire from Southern Scotland in the late eighteenth century and played key roles in the development of Manchester's textile industry (Miller and Wild 2007).
- 3.2.5 The earliest maps of the area to depict the footprint of the mill accurately are those published by Johnson in 1818-19 and Pigot in 1819. The first detailed survey of the mill, however, is provided in a book entitled *Plans of all the Spinning Factories in Manchester*, and dated c 1822 (Plate 3). The annotation on the plan of a mill entitled 'James Kennedy, Owner and Occupier' indicates that the main block (marked 'a' and 'b'), aligned parallel to Great Ancoats Street and crossing the centre of the site, was five storeys high, plus an attic. Two small blocks that fronted onto Great Ancoats Street ('c' and 'e'), representing the cotton rooms and gasometer/smith's shop respectively, were both of a single storey. Situated between these two blocks on the Great Ancoats Street frontage was a seven-storey high component ('d'), which incorporated a warehouse, packing rooms, a counting house and reeling rooms. A small detached building ('f') situated close to the Pollard Street frontage, which is named Ashton Street on the plan, is marked as a shed with a chimney at its base. This building fronted onto a branch of the Ashton Canal, which is shown to have taken a route to the rear of the mill; the canal is shown on subsequent mapping of the area, including Bancks & Co's map of 1831, to have terminated at a small triangular-shaped basin that appears to have subsumed this small building. With the exception of the chimney in the small detached shed, the plan provides no indication for the mill having contained any steam-raising plant or source of steam power. This suggests that the machinery in the mill at this date may have been entirely hand powered.

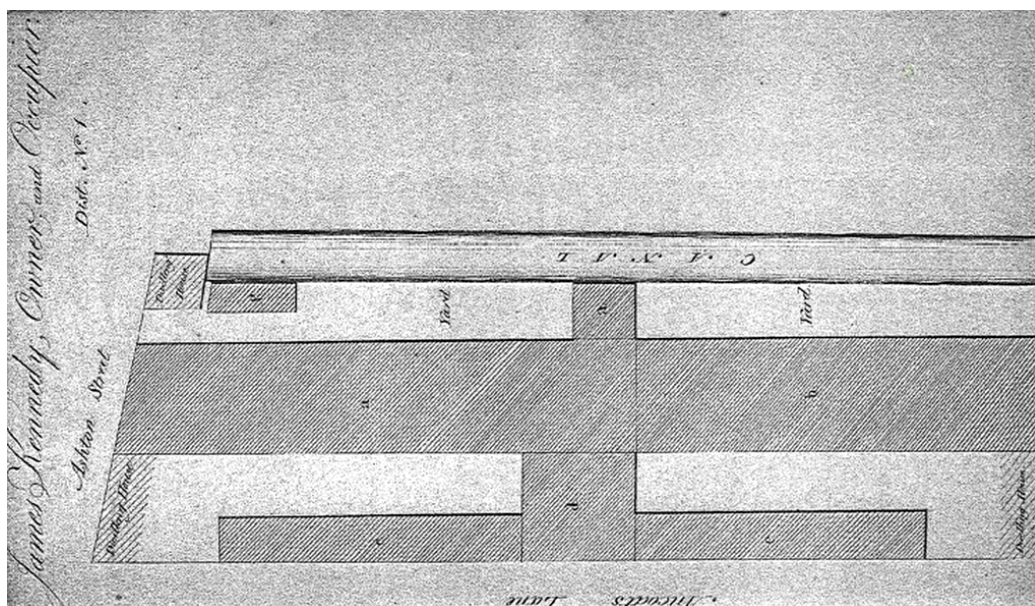
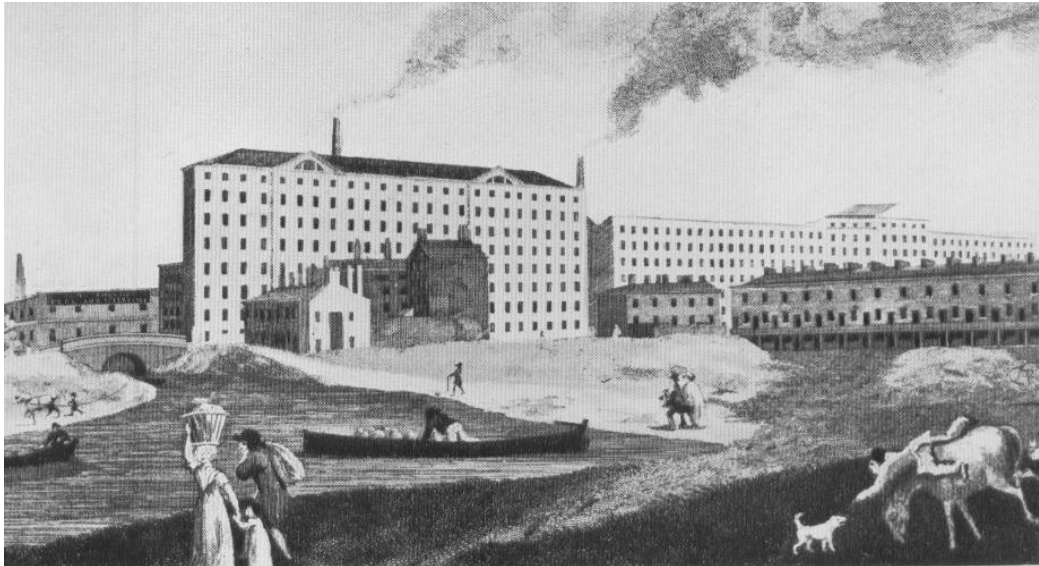


Plate 3: Extract from the *Plans of all the Spinning Factories in Manchester*, c 1822



- 3.2.6 Kennedy's mill, together with the adjacent steam-powered mill of Jonathan Pollard, is featured on an engraving dating to the early nineteenth century (Plate 4). The layout of Kennedy's mill appears to be consistent with the description provided by the plan of *c* 1822. Notably, and in contrast to Pollard's mill, Kennedy's factory is not shown to have incorporated a chimney, adding weight to the suggestion that the mill did not originally contain any steam-power plant.



*Plate 4: Early nineteenth-century engraving looking east across Great Ancoats Street, showing Pollard's mill, Kennedy's mill and the Ashton Canal*

- 3.2.7 It is clear, however, that Kennedy had equipped his mill with steam power before the end of the 1820s; records within the Boulton & Watt archive provide details of some of the steam engines ordered by James Kennedy during this period, presumably for his mill on Pollard Street. The earliest of these records indicates that James Kennedy ordered a 10 horsepower steam engine from Boulton & Watt in 1828/29. A second order, placed by James Kennedy in 1836, was for an 80 horsepower side-lever type engine, whilst a further order in 1844 was for a 25hp independent type engine.
- 3.2.8 Further evidence that steam-power plant had been added to the mill by the early 1830s is provided by Bancks & Co's *Map of Manchester and Salford*, which was published in 1831. This detailed map shows a new block of buildings to have been added to the rear, or north-east-facing, elevation of the mill. These buildings are annotated as an engine house and a large boiler house on the Ordnance Survey 60": 1 mile map of the area, which was published in 1849 (Plate 5); it is possible that these buildings actually represented the replacement of those depicted on the 1831 map as their footprint is somewhat larger on the later map, although it seems likely that the original function as a focus for power generation would have been maintained. The Ordnance Survey plan identifies the mill as Caledon Mill, and also shows another detached engine and boiler house to have been erected to the south-east, perhaps intended to house the 25hp engine ordered in 1844.

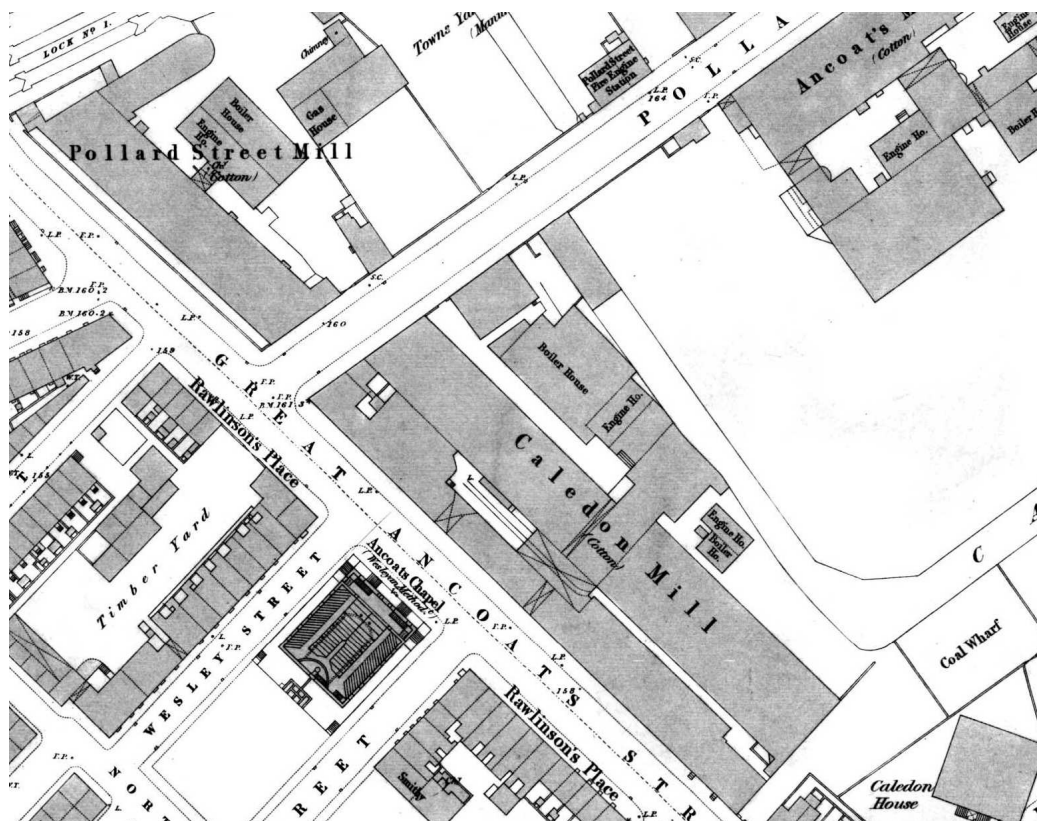


Plate 5: Extract from the Ordnance Survey 60": 1 mile map of 1849

3.2.9 The firm of James Kennedy & Co is listed as cotton spinner, doublers, crape and yarn manufacturers in trade directories for most of the 1850s (*eg* Slater 1854-5). However, the mill is not listed in trade directories for 1858, suggesting that Kennedy & Co may have ceased trading and the mill was vacant (Slater 1858). This is confirmed by an entry in a trade directory for 1861, which identifies John Blair, cotton spinner and wadding manufacturer, as the occupier of the mill (Slater 1861). However, the Cotton Famine of the early 1860s resulted in the bankruptcy of many firms engaged in cotton spinning; by 1869, the mill appears to have been occupied by the Great Ancoats Flax & Hemp Spinning Co Ltd (Morris 1869). This firm still occupied part of the mill in 1876, whilst another part of the mill was in use as the Midland Railway Company Grain Office (Slater 1876). By 1881, however, the mill was occupied solely by the Midland Railway Company as a grain store (Slater 1881).

3.2.10 The Midland Railway Company carried out some remodelling of the mill buildings, as depicted on the Ordnance Survey map of 1893 (Plate 6). The area between the original body of the mill and the range of buildings fronting onto Great Ancoats Street was covered, and a series of railways tracks were laid, including a line that crossed Great Ancoats Street. The detail provided by this map also indicates that the engine and boiler houses to the rear of the mill had been demolished.

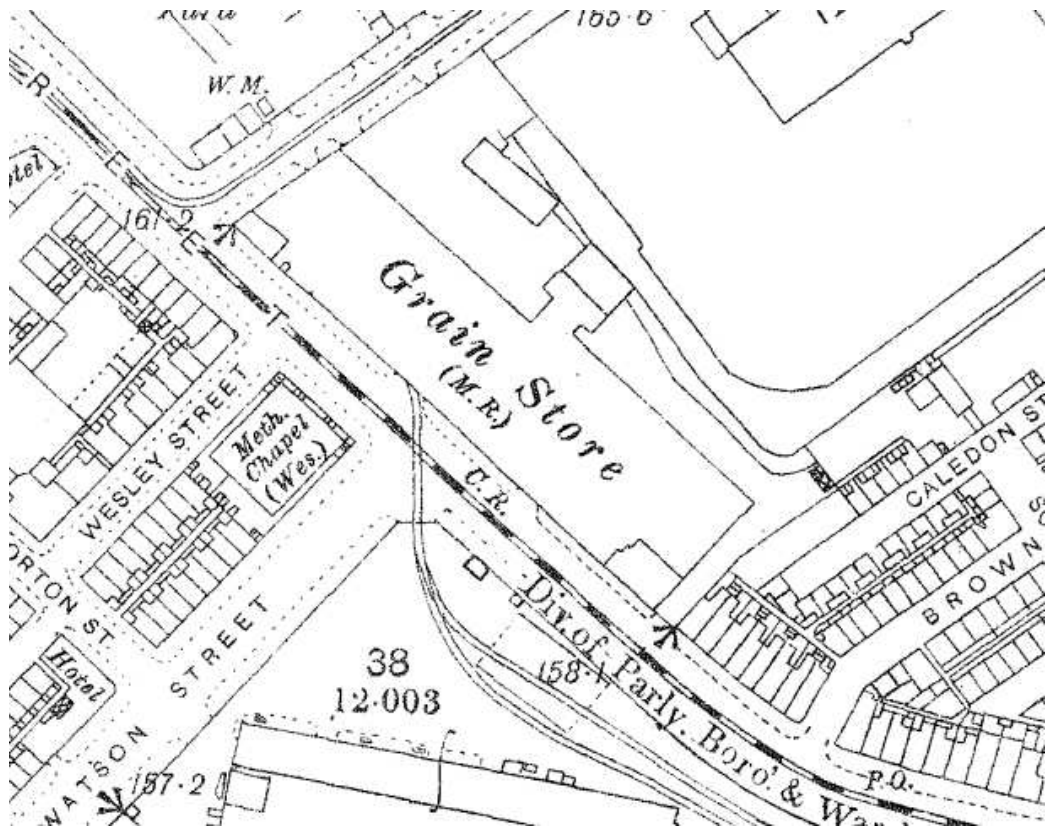


Plate 6: Extract from the Ordnance Survey 25": 1 mile map of 1893

- 3.2.11 By 1911, a small building had been constructed in the north-western corner of the study area. This building was replaced subsequently by a larger structure that is annotated as a garage on Goad's insurance plan of 1928. This detailed plan indicates that the site was still used in part as a grain store, which by that date was owned by the London, Midland & Scottish Railway. Another part of the building was occupied by Associated Biscuit Manufactures Ltd, whilst other goods stored in the warehouse included meat extraction products, confectionery and silk.
- 3.2.12 The building is depicted in a photograph dated 1960, which appears to show the main five-storey block as surviving largely extant. A modern, single-storey structure is shown to occupy the Great Ancoats Street frontage, although the original seven-storey component of this range appears to survive. However, all historic structures on the site had been demolished by the mid-1980s, and the site redeveloped for retail purposes.

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## 4. EVALUATION RESULTS

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### 4.1 INTRODUCTION

- 4.1.1 The initial stage of the intrusive archaeological investigation comprised the excavation of seven trenches of varying sizes, which were targeted on structures depicted on the sequence of historical mapping (Figs 2 and 3). An overview of the results obtained from each of these evaluation trenches is presented below, with a summary context index provided in *Appendix 2*.

### 4.2 TRENCH 1

- 4.2.1 Trench 1 was aligned north/south across the north-eastern part of the site, and was targeted on the north-western part of the boiler house and the adjacent canal arm. The trench measured 17 x 2m, and was excavated to a maximum depth of 2m within a sondage (Plate 7).



*Plate 7: View of Trench 1, looking south*



- 4.2.2 The natural clay geology was exposed at the base of a sondage excavated along the western side of the trench. The natural geology had been cut by a wall (*1*) composed of hand-made bricks, which was aligned north-east/south-west and was similarly exposed at the base of the excavated sondage. The location of the wall corresponded with the small building depicted adjacent to an arm of the Ashton Canal shown on the plan of the site dating to c 1822.
- 4.2.3 Wall *1* was sealed with a thick deposit of clay and rubble backfill, which seemingly represented the demolition of buildings in this part of the site during the mid- to late nineteenth century. This demolition material was overlain by the remains of an uneven brick surface (*2*), which was exposed for an area measuring some 2 x 1m in the northern part of the trench. The surface comprised hand-made bricks, each measuring 240 x 120 x 50mm, and bonded with a lime-based mortar, indicative of early to mid-nineteenth-century construction.
- 4.2.4 Surface *2* was truncated by a north-east/south-west-aligned wall (*3*), which was composed of machine-pressed bricks and bonded with a hard grey mortar, and white-washed on its southern elevation. Wall *3* was exposed to a depth of 0.83m (ten courses). Another similarly aligned brick wall (*4*) was exposed a short distance to the south (Fig 4), and also represented twentieth-century construction. The top of both walls were exposed at a depth of 250mm below the modern ground surface. The southernmost wall (*04*) truncated the remains of a brick-built, curvi-linear structure (*5*), which probably represented the remains of a flue associated with the boiler house depicted on historical mapping.
- 4.2.5 Structure *5* comprised two side walls (*6* and *7*), which survived to a height of four courses, with the remnants of an arched roof (*9*) surviving *in-situ* (Plate 8). The surviving fabric of the arched roof appeared to be keyed into the base of a north-west/south-east-aligned culvert (*8*). This comprised two single-skin brick walls, which survived to a height of two courses, and capped with sandstone.



Plate 8: View of the flue 5 in Trench 1, looking east

- 4.2.6 No significant archaeological remains survived to the south of flue **5**, other than a small, rectangular-shaped stone machine base (**10**), which had been cut into the natural yellow clay geology (**40**). Situated immediately to the south of machine base **10** was a north/south-aligned ceramic drain pipe (**11**), which had been cut into a deposit of orange gravel (**41**). The gravel was exposed at a depth of 150mm beneath the modern ground surface, and overlaid natural clay **40** to a maximum depth of 1.3m.

### 4.3 TRENCH 2

- 4.3.1 Trench 2 was aligned north-west/south-east across the north-western part of the site. It measured 12 x 2.3m, and was excavated to a maximum depth of 1.7m (Plate 9). The remains exposed in the trench comprised the eastern external wall (**24/25**) of the mill, and two well-preserved flues (**26** and **27**); these structures were examined further during the detailed excavation work carried out subsequently (Fig 4).



Plate 9: View of Trench 2, looking south-east

- 4.3.2 A substantial, north-west/south-east-aligned wall (**24**) was exposed along the southern edge of the trench (Fig 7). Wall **24** was five bricks wide, and survived to a height of 12 courses. The position of the wall corresponded closely with the north-eastern external wall of the early nineteenth-century mill, as shown on historical mapping (Fig 2). The south-eastern end of the exposed wall was of a slightly different build, although seemingly of a broadly contemporary date. This section (**25**) also formed the south-western side of flue **26** (Fig 7). The fabric of all elements of the wall comprised hand-made bricks bonded with a mixture of lime and ash-rich mortar, suggesting some re-pointing, perhaps carried out during the late nineteenth century.
- 4.3.3 Traces of an earlier wall (**37**) were identified beneath **24**, although this may have represented a foundation course. Wall **24** was abutted by a two-skin wide buttress (**38**), which overlaid wall **37**.
- 4.3.4 Another brick structure was identified in the north-western part of the trench (**39**). This was aligned north-west/south-east, and survived as a two-course high structure. It measured at least 0.5m wide, and may have formed part of a brick surface.
- 4.3.5 The central part of the excavated trench was dominated by the remains of two flues (**26** and **27**). Flue **26** was aligned north-west/south-east along the centre of the trench, had a width of 1.1m and was exposed for a distance of 6m. A section of the roof (**30**) survived intact. The roof of the flue measured three brick courses thick, and was supported by eastern (**29**) and western (**31**) retaining walls, although its southern extent had been destroyed by a manhole (**28**). The area between manhole **28** and flue roof **30** was infilled with fuel waste and rubble, which was sealed with a evenly laid timber, suggesting that part of the flue may have continued to be used after the installation of the manhole.
- 4.3.6 The second flue (**27**) exposed in the trench lay immediately to the north of flue **26**, and was exposed for a distance of 9m, but continued beyond the confines of the excavated trench. The flue comprised two walls (**35** on the south and **44** on the north) and a sloping brick floor surface (**42**), which was set directly onto the natural clay geology. Traces of the roof of flue **27** were represented by some surviving springing courses of brickwork (**36**), which were situated at a height of 0.94m above the base of the flue. The north-western end of the flue had been removed by subsequent development, leaving no trace of a distinct terminal, although sufficient fabric survived to demonstrate that the course of flue **27** would have blocked flue **26**, suggesting that the former represented a modification to the flue system. Physical evidence for a modification to flue **26** was provided by a two-string wide brick wall (**32**), which bridged the gap between the western wall (**31**) of the flue **26** and wall **25**.



#### 4.4 TRENCH 3

- 4.4.1 Trench 3 was aligned north-east/south-west across the north-western part of the site, within the footprint of one of the early nineteenth-century buildings that fronted onto Great Ancoats Street and the mill courtyard (Fig 2). The trench measured 23 x 2m, and was excavated to a maximum depth of 2.4m into the natural clay geology within a sondage in the south-western part of the trench. The rest of the trench was excavated to a depth of 1.25m onto the upper surface of buried structural remains (Plate 10).
- 4.4.2 Historic mapping shows the mill comprised two principal ranges aligned north-west/south-east (Fig 2), which by the late nineteenth century had been incorporated into a larger building (Fig 3). The buried remains exposed in the trench represented the development of the original mill and the subsequent grain store. In particular, substantial foundation structures associated with the eastern range were identified (Fig 7). A surface situated between the two original ranges was represented by a spread of cobbles (*17*) that was exposed in the south-western part of the trench (Fig 8), with another later cobbled surface (*138*; *Section 4.4.6 below*) laid during the use of the site as a grain store.



*Plate 10: View of Trench 3, looking west*



- 4.4.3 The physical remains of the early nineteenth-century eastern range of the mill complex was provided by a 0.7m wide brick wall (**I2**), which was aligned north-west/south-east across the central part of the trench (Plate 11). The top of the wall was exposed at a depth of 1.1m beneath the modern ground surface, and it survived to a height of ten courses, laid onto the natural clay geology. Other remains of the original mill included a 0.50m wide wall (**I3**), representing an internal partition. Wall **I2** was butted along its western side by a square-shaped brick chamber (**I6**; Plate 11) which is likely to have formed a cavity for an upright drain against the wall.



*Plate 11: Remains of drain **I6** and the western wall (**I2**) of the mill*

- 4.4.4 Excavation of the north-eastern part of the trench revealed two large, square-shaped sandstone blocks (**80** and **I5**), each measuring 1.3m<sup>2</sup> and displaying residues of iron on their upper surface (Plate 10). These blocks almost certainly represented the foundation pads for substantial vertical supports, and were probably associated with the late nineteenth-century modification of the building for a grain store.

- 4.4.5 Sandstone blocks **80** and **15** were sealed beneath a concrete floor (**14**), which extended north-east/south-west along the central part of the trench, and abutted the upper surviving course of wall **13** along its eastern edge. This surface clearly represented twentieth-century modifications to the building.
- 4.4.6 The archaeological remains exposed in the western part of the trench comprised a spread of square-shaped granite setts (**17**), situated at a depth of 1m beneath the modern ground surface (Fig 8). The setts formed an evenly laid surface that was exposed for a distance of 4m, although continued beyond the western edge of the excavated trench. This surface also represented twentieth-century modifications to the site.

## 4.5 TRENCH 4

- 4.5.1 Trench 4 was aligned north-west/south-east within the eastern bay of the modern building, and was targeted on the footprint of an engine house shown on the Ordnance Survey map of 1849 (Fig 2). It was intended to measure 20m long but because of its limited space its excavated dimensions were limited to 13.3 x 1.45m (Plate 12). It was excavated to a maximum depth of 2m in the northern part of the trench to determine the depth of a natural clay horizon. The modern surface comprised a 60mm thick layer of reinforced concrete, which sealed up to 0.5m thick deposits of hardcore levelling and sand, which in turn overlaid walls that were likely to have been associated with the engine house. These were identified in the central (**20**) and south-eastern (**19**) parts of the trench (Fig 5).



Plate 12: View of Trench 4, looking south-east

- 4.5.2 Wall **19** was aligned east/west, measured 2m wide, and was exposed to a depth of eight courses. It comprised hand-made bricks, each measuring 230 x 110 x 70mm and set in a lime-based mortar in a random bond.
- 4.5.3 Wall **20** was situated 5.1m to the north-west, and was aligned parallel to wall **19** (Fig 5). Wall **20** was not as wide, measuring only 0.8m across, but similarly comprised hand-made bricks bonded in a lime-based mortar. In addition, the interior, south-east-facing elevation of the wall was lined with a single skin of refractory bricks. Wall **20** was strengthened along its north-west-facing elevation by a buttress (**22**), which measured 1.0 x 0.6m and was exposed to a depth of



0.5m. It comprised a mixture of hand-made and refractory bricks, bonded with grey ash-rich speckled mortar, indicating that the buttress was probably a later addition. It was abutted along its north-western face at the eastern end by a narrow north-west/south-east-aligned wall (**21**), which measured 1.7 x 0.24m. This was constructed from similar material as the other walls in the trench, although its south-western face had been subject to extreme temperatures. It is possible that this represented part of the boiler house which is shown to have been situated adjacent to the engine house on the Ordnance Survey map of 1849.

4.5.4 The position of the walls **19** and **20** corresponded with the location of the exterior walls of the engine house depicted on the Ordnance Survey map of 1849 (Fig 2). However, no other internal features, fixtures or fittings of the former engine house were exposed in the trench. All of the walls in the trench were overlaid with rubble extending to a depth of over 2m.

4.5.5 **Watching brief:** a watching brief was maintained during the removal of the modern concrete floor as part of the demolition works, and a small test pit was excavated manually to establish the presence or absence of further remains of the engine house. Up to 1m thick deposit of hardcore and clay levelling was removed to reveal the remains of a north-east/south-west aligned wall that measured 0.47m wide, and comprised hand-made bricks bonded with a lime-based mortar. The position and alignment of this wall suggested that it was a continuation of wall **20** (Fig 5). The wall was abutted by an evenly laid brick surface (**142**), which was also constructed from hand-made bricks. It is possible that this surface represented a former floor within the engine house.



*Plate 13: A continuation of wall **20** during the watching brief*

#### 4.6 TRENCH 5

- 4.6.1 The trench was excavated within the main part of the modern building, and was targeted on the southern parts of the engine house and boiler house depicted on the Ordnance Survey map of 1849. It measured 25 x 2m, and was excavated to a maximum depth of 1.2m. No remains of archaeological interest were revealed in the trench; there were no physical remains of the walls that had been exposed in Trench 4.
- 4.6.2 A deposit of clay, which appeared to be contaminated with oil or diesel, was exposed at the base of the excavated trench. This was sealed by a 1m thick deposit of brick rubble, which presumably represented the demolition of the engine and boiler houses. This deposit of rubble was sealed by the concrete floor associated with the modern building.

#### 4.7 TRENCH 6

- 4.7.1 Trench 6 measured 15 x 2m, and was excavated to a maximum depth of 1.3m. It was placed within the modern building, and was targeted on the footprint of the early nineteenth-century mill block depicted on historical mapping (Fig 2). No remains of archaeological interest were identified within the trench.
- 4.7.2 The remains of a concrete floor, which appeared to overlie the natural clay geology, were exposed at a depth of 0.5m. This floor almost certainly represented the use of the site as a warehouse in the late nineteenth or early twentieth century. The surface was overlain by brick rubble which formed a levelling layer for the modern concrete floor.

#### 4.8 TRENCH 7

- 4.8.1 Trench 7 was aligned north-east/south-west, and was placed across the footprint of the detached engine and boiler house depicted on the Ordnance Survey map of 1849. The trench measured 15 x 1.4m, and was excavated to a maximum depth of 1.6m onto natural clay (**123**) within a sondage along the south-eastern part of the trench. Buried structural remains of archaeological interest were exposed immediately below the modern ground surface (Plate 14).
- 4.8.2 A row of three sandstone blocks (**48**) were partially exposed at a depth of 0.40m beneath the modern ground surface in the north-eastern part of the trench (Fig 6). Each block was square in shape and measured less than 1m long, with a combined length of 2.5m. The remains of a north-east/south-west-aligned brick wall (**49**) abutted the south-western end of the row of blocks. Wall **49** comprised a combination of hand-made and refractory bricks.
- 4.8.3 Situated a short distance to the south-west of wall **49** was another wall (**125**), which was similarly aligned north-west/south-east, and comprised hand-made bricks bonded with a lime-based mortar, indicative of an early to mid-nineteenth-century construction date. Wall **125** was two-bricks thick, and probably represented a partition within the former engine house. It was abutted by a partially exposed north-east/south-west-aligned brick wall (**126**). This wall

was not fully exposed, although at least two strings (0.25m) were revealed and its width seemingly extended beyond the edge of the excavated trench (Fig 6). The position of this wall corresponded with a small projection against the boiler house shown on the Ordnance Survey map of 1849.



*Plate 14: View of sandstone blocks 48 at the north-eastern end of Trench 7*

- 4.8.4 Physical evidence for a remodelling of the former engine and boiler house was provided by a square-shaped surface (**128**) measuring 0.7m long, which comprised machine-pressed bricks bonded with a cement-based mortar. The surface was keyed into a north/south-aligned wall (**129**), which was constructed from similar type components, indicative of twentieth-century construction.
- 4.8.5 Demolition of the structures was represented by a deposit of ash and rubble (**124**), which was spread along the entire trench. This deposit was sealed by hardcore that formed a levelling deposit for the modern tarmac surface.



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## 5. EXCAVATION RESULTS

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### 5.1 INTRODUCTION

5.1.1 Following the completion of the initial evaluation trenching, and consultation with the Greater Manchester County Archaeologist, it was recommended that the buried remains exposed in Trenches 2 and 3, in the northern part of the site, merited further detailed excavation. The targeted area measured 25 x 16m, and was defined by the footprint of the proposed new building. Excavation of this area exposed structural remains that represented three broad phases in the development of the site:

- *Phase 1, 1804-1870s*: this represent the period of the initial development of the cotton mill by James Kennedy & Co, and its occupation subsequently by John Blair;
- *Phase 2, 1870s-1920s*: the conversion of the cotton mill to a grain store under ownership Midland Railway by 1876, the engine house at the southern end of the mill was demolished by 1888, as shown on the Ordnance Survey map produced in 1893.
- *Phase 3, post-1920s*: the final phase of the site's development, involving its transition from a grain store to a warehouse.



*Plate 15: General view of the excavation area, looking west*

## 5.2 PHASE 1

5.2.1 The earliest structural remains encountered during the archaeological investigation comprised elements of the early nineteenth-century cotton mill. These remains included the external walls of the eastern range, elements of a stair tower, possible machine bases at the north-eastern end of the mill, structures directly south of the machine bases, and associated remains situated beyond the eastern external wall of the mill.

5.2.2 **External walls:** three contiguous walls (**24/25**, **109** and **139**) pertaining to the north-eastern range of the cotton mill were exposed. Each wall was constructed primarily from partially-reduced hand-made bricks, although some sections of walling incorporated machine-pressed Accrington-type bricks, representing late nineteenth- or early twentieth-century repairs or modification. The original fabric was bonded with lime-based mortar, with the later bricks being set in a dark grey ash-rich mortar (Plate 16).



Plate 16: View of the remains in the north-western part of the mill

5.2.3 An 11m long section of the eastern wall of this range (**24/25**) was exposed in Trench 2 (*Section 4.3.2 above*), where it survived to a height of 21 courses (1.85m) above a brick surface (**102**) along its western face. The northern wall (**109**) of the range was partially exposed at the limit of excavation, with its upper surface lying at a depth of less than 0.10m below the modern ground surface (Plate 16). The south-east-facing elevation of wall **109** was exposed for a length of 13m, and was recorded to a depth of 1.87m. It was keyed into wall **24/25**, and the south-western wall (**139**) of the mill. Wall **139** was exposed for a distance of 14m, measured 1.14m wide, and was exposed to a depth of 10 courses (0.85m). The wall was strengthened by a buttress (**144**) measuring 1.1m long by 0.35m



wide that abutted its eastern face. It was constructed from similar types of bricks, although was bonded with a grey mortar, suggesting that it was a later addition.

- 5.2.4 **Stair tower foundation:** access into the cotton mill was afforded via the south-western part of wall **109**, adjacent to wall **139**, where the foundations of a stair tower (**119**) were exposed (Fig 7). The remains of the stair tower comprised a semi-circular structure measuring 3.6m across, constructed entirely of brick, and surviving to a height of ten courses (0.65m) above a broad brick base (**121**) that had a depth of 0.66m (Plate 17). The stairs were partially constructed on a row of sandstone blocks (**106**) which butted the southern face of wall **109**, contiguous with another row of steps (**107**) that provided access to the basement. The steps were retained on their north-western side by a curving brick wall, which extended from the northern side of **119**, and continued beyond the limit of the excavated area.



Plate 17: View of the stair foundation (**119**) constructed against the mills south-western (**139**) and northern (**109**) walls, looking north-west

- 5.2.5 **Machine foundation:** a row of sandstone blocks (**101**, **104** and **105**), extending for a total distance of 7m, was located at the northern end of the building, abutting wall **109** (Fig 7). These blocks may have collectively provided a foundation for a large item of machinery, perhaps an engine, within the northern part of the mill (Plate 18); numerous friction scars incised into wall **109** provided further indication for machinery having been housed in this area, although none of the stone blocks incorporated iron machine ties.



- 5.2.6 The earliest block (**101**) measured 0.8m long and 0.54m wide, and retained chisel marks on its southern and western asides. Block **101** was overlaid by a split-level brick foundation (**103**), measuring 1.8m wide and 1.45m deep, which had been burnt along its southern face. The longest element of the sandstone foundation (**105**) measured 5.5m long and 1.93m high, and comprised two courses of ashlar, each measuring 1.1m and 0.63m deep; a thin layer of slates was noted between the two courses of stone. Block **104** formed the north-eastern extent of the row. Its southern face retained a 0.20 x long by 0.04m wide groove, which may have represented the position of an axle.



Plate 18: View of part of a possible engine foundation against wall **109**, looking north

- 5.2.7 **Basement floor:** the remains of a surface (**102**) was aligned north-east/south-west across the northern part of the mill basement. The floor comprised a two-course thick, evenly laid surface that incorporated a mixture of hand-made and refractory brick. A similarly constructed surface (**108**) was located at the southern end of **102**, abutting wall **24/25**. This degraded surface was spread over an area measuring 1.26 x 0.5m, and comprised loosely bonded bricks, some of which retained traces of an iron residue on their surface. A piece of iron resembling a damper runner was located along the eastern part of the surface, which was bordered by an angled brick located within the wall, appearing to pass beneath it.
- 5.2.8 Further evidence of a floor was represented by a cruciform-shaped surface (**84**) observed across the central part of the site (Plate 19). The entire surface had been truncated by two rows of sandstone blocks, representing a later phase of the building. The surviving part measured 4.4 x 4.3m, and comprised a combination of brick (**83**) and sandstone, and incorporated a concave-shaped pit

measuring 1.2 x 0.9m and 0.45m deep, which may have housed a small flywheel. A narrow-diameter metal pipe protruded above the pit floor, which perhaps suggests that it may have housed a gas engine. This was bounded by a small rectangular-shaped sunken chamber (87), measuring 2 x 1.1m, and bordered by split-level walls on its northern and eastern sides (89 and 97). The eastern wall of the chamber (97) was abutted by another brick surface, representing the base of a former channel that extended north/south. This had been blocked by a short east/west-aligned wall (99), which abutted the eastern side of wall 97. A possible continuation of the surface (92) was observed along the northern side of wall 99, although it was slightly higher than floor surface 91. Surface 92 was aligned broadly north/south toward the southern part of surface 108. These chambers and floor surface collectively represented small flues and channels which may have been associated with a boiler situated to the north of the building.



Plate 19: Foundation 103 against wall 109, and remains to the south-west of wall 24/25

- 5.2.9 **Water management:** a well (81) was located close to the eastern side of wall 139 (Plate 20). It measured 1.4m in diameter, with an internal diameter of 0.9m. It was constructed from hand-made bricks bonded with lime-based mortar, and was exposed to a depth of five courses, although a full depth of the structure was not ascertained. The well was abutted along its south-western side by the stub of a north-west/south-east-aligned retaining wall (82), which measured 1.2m long.
- 5.2.10 A north-west/south-east-aligned brick and stone culvert (56) formed by two-course high brick walls (60 and 62) and sealed with a stone capping (61), was observed passing beneath walls 45 and 46 in the direction of the well. Further elements of a water-management system included a drain that passed beneath an arch (72) within wall 46. The drain passed along the external side of a brick foundation (74).





*Plate 20: View of the remains within the central part of the excavation looking south-west*

5.2.11 **Brick foundations:** a row of three similarly sized brick surfaces (67, 74, and 77) were observed in the southern part of the excavated area, with a combined maximum length of 8m. The south-westernmost surface (67) comprised loosely laid bricks bonded with lime-based mortar, and measured 1.58 x 1.2m wide. Another surface (68) of hand-made bricks was exposed at a lower level, and measured 1.2m<sup>2</sup>. It was lined along its northern and western sides by low retaining walls (65 and 66), which similarly comprised hand-made bricks, although each internal face was scorched from exposure to high temperatures. Surface 74 was situated 2m to the north-east of foundation 67. It comprised mortared bricks formed haphazardly laid into a square shape above a deposit of broken sandstone and clay. The surface sloped slightly on its eastern side toward a concave-shaped channel (75).

### 5.3 PHASE 2

- 5.3.1 The excavated remains ascribed to this phase included two rows of sandstone blocks (**15, 80, 53, 54, 85, 86**), and railway tracks (**130-134, 135** and **137**).
- 5.3.2 Two rows of six stone blocks (**15, 80, 53, 54, 85, 86**; Plate 21), aligned north-west/south-east, were exposed in the central part of the excavated area. The blocks were set at regular intervals of 4m. Each comprised a single, square ashlar block measuring 1m<sup>2</sup> and 1m deep, with a recessed shallow niche across the upper surface (Plate 21). Each ashlar block was laid above a wider stone foundation, comprising an arrangement of four blocks forming a surface area measuring 3m<sup>2</sup>. All of the foundations were contained within concrete-filled construction trenches, indicating that their construction dated to the late nineteenth or early twentieth century.



*Plate 21: The large sandstone blocks aligned through the building, looking south*

- 5.3.3 The remains of short sections of railway lines (**130-134, 135** and **137**; Plate 22), aligned north-west/south-east and set into compact black ash ballast (**50**), were exposed along the western edge of the excavated area. The longest section (**130** and **131**) measured 2.6m long with a line gauge of 1.8m. Part of a sleeper (**132**) survived beneath the rails housed within a cradle (**133**). Remains of another sleeper (**135**) and rails (**137**) were located 4m to the south-east, although these had been disturbed by a modern drain (**51**). These lines are shown clearly on the Ordnance Survey map of 1893.





*Plate 22: View of the railway track along the western side of wall 139, looking south-east*



## 5.4 PHASE 3

- 5.4.1 The excavated remains ascribed to the final phase of the site's development included the foundations for an internal wall forming a room in the southern part of the mill (walls **45**, **46**, **47** and **59**, and concrete floor **57**). Other structural remains included a yard laid above the former rail track (cobbles **138**), and a manhole (**28**) cutting through flue **27**.
- 5.4.2 **Internal divisions:** three north-east/south-east-aligned walls (**45**, **46** and **47**) were exposed across the central part of the building (Plate 23), abutting the external walls of the mill. Wall **45** was 0.61m wide, and was exposed for a length of 12.8m and to a depth of 1.2m. It comprised machine-pressed bricks bonded with a cement-based mortar. The wall was built over the top of blocks **53** and **54**, and overlaid the capping of culvert **56**.
- 5.4.3 Wall **46** was somewhat narrower than wall **45**, measuring 0.22m wide, and was exposed to a depth of 0.53m. It comprised identical components as wall **45**. The central part of the wall incorporated an arch (**72**), measuring 1.9m long by two courses high, and may have been intended to respect the route of a drain. A similar arch (**79**) was built into within wall **47**.
- 5.4.4 Wall **47** was also identical in fabric to walls **45** and **46**, and was exposed to a depth of five courses at the south-western end, where it was laid above rubble, cinder and ash, with parts of the wall built over blocks **15** and **80** (Fig 7). The upper surviving courses of walls **46** and **47** were abutted by a concrete floor (**57**), which was 50mm thick and was exposed over an area of 5 x 2m. The surface was overlaid by a partition wall (**59**) composed of machine-pressed bricks, which measured 2m long and 0.52m high, and which abutted the eastern face of wall **24/25**. It is possible that walls **46** and **47** provided a foundation for floorboards, and that wall **45** formed the north boundary of the room.



Plate 23: View of internal walls **45**, **46** and **47**, looking south-west

- 5.4.5 **Yard area:** a spread of cobbles (**138**) was exposed beyond the south-western external wall of the mill. The cobbles survived intact over an area measuring 3.85 x 1m, although several areas of disturbed cobbles were identified to the north and south of the surface. The cobbles were laid above a layer of ballast (**50**) that had been associated with the railway tracks (Phase 2), and had presumably been redeposited to form a levelling layer for cobbles **138**. The cobbles were evenly laid with square and rectangular-shaped cut granite, each measuring between 0.10 x 0.08 x 0.05m, to 0.17 x 0.06 x 0.03m. It is possible that some of the cobbles were re-used from the original courtyard area (**15**), situated between the former ranges as exposed in the western end of Trench 3.
- 5.4.6 **Manhole 28:** the southern end of flue **26** was truncated by the installation of a manhole (**28**). The manhole was constructed from machine-pressed bricks and lined with asbestos, and had been filled latterly with fuel waste. It measured 1.28 x 1m and was 1m deep. The structure was clearly associated with a late phase in the development of the site.

## 5.5 THE FINDS

- 5.5.1 A small assemblage of 17 artefacts was recovered from the archaeological investigation. The bulk of the assemblage dates to the late nineteenth and twentieth centuries. Pottery (12 fragments) dominated the assemblage, with lesser amounts of clay tobacco pipe (3), and a fragment of ceramic building material (2). The bulk of the assemblage was derived from demolition layers and, as such, is considered as unstratified. Most of the objects were domestic in function and of relatively low status.
- 5.5.2 In conclusion, the small finds assemblage is of limited archaeological significance. In all probability, the finds represent the dumping of domestic refuse on the site during the later nineteenth and twentieth centuries.

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## 6. DISCUSSION

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### 6.1 INTRODUCTION

6.1.1 The archaeological excavation has provided a record of the physical remains of dense activity from the early nineteenth century during the initial development of the site as a cotton mill, to its late nineteenth-century conversion as a railway grain store and goods warehouse during the twentieth century. A chronological sequence of three principal phases of development (Phase 1-3) has been identified from the buried remains, and this has been enhanced by cartographic evidence and other historical documentation. The phases are presented as follows.

- **Phase 1, 1804-1870:** this represent the period of the initial development of the cotton mill by James Kennedy & Co, and its occupation subsequently by John Blair. This phase may also be sub-divided into two: the early development of the site from 1804 by James Kennedy, creating the layout depicted on historical mapping of c 1822; and a subsequent phase of development up to the 1870s, which included the addition of steam-power plant features;
- **Phase 2, 1870s-1920s:** this phase covers the conversion of the cotton mill to a grain store under ownership Midland Railway by 1876. This involved combining the two principal mill blocks of the original site into a single structure, the demolition of engine and boiler houses, and the connection of the site to the railway network. The resultant layout is depicted on the Ordnance Survey map produced in 1893;
- **Phase 3, post-1920s:** this final phase in the site's development represents its transition to a goods warehouse under its ownership by the London & Midland Scottish Railway. The warehouse stored a variety of materials, as shown on Goads insurance plans of 1922 and 1929, and its layout is shown on Ordnance Survey maps produced in 1932 and 1965.

### 6.2 PHASE 1A

6.2.1 Three external walls of the original five-storey range, representing the main spinning block, were identified and may be ascribed to the initial development of the mill. These included the eastern (24/25), northern (109) and western (139 = 12 in Trench 3) walls. These walls were all constructed during the early part of the nineteenth century, although all retained some evidence in the surviving fabric for repairs and modification. Other original features within this part of the mill complex that were exposed included an interior floor (61) overlying a culvert (56), several internal partitions (90 - 99), and the remains of a stair tower (119) in the north-western corner of the building. Little, or no, physical remains of power sources were identified that could be attributed firmly to the initial phase of development. Given the absence of any specific references to power features within the original mill amongst the available documentary sources, it seems possible that the machinery in the mill was originally hand powered.



### 6.3 PHASE 1B

- 6.3.1 The documentary evidence suggests that a steam engine was installed in the mill during the 1820s, with additional models ordered in the 1830s and 1840s. Substantial remains abutting the northern wall (**109**) of the mill are likely to have represented the foundation base for large machinery. These remains included an arrangement of stone ashlar (**101**, **104**, **105** and **106**) and split-level brick foundations (**102**, **103**, and **108**) forming an L-shape in the north-eastern corner of the mill. The configuration of these structural remains was consistent with the foundation bed for a steam engine. It was commonplace for early nineteenth-century cotton mills to have a steam engine situated within the main spinning block, and usually at one end of the building (Williams with Farnie 1992), and the excavated remains in James Kennedy's Mill are consistent with this configuration.
- 6.3.2 Situated immediately to the north-east of the putative engine beds, but on the exterior of the mill block, were the remains of the flue system. The proximity of these flues to the engine beds adds weight to the suggestion that this part of the mill was the focus for the first generation steam-power plant.
- 6.3.3 Excavation of Trench 4 in the eastern part of the study area revealed two walls (**19** and **20**) that almost certainly represented the external walls for the detached engine house, which was perhaps erected in the 1830s. Other structural remains exposed in this trench (buttress **21** and wall **22**), and during the watching brief (surface **142**) carried out subsequently pertained to a later development of the engine house. However, no other physical remains for the steam engine located in this part of the site were identified. Similarly, no structural remains of the foundations for the associated boilers were encountered.
- 6.3.4 A single trench (Trench 7) was excavated across the footprint of a second engine and boiler house, which is depicted on the Ordnance Survey map of 1849. A row of large sandstone blocks exposed in this trench are likely to have represented the remains of foundation bases for a steam engine installed in this engine house. In addition, walls **125** and **126** and in Trench 7 probably represented the projection shown on the north-western part of the boiler house on the Ordnance Survey map of 1849. However, this part of the study area will not be subject to any earth-moving works as part of the proposed development, and therefore further archaeological investigation was not merited.
- 6.3.5 Other structures pertaining to this early phase in the development of the site included wall **1**, flue **5**, and culvert **8** in Trench 1. These structures may have been associated with the building located in the north-eastern corner of the site. This building was extant throughout the early nineteenth century, and is shown on successive historic maps from 1819 until 1849. In addition, cobble surface **17** located along the south-western part of Trench 3 possibly represented a former passage between the main spinning block and the range fronting onto Great Ancoats Street. This surface seemingly remained at least partially intact during the lifetime of the site, although it was overlain by **138** during Phase 2.

## 6.4 PHASE 2

- 6.4.1 This period represents the continued expansion and remodelling of the mill building for use as a grain store owned by Midland Railway in the 1870s. Evidence of this transition is represented by the row of six large stone block foundations (**15**, **80**, **53**, **54**, **85**, and **86**) which partially truncated the internal foundations of the original mill. Further evidence of the site's use by the railway company was provided by the sections of railway tracks (**130-134**, **135** and **137**) located along the western side of wall **139**.
- 6.4.2 Other structural remains associated with this development included foundation **67** formed from re-used brick bonded with grey mortar, and a brick buttress (**144**) attached to the eastern face of external wall **139**. This may have been constructed in order to strengthen the wall during the buildings modification.
- 6.4.3 It is possible that the boiler house located in Trench 7 was modified sometime during the latter half of the nineteenth century before its demolition. This was represented by the wall **129** and surface **128**, which were each constructed from machine-pressed bricks that were bonded with hard cement-based mortar.

## 6.5 PHASE 3

- 6.5.1 Several indicators of internal modifications to the building during the twentieth century were identified, including three partition walls (**45**, **46** and **47**) constructed from re-used hand-made and machine-pressed bricks, which were located within the southern part of the excavation site. These butted the sandstone block foundations and extended across the width of the former spinning block, forming two narrow rooms. These were overlaid by a concrete surface **14** (Trench 3) and **57**, representing a working floor. Floor **57** was in turn partitioned with a brick partition wall (**59**) composed of machine-pressed bricks.
- 6.5.2 A surface of cobble sets (**138**) similar to the type used for surface **17**, were located above the railway tracks (**135** and **137**). It is probable that these were laid after the tracks fell out of use.
- 6.5.3 The remains of the twentieth-century garage annotated on Goad's insurance plan of 1928 were identified in Trench 1, and comprised a brick floor surface (**2**), internal white-washed brick walls (**3** and **4**) of machine-pressed bricks, and a stone machine base (**10**) with threaded iron bolts attached to its upper surface. By this time there is no evidence of the chimney marked on the plan of c 1822, and was likely to have been demolished.
- 6.5.4 A ceramic pipe (**11**) was identified cutting gravel (**141**) in Trench 1, which extended in the direction of a heater marked on Goads 1928 map, and to the annexe along the eastern side of the warehouse. A ceramic drain (**51**) of similar date was located extending across the upper surviving course of wall **139**, and cut into block **53**. This pipe may have extended east toward an asbestos-lined manhole (**28**) located along the southern part of flue **26**.

- 6.5.5 A crushed brick and cinder deposit (**117**) along the eastern side of flue **27** was compacted to create a level surface beneath the tarmac car park. This was probably deposited after the demolition of the building in the mid-1980s.

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## 7. CURATION AND CONSERVATION

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### 7.1 RECIPIENT MUSEUM

- 7.1.1 The Museum of Science and Industry in Manchester has been nominated as the ultimate repository for the finds:

Museum of Science and Industry in Manchester,  
Liverpool Road,  
Manchester

- 7.1.2 Arrangements were made with the Museum prior to the commencement of the excavations for the deposition of the complete site archive, and the Museum Curator has acknowledged her willingness to accept the archive.

### 7.2 CONSERVATION

- 7.2.1 There are no conservation requirements.

### 7.3 STORAGE

- 7.3.1 The complete project archive, which will include written records, plans, black and white and colour photographs, and artefacts, will be prepared for long-term storage following the guidelines set out in *Environmental standards for the permanent storage of excavated material from archaeological sites* (UKIC 1984, Conservation Guidelines 3), and *Guidelines for the preparation of excavation archives for long-term storage* (Walker 1990).

### 7.4 DISSEMINATION

- 7.4.1 The complete results obtained from the archaeological investigation at Pollard Street are incorporated in this final excavation report. In addition to The Royal London Exempt Property Unit Trust, copies of the report will be forwarded to the Museum of Science and Industry in Manchester, Manchester City Council Planning Department, and the Greater Manchester Historic Environment Record.
- 7.4.2 It is anticipated that a public information board will ultimately be installed on the site. This will present and explain the industrial heritage of the site, and will aim to provide a lasting sense of place and history for people who lived, work in, as well as visit the area.

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## ILLUSTRATIONS

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### FIGURES

Figure 1: Site location

Figure 2: Trench location shown on the Ordnance Survey mapping of 1849

Figure 3: Trench location shown on the Ordnance Survey mapping of 1893

Figure 4: Phased plan of Trench 1

Figure 5: Phased plan of Trench 4 and watching brief area

Figure 6: Phased plan of Trench 7

Figure 7: Phased plan of the excavation site (east) and Trench 2

Figure 8: Phased plan of the excavation site (west) and Trench 3

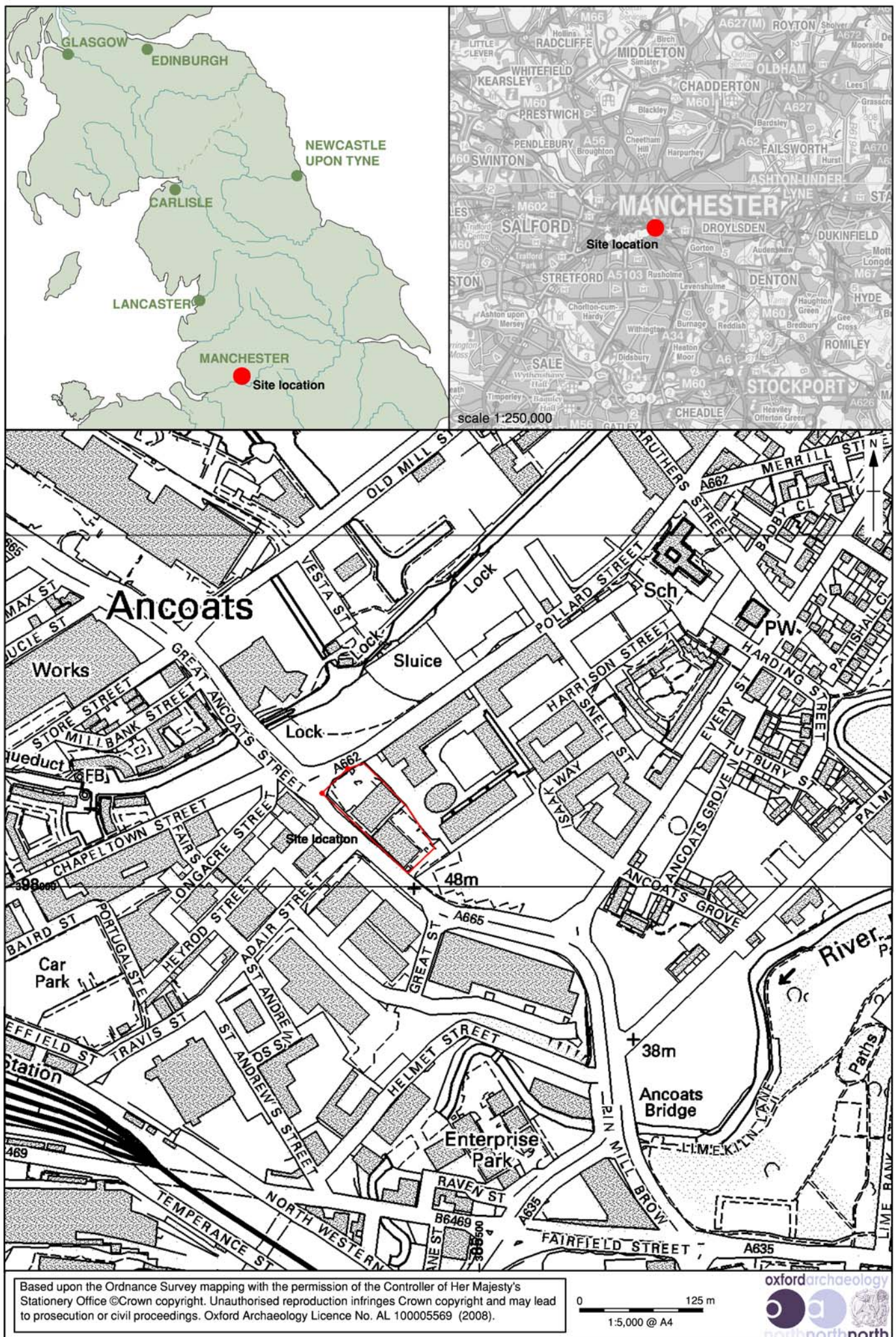


Figure 1: Site location





Figure 2: Trench location shown on the Ordnance Survey map of 1849



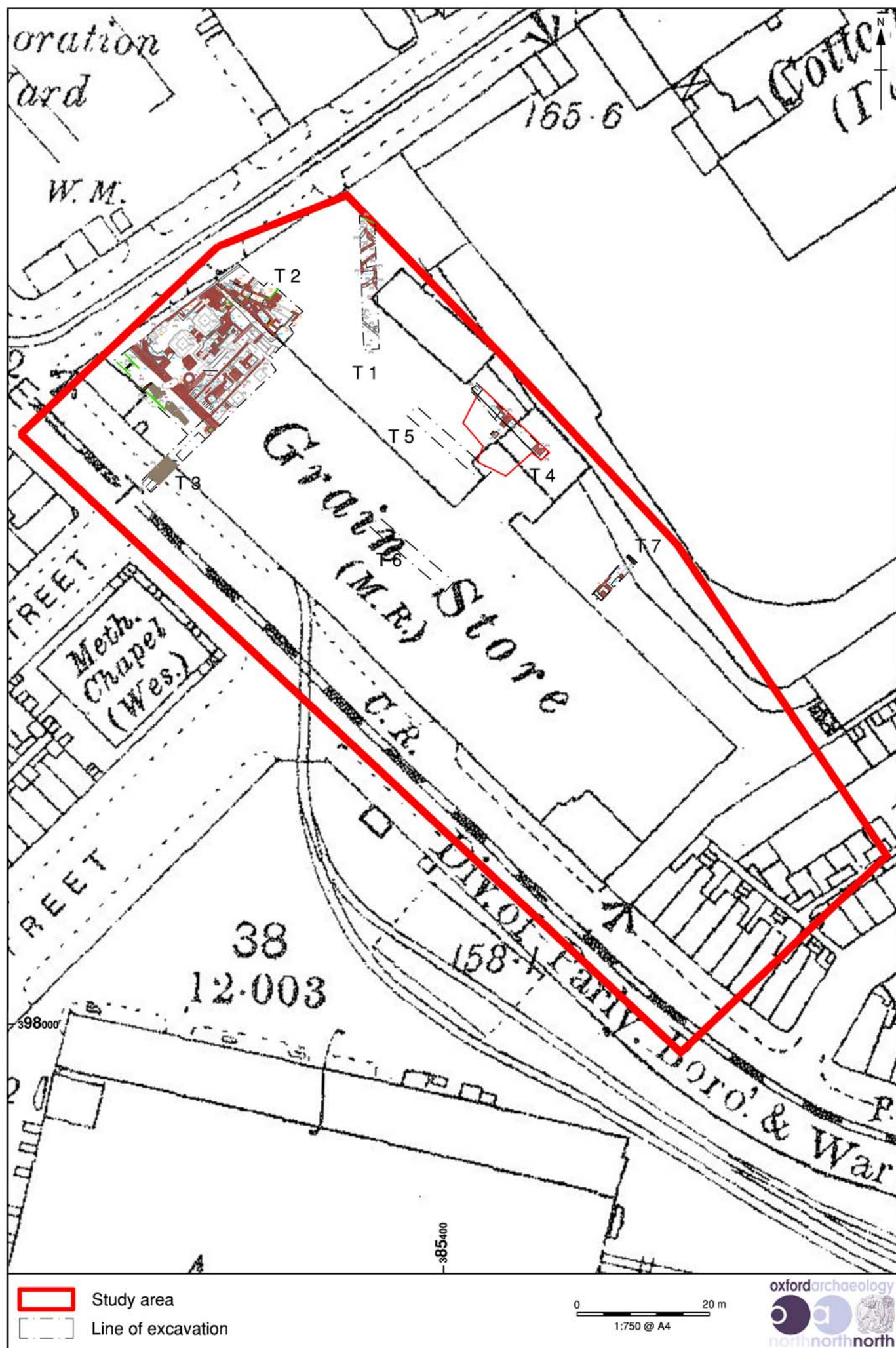


Figure 3: Trench location shown on the Ordnance Survey map of 1893

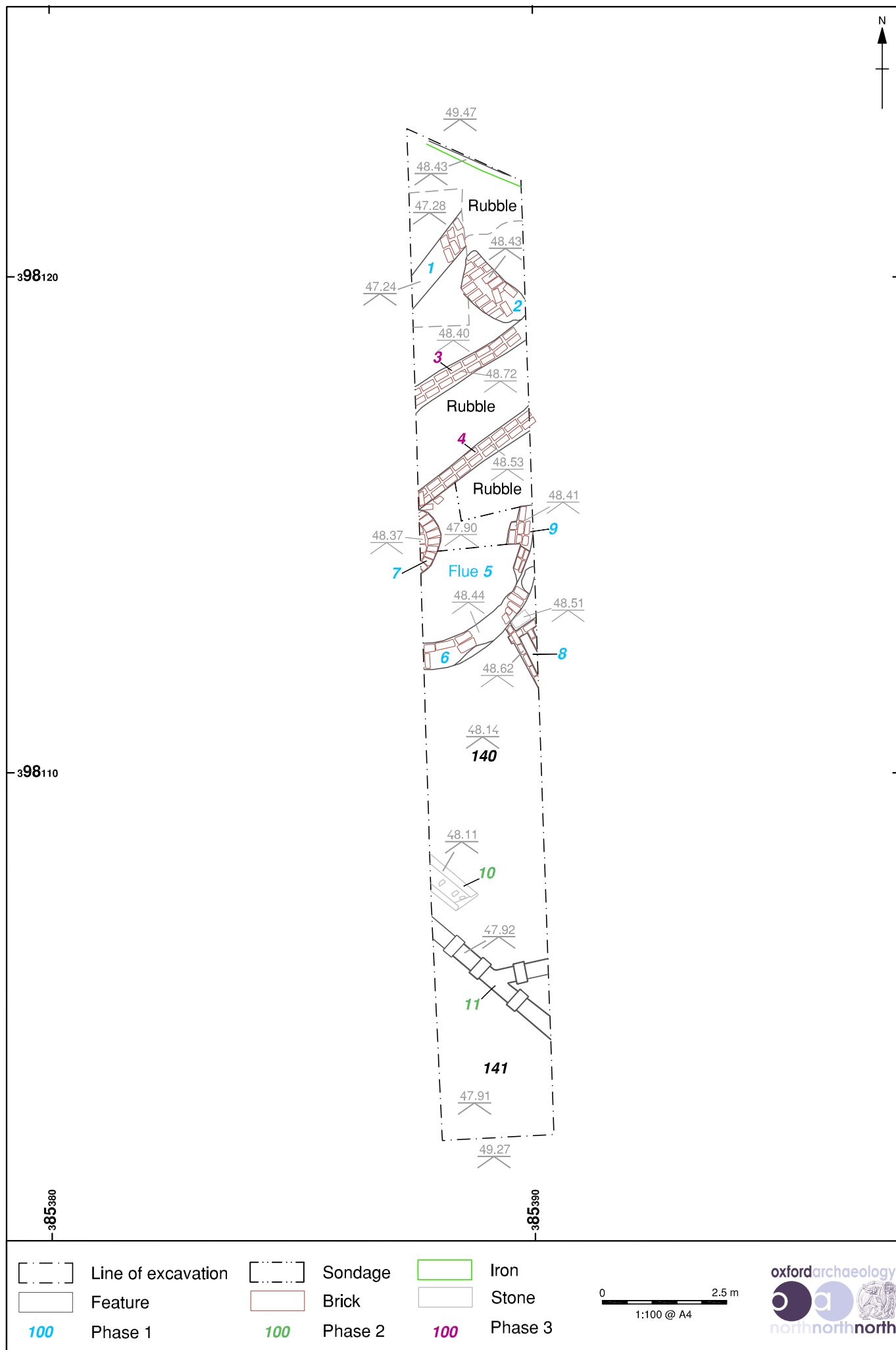


Figure 4: Phased plan of Trench 1

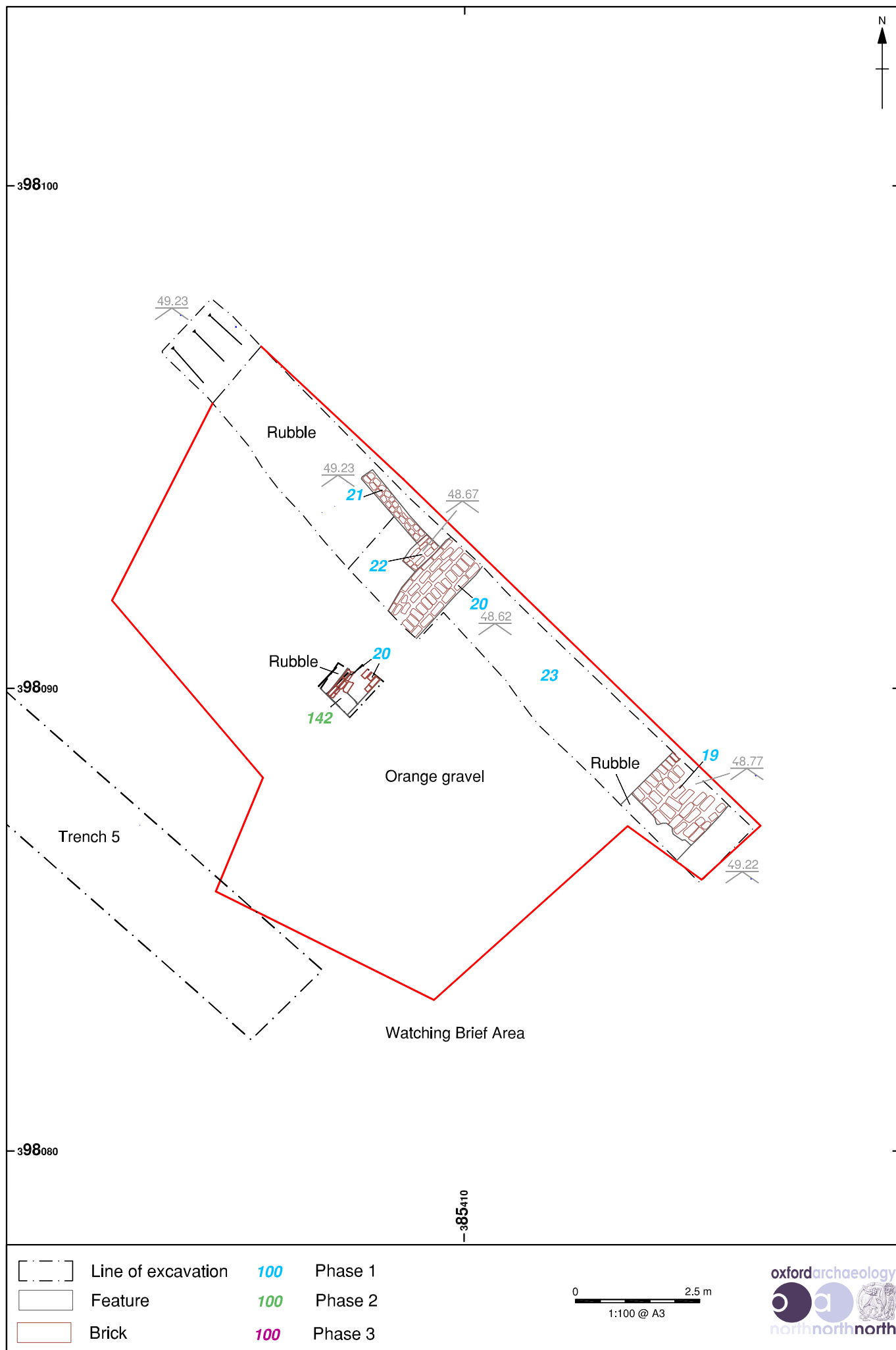


Figure 5: Phased plan of Trench 4 and watching brief area

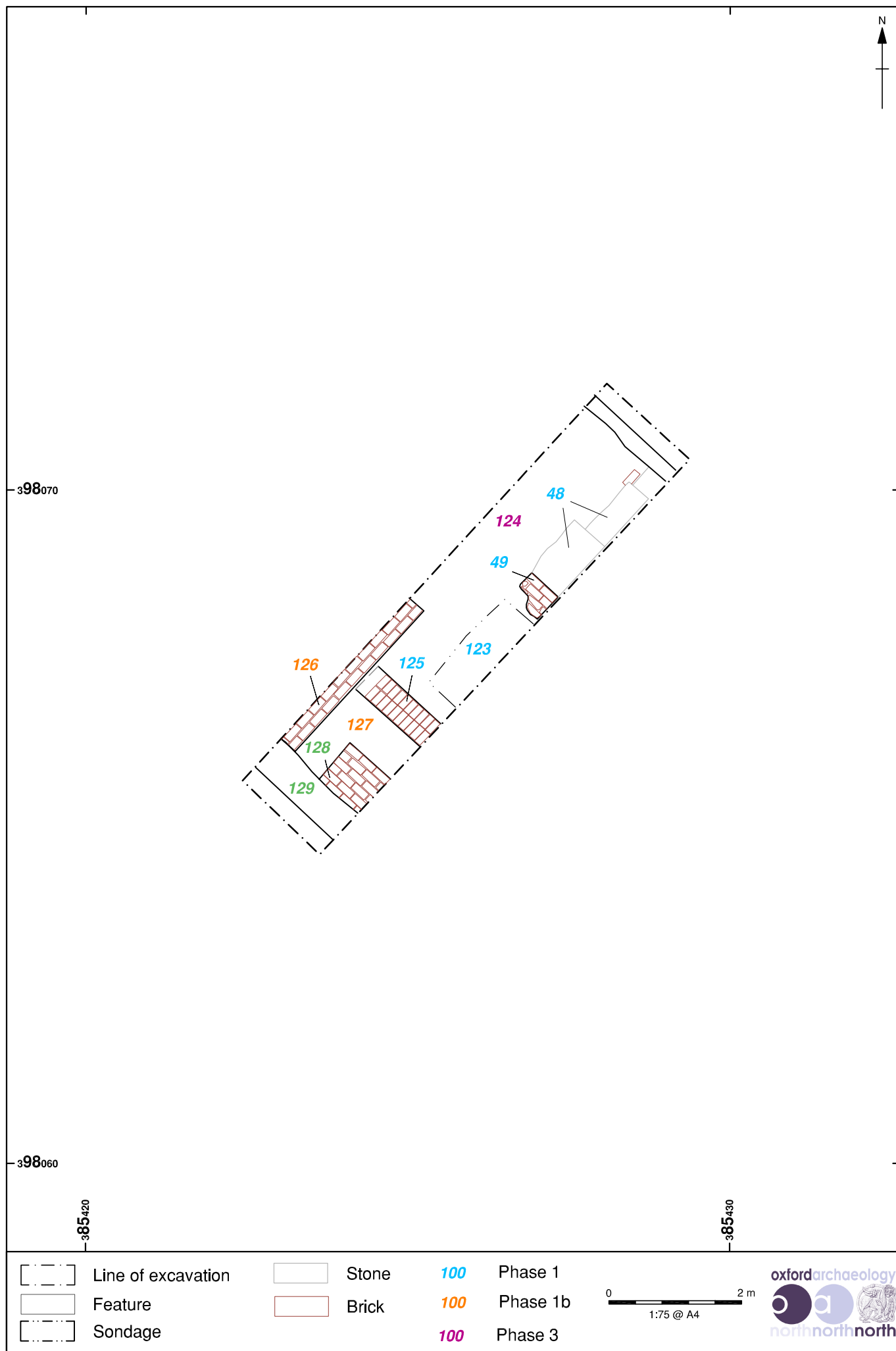


Figure 6: Phased plan of Trench 7





Figure 7: Phased plan of the excavation site (east) and Trench 2





Figure 8: Phased plan of the excavation site (west) and Trench 3

## APPENDIX 1: PROJECT DESIGN

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December 2009

Oxford  
Archaeology  
North

**POLLARD STREET,  
ANCOATS,  
MANCHESTER**



**ARCHAEOLOGICAL EVALUATION PROJECT DESIGN**

***Proposals***

*The following Project Design is offered in response to a request from Mr P Jackson, of CRE8 Management Ltd, for an archaeological evaluation in advance of the proposed development of land at the junction of Pollard Street with Great Ancoats Street, in the Ancoats area of Manchester.*



# 1 BACKGROUND

## 1.1 CIRCUMSTANCES OF PROJECT

- 1.1.1 CRE8 Management Ltd is managing a scheme of redevelopment of a site on the corner of Pollard Street and Great Ancoats Street in Manchester. The proposed development site is of some archaeological interest, as it was occupied from 1803/04 by a steam-powered cotton mill of considerable historical and archaeological importance. The archaeological potential of the site has been highlighted in a desk-based assessment carried out in 2006, which concluded that the site merited physical investigation prior to redevelopment (UMAU 2006).
- 1.1.2 In the light of the conclusions drawn by the desk-based assessment, the County Archaeologist for Greater Manchester, who provides planning advice on archaeological issues to Manchester City Council, has recommended that a programme of archaeological evaluation is carried out. It was recommended that this comprised the excavation of seven trenches, with a total combined length of some 135m, intended to establish the presence or absence of buried remains and assess their significance. The positions of the trenches have been targeted on elements of the mill's former steam-power plant, an infilled canal basin immediately to the rear of the mill, and other buildings that formed part of the early mill complex.
- 1.1.3 In December 2009, CRE8 Management Ltd requested that Oxford Archaeology North devise a Project Design for the required programme of archaeological evaluation. This has been formulated to meet the requirements of a verbal specification by the County Archaeologist for Greater Manchester.

## 1.2 OXFORD ARCHAEOLOGY

- 1.2.1 Oxford Archaeology is an educational charity under the guidance of a board of trustees with over 35 years of experience in archaeology, and can provide a professional and cost-effective service. We are the largest employer of archaeologists in the country (we currently have more than 300 members of staff), and can thus deploy considerable resources with extensive experience to deal with any archaeological obligations you or your clients may have. OA is an Institute for Archaeologists Registered Organisation (No 17). We have offices in Lancaster and Oxford, trading as Oxford Archaeology North (OA North) and Oxford Archaeology South (OA South) respectively, enabling us to provide a truly nationwide service. All work on the project will be undertaken in accordance with relevant professional standards, including:
- IfA's *Code of Conduct* (1999); *Code of Approved Practice for the Regulation of Contractual Arrangements in Field Archaeology* (1999); *Standard and Guidance for Archaeological Evaluations* (1999);
  - English Heritage's *Management of Archaeological Projects*, 1991;
  - The European Association of Archaeologists *Principles of Conduct for Archaeologists Involved in Contract Archaeological Work* (1998).

- 1.2.1 OA North has unrivalled experience in the assessment, evaluation and excavation of former industrial sites, particularly in the context of Manchester. We have an extensive portfolio of excavating the buried remains of former textile mills in Manchester, including Salvins' Factory, New Islington Mill, and Waller's Mill as part of the New Islington Millennium Village, Moore's Mill on the New Islington Wharf development, Peter Drinkwater's Mill and Shepley Street Mill in Piccadilly, and the Bengal Street Mill in Ancoats to name but a few. Our excavations at A & G Murray's Mills in Ancoats also involved placing evaluation trenches across the infilled private canal basin, whilst we have also excavated sections the former Pott Street canal arm at New Islington, and the Bengal Street canal arm in Ancoats.

## **2 AIMS AND OBJECTIVES**

### **2.1 ACADEMIC AIMS**

- 2.1.1 The main research aim of the investigation, given the commercial nature of the development, will be to establish the presence or absence of buried archaeological remains on the site and, if present, characterise the level of preservation and significance, and provide a good understanding of their potential.

### **2.2 OBJECTIVES**

- 2.2.1 The objectives of the project may be summarised as follows:

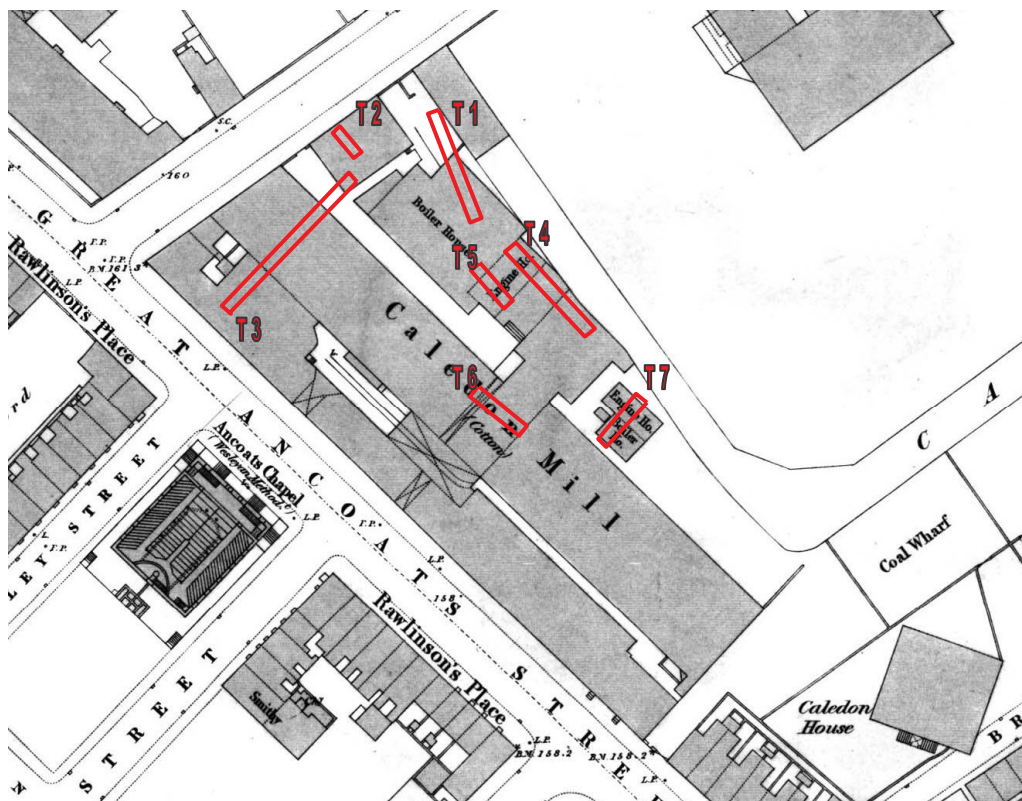
- to determine the presence, character, and extent of the original power-plant buildings, shown on early maps of the site;
- to determine the presence, character, and extent of the mid nineteenth-century engine and boiler house, shown on the Ordnance Survey map of 1849;
- to determine the presence, character, and extent of the canal basin that is shown immediately to the rear of the mill on Bancks & Co's map of 1831;
- to determine the presence, character, and extent of the original mill block;
- to determine the presence, character, and extent of the original buildings in the north-western part of the site;
- to inform a decision as to whether further archaeological investigation will be required in advance of development ground works.

### 3 METHOD STATEMENT

3.1 The following work programme is submitted in line with the aims and objectives summarised above, and in accordance with the requirements of the Greater Manchester County Archaeologist.

#### 3.2 EVALUATION

3.2.1 **General Methodology:** it is proposed that the site be investigated initially via seven trenches, with a combined total length of approximately 135m.



*Extract from the Ordnance Survey 60": 1 mile map of 1848, showing proposed trench location (approximate)*

3.2.2 *Trench 1:* will be 22m in length, will be placed across the former canal basin and as shown on Bancks & Co's map of 1831, the western part of the boiler house named on the Ordnance Survey map of 1848.

3.2.3 *Trench 2:* will be 13m in length, and placed across the north-western part of the original mill block.

3.2.4 *Trench 3:* will be 30m in length, placed at a right angle to Trench 2, and will provide a section across the early spinning block, the mill courtyard, and the mid nineteenth-century extension to the cotton rooms along the Great Ancoats Street frontage.



- 3.2.5 *Trench 4:* will be 25m in length, and will investigate the buried remains of the steam-power plant features named on the Ordnance Survey map of 1848. The trench will be excavated inside the modern building that occupies the site.
- 3.2.6 *Trench 5:* will be 15m long, placed parallel to Trench 4, and will similarly investigate the buried remains of the engine house named on the Ordnance Survey map of 1848. The trench will be excavated inside the modern building that occupies the site.
- 3.2.7 *Trench 6:* will be 15m in length, and will be placed across the footprint of the original mill block. The trench will be excavated inside the modern building that occupies the site.
- 3.2.8 *Trench 7:* will be 15m long, and will be placed across the mid nineteenth-century engine and boiler house named on the Ordnance Survey map of 1848.
- 3.2.9 Excavation of the modern ground surface, which comprises tarmac externally and concrete internally, will be undertaken by a machine of appropriate power using a toothed bucket and, where necessary a breaker. The uppermost levels of overburden/demolition material will then be removed using the same machine, but fitted with a toothless ditching bucket, to the top of the first significant archaeological level. The work will be supervised closely by a suitably experienced archaeologist. Spoil from the excavation will be stored adjacent to the trench, and will be backfilled upon completion of the archaeological works.
- 3.2.10 Machine excavation will then be used to define carefully the extent of any surviving foundations, floors, and other remains. Thereafter, structural remains will be cleaned manually to define their extent, nature, form and, where possible, date. It should be noted that no archaeological deposits will be entirely removed from the site. If the excavation is to proceed below a depth of 1.2m, then the trenches will be widened sufficiently to allow the sides to be stepped in.
- 3.2.11 All information identified in the course of the site works will be recorded stratigraphically, using a system adapted from that used by the Centre for Archaeology Service of English Heritage. Results of the evaluation will be recorded on *pro-forma* context sheets, and will be accompanied with sufficient pictorial record (plans, sections and both black and white and colour photographs) to identify and illustrate individual features. Primary records will be available for inspection at all times.
- 3.2.12 **Context Recording:** all contexts will be recorded using *pro-forma* sheets, and details will be incorporated into a Harris matrix. Similar object record and photographic record *pro-formas* will be used. All written recording of survey data, contexts, photographs, artefacts and ecofacts will be cross-referenced from *pro-forma* record sheets using sequential numbering.
- 3.2.13 **Photography:** a full and detailed photographic record of individual contexts will be maintained and similarly general views from standard view points of

the overall site at all stages of the evaluation will be generated. Photography will be undertaken using 35mm cameras on archivable black and white print film as well as colour transparency, and all frames will include a visible, graduated metric scale. Extensive use of digital photography will also be undertaken throughout the course of the fieldwork for presentation purposes. Photographs records will be maintained on special photographic *pro-forma* sheets.

- 3.2.14 **Planning:** the precise location of the evaluation trenches, and the position of all archaeological structures encountered, will be surveyed by EDM tacheometry using a total station linked to a pen computer data logger. This process will generate scaled plans within AutoCAD, which will then be subject to manual survey enhancement. The drawings will be generated at an accuracy appropriate for 1:20 scale, but can be output at any scale required. Sections will be manually drafted as appropriate at a scale of 1:10. All information will be tied in to Ordnance Datum.
- 3.2.15 Human remains are not expected to be present, but if they are found they will, if possible, be left *in situ* covered and protected. If removal is necessary, then the relevant Home Office permission will be sought, and the removal of such remains will be carried out with due care and sensitivity as required by the *Burials Act 1857*.
- 3.2.16 Any gold and silver artefacts recovered during the course of the excavation will be removed to a safe place and reported to the local Coroner according to the procedures relating to the Treasure Act, 1996.
- 3.2.17 **Finds policy:** finds recovery and sampling programmes will be in accordance with best practice (following current Institute for Archaeologists guidelines) and subject to expert advice in order to minimise deterioration. OA North employs in-house artefact and palaeoecology specialists, with considerable expertise in the investigation, excavation, and finds management of sites of all periods and types, who are readily available for consultation. Finds storage during fieldwork and any site archive preparation will follow professional guidelines (UKIC). Emergency access to conservation facilities is maintained by OA North with the Department of Archaeology, the University of Durham. Samples will also be collected for technological, pedological and chronological analysis as appropriate. OA North employs palaeoecology and soil micromorphology specialists with considerable expertise in the investigation, excavation and analysis of sites of all periods and types, who are readily available for consultation.

### **3.3 HEALTH AND SAFETY**

- 3.3.1 Full regard will be given to all constraints during the course of the project. OA North provides a Health and Safety Statement for all projects and maintains a Safety Policy. All site procedures are in accordance with the guidance set out in the Health and Safety Manual compiled by the Standing Conference of Archaeological Unit Managers.
- 3.3.2 OA North undertakes to safeguard, so far as is reasonably practicable, the health, safety and welfare of its staff and of others who may be affected by our work. This applies in particular to providing and maintaining suitable premises, ensuring the safety of all equipment supplied by the Company, and providing all reasonable safeguards and precautions against accidents. OA North will also take all reasonable steps to ensure the health and safety of all persons not in their employment, such as volunteers, students, visitors, and members of the public (this includes trespassers). OA North will ensure that no one suffers injury because of dangers arising from the state of the premises, or things done, or omitted to be done, on the premises.
- 3.3.3 OA North is fully familiar with and will comply with all current and relevant legislation, including, but not limited to:
- The Health and Safety at Work Act (1974);
  - Management of Health and Safety at Work Regulations (1999);
  - Manual Handling Operations Regulations 1992 (as amended in 2002);
  - The Construction (Design and Management) Regulations (2007);
  - The Control of Asbestos Regulations (2006);
  - The Workplace (Health, Safety and Welfare) Regulations (1992);
  - Construction (Health, Safety and Welfare) Regulations (1996);
  - The Health and Safety (Miscellaneous Amendments) Regulations (2002);
  - The Work at Height Regulations (2005);
  - The Control of Substances Hazardous to Health Regulations (2002);
  - The Health and Safety (First-Aid) Regulations (1981);
  - The Regulatory Reform (Fire Safety) Order (2005);
  - The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (1995),
  - The Provision and Use of Work Equipment Regulations (1998);
  - Lifting Operations and Lifting Equipment Regulations (1998).
- 3.3.2 OA North has professional indemnity to a value of £2,000,000, employer's liability cover to a value of £10,000,000 and public liability to a value of £15,000,000. Written details of insurance cover can be provided if required.
- 3.3.3 Normal OA North working hours are between 9.00 am and 5.00 pm, Monday to Friday, though adjustments to hours may be made to maximise daylight working time in winter and to meet travel requirements. It is not normal practice for OA North staff to be asked to work weekends or bank holidays and

should the Client require such time to be worked during the course of a project a contract variation to cover additional costs will be necessary.

### 3.4 OTHER MATTERS

- 3.4.1 Access to the site will be arranged via the Client/main contractor.
- 3.4.2 The costings given do not allow for the erection of fencing to enclose the evaluation trenches, as it is assumed that the Client/main contractor will provide a secure enclosed area for the archaeological work to take place within.
- 3.4.3 The trenches will be backfilled upon completion of the archaeological works. However, paved areas and tarmac surfaces removed during the course of the evaluation will not be reinstated to their current standard.
- 3.4.4 The Client/main contractor is asked to provide OA North with information relating to the position of live services on the site. OA North will use a cable detecting tool in advance of any machine excavation.

### 3.5 POST-EXCAVATION AND REPORT PRODUCTION

- 3.5.1 **Archive:** the results of the archaeological investigation will form the basis of a full archive to professional standards, in accordance with current English Heritage guidelines (*The Management of Archaeological Projects*, 2nd edition, 1991) and the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990). 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 IfA 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.
- 3.5.2 The paper and finds archive for the archaeological work undertaken at the site will be deposited with the Science and Industry Museum at Manchester, as this is the nearest museum which meets Museums' and Galleries' Commission criteria for the long term storage of archaeological material (MGC 1992). This archive can be provided in the English Heritage Centre for Archaeology format, both as a printed document and on CD (as appropriate). The archive will be deposited with the museum within six months of the completion of the fieldwork. Except for items subject to the Treasure Act, all artefacts found during the course of the project will be donated to the receiving museum.
- 3.5.3 **Report:** four copies of a bound and collated final report will be submitted to the Client within six weeks of the completion of the fieldwork. Further copies will be sent to the Manchester Planning Department, the County Archaeologist, the Greater Manchester Sites and Monuments Record, and the Museum of Science and Industry at Manchester. The final report will include a copy of this project design, and indications of any agreed departure from that



design. It will include an historical and archaeological background to the study area, an outline methodology of the investigation, and present, summarise, assess, and interpret the results of the programme of archaeological works detailed above. It will also include an assessment of the finds, which will be accompanied by relevant proposals for detailed finds analysis and conservation with costs. In addition, recommendations for any further mitigation works and details of the final deposition of the project archive will also be made.

- 3.5.4 A summary of the results produced from the archaeological investigation will be published in the CBA North West magazine, although a more detailed article will be provided should the results be of sufficient merit.

- 3.5.4 **Confidentiality:** the final report is designed as a document for the specific use of the Client, and should be treated as such; it is not suitable for publication as an academic report, or otherwise, without amendment or revision. Any requirement to revise or reorder the material for submission or presentation to third parties beyond the project brief and project design, or for any other explicit purpose, can be fulfilled, but will require separate discussion and funding.

## 4 WORK TIMETABLE

- 4.1 A two-week period should be allowed to excavate, record and backfill the evaluation trenches.
- 4.2 A report will be submitted within six weeks of the completion of the fieldwork.
- 4.3 OA North can execute projects at very short notice once an agreement has been signed with the Client.

## 5 STAFFING PROPOSALS

- 5.1 The project will be under the overall charge of **Ian Miller BA FSA** (OA North Senior Project Manager) to whom all correspondence should be addressed. Ian has over 20 years experience of commercial archaeology, and has a particular interest in the archaeology of the Industrial Period, and particular that of Greater Manchester and Lancashire. Ian has been managing industrial archaeology projects since 1993, when he directed the excavation and survey of the Netherhall Iron Works in Maryport, and undertook the subsequent analysis and publication of the results. He has also edited a monograph dedicated to the alum industry of north-east Yorkshire, which arose from the results of the survey excavation of Carlton Alum Works. More recently, Ian managed the excavation of the Percival, Vickers & Co flint glass works in Manchester, and the excavation of the River Street Iron Works in Rochdale. He was also responsible for managing the archaeological elements of the Murrays' Mills Major Repairs Project in Manchester, which culminated in the production of an academic monograph of the steam-powered mills in the Ancoats area of Manchester. He has also managed many other evaluations and excavations of former industrial sites in Manchester.

- 5.2 His role will be to ensure that the project design is implemented within the framework of the Project Objectives. He will be responsible for all aspects of staff and resource logistics, ensuring the smooth running of the project programme. He will liaise with the Client and County Archaeologist with regard to progress, and will maintain relationships with other contractors.
- 5.3 The evaluation is likely to be undertaken by **Sean McPhillips BA** (OA North Project Officer). Sean is an highly experienced field archaeologist, who has a particular interest in Industrial Archaeology, and especially that of Manchester. He recently directed the archaeological investigation of a complex of textile mills as part of the New Islington Millennium Village Scheme in Manchester, and Moore's Mill at New Islington Wharf. Sean also played a key role in the excavations at Calprina Works, Stalybridge, and Macintosh Mill, Manchester.
- 5.4 It is not possible to provide details of specific technicians that will be involved with the fieldwork at this stage, but all shall be suitably qualified archaeologists with proven relevant experience. It is anticipated that up to three technicians will be required during the course of the fieldwork.
- 5.5 Assessment of any finds recovered from the evaluation will be undertaken by OA North's in-house finds specialist **Christine Howard-Davis BA** (OA North Finds Manager). Christine has extensive knowledge of all finds of all periods from archaeological sites in northern England, and is a recognised expert in the analysis of post-medieval artefacts.

## **6 MONITORING**

- 6.1 Monitoring meetings will be established with the Client and the archaeological curator at the outset of the project. Monitoring of the project will be undertaken by the Greater Manchester County Archaeologist, or his representative, who will be afforded access to the site at all times.

## APPENDIX 2: CONTEXT LIST

Ctx	Site sub div	Description	Phase
1	Trench 1	Hand-made brick wall exposed at the base of the sondage. Possibly represents part of a building adjacent to the canal arm	1
2	Trench 1	Brick surface measuring three strings wide extending east beyond the limit of excavation	2
3	Trench 1	North-east/south-west-aligned narrow brick wall, white washed on southern face	2
4	Trench 1	North-east/south-west-aligned narrow brick wall, closely similar to wall 3	2
5	Trench 1	Flue aligned north/south along the eastern side of the trench	1
6	Trench 1	Eastern wall of flue 5	1
7	Trench 1	Western wall of flue 5	1
8	Trench 1	Culvert overlying flue 5	1
9	Trench 1	Roof of flue 5	1
10	Trench 1	Rectangular-shaped stone machine base	2
11	Trench 1	Ceramic drain north/south aligned	3
12	Trench 3	Western wall of east range (same as wall 139)	1
13	Trench 3	Partition wall within east range, did not continue beyond wall 47	1
14	Trench 3	Concrete floor. sealed wall 13 and overlaid block 80	3
15	Trench 3	Group number for a row of two square stone blocks	2
16	Trench 3	Upright drain cavity	1
17	Trench 3	Cobble surface	1
18	Trench 3	Natural clay	-
19	Trench 4	Brick foundation or southern wall of the engine house	1
20	Trench 4	East/west-aligned brick wall of engine house	1
21	Trench 4	Buttress against wall 20	1
22	Trench 4	North/south-aligned brick partition bonded to wall 21	1
23	Trench 4	Contaminated clay located south of wall 20	1
24	Trench 2	North/south-aligned wall along the western side of trench	1
25	Trench 2	North/south-aligned wall abutted by wall 24	1
26	Trench 2	Group number for north-east./south-west-aligned flue	1
27	Excavation	Group number for north/south aligned flue, post dated flue 26	1
28	Excavation	Manhole	3
29	Excavation	Eastern wall of flue 26	1
30	Excavation	Roof of flue 26	1
31	Excavation	Western wall of flue 26	1
32	Excavation	Bridging wall between walls 24 and 25	1

33	Excavation	Surface between walls <b>24</b> and <b>25</b>	1
34	Excavation	Narrow wall between wall <b>31</b> and <b>25</b>	1
35	Excavation	Western wall of flue <b>27</b> (same as <b>113</b> )	1
36	Excavation	Roof of flue <b>27</b>	1
37	Excavation	Possible former threshold through walls <b>24</b> and <b>25</b>	1
38	Excavation	Buttress along the eastern face of wall <b>24</b>	1
39	Excavation	North-west/south-east-aligned brick wall butting buttress <b>38</b>	1
40	Excavation	Natural yellow clay beneath wall <b>41</b>	0
41	Excavation	Clay levelling	1
42	Excavation	Floor of flue <b>27</b>	1
43	Excavation	Redeposited clay beneath wall <b>34</b>	1
44	Excavation	Northern wall of flue <b>27</b>	1
45	Excavation	North-east/south-west-aligned brick wall overlying blocks <b>53</b> and <b>54</b>	3
46	Excavation	North-east/south-west-aligned brick wall identical in fabric with wall <b>45</b> , spaced 1m apart. Sealed beneath rubble <b>58</b>	3
47	Excavation	East/west-aligned brick wall, identical in fabric with wall <b>46</b> , partition wall pertaining to a later phase of the building	3
48	Trench 7	Sandstone blocks at the eastern end of the trench, possibly representing part of the original engine house	1
49	Trench 7	Moulded and refractory brick wall along the western edge of block <b>48</b>	1
50	Excavation	Dark brown clay layer containing abundant fuel waste and slag used as ballast beneath rail track <b>133</b> and <b>135</b> , and redeposited beneath cobble surface <b>138</b>	2/3
51	Excavation	Modern drain cutting through wall <b>139</b>	3
52	Excavation	Not used	
53	Excavation	Stone block that is part of a group including <b>15</b> , <b>80</b> , <b>85</b> and <b>86</b> . These pertain to a redevelopment of the mill in the late nineteenth century	2
54	Excavation	Stone block that is part of a group including <b>15</b> , <b>80</b> , <b>85</b> and <b>86</b> . These pertain to a redevelopment of the mill in the late nineteenth century	2
55	Excavation	Stone capping above culvert <b>56</b>	1
56	Excavation	Stone-lined culvert extending north/south beneath wall <b>45</b> representing water management pertaining to an early phase of the mill	1
57	Excavation	Concrete floor contained within walls <b>24</b> , <b>45</b> and <b>79</b> , representing the latest phase of the building	3
58	Excavation	Compacted rubble sealed beneath floor <b>57</b> , seemingly used for levelling	3
59	Excavation	Partition wall constructed from machine cut brick laid above floor <b>57</b>	3
60	Excavation	East/west-aligned brick wall overlying floor <b>61</b> but probably contemporary construction	1
61	Excavation	Stone floor surface extending east from capping <b>55</b> above culvert <b>56</b>	1
62	Excavation	Possible original eastern wall of culvert <b>56</b>	1
63	Excavation	Clay and rubble backfill of culvert <b>56</b>	2



64	Excavation	North-east/south-west-aligned wall forming the western wall of culvert <b>56</b>	1
65	Excavation	East/west-aligned brick wall extending west from foundation <b>67</b> , keyed with wall <b>66</b>	1
66	Excavation	North/south aligned brick wall keyed with wall <b>65</b> , surrounding a small square-shaped heat-affected chamber <b>68</b>	1
67	Excavation	Large brick foundation unevenly laid/stacked formed by mixture of fire and hand-made brick	2
68	Excavation	Sunken floored chamber attached to the western side of <b>67</b>	1
69	Excavation	East/west-aligned brick and concrete wall sitting above the upper surface of <b>67</b> . Probably associated with post cotton mill phase	2
70	Excavation	Narrow wall extending east/west and dog-legging to the north sealed beneath wall <b>69</b> , extending toward arch <b>72</b> running beneath wall <b>46</b> , maybe part of an abandoned culvert	1
71	Excavation	North/south-aligned brick wall cut by wall <b>70</b> running parallel to surface <b>74</b> . Possibly represents a former partition in the early phase of the mill	1
72	Excavation	Arch within wall <b>46</b> . Probably served as a roof of a culvert extending beneath wall <b>46</b> and <b>47</b>	3
73	Excavation	North/south-aligned wall constructed from re-used hand-made brick rendered with slate parallel with wall <b>70</b> , forming a channel. Post-dates arch <b>72</b> , sits above foundation <b>74</b>	1
74	Excavation	Square-shaped brick foundation components including wall <b>71</b> , drain <b>75</b> and foundation <b>77</b> . Function unknown	1
75	Excavation	North/south aligned concave brick lined drain attached to foundation <b>74</b> and <b>77</b> . Filled with oily silt	1
76	Excavation	Concrete infill of construction cut of block <b>54</b> , cuts <b>75</b>	2
77	Excavation	Split level lime mortared brick foundation along the eastern side of <b>75</b> , contemporary with <b>74</b> and <b>75</b> . Possible engine base	1
78	Excavation	Accumulated clay located along the eastern side of <b>77</b> , sealed beneath rubble <b>58</b>	2
79	Excavation	Arch within wall <b>47</b> , identical to arch <b>72</b> . Supported by the foundations beneath <b>15</b> and <b>80</b>	3
80	Excavation	Western most stone block, identical to block <b>15</b> , base exposed beneath wall <b>47</b> , truncated wall <b>13</b>	2
81	Excavation	Well	1
82	Excavation	Retaining wall for well	1
83	Excavation	Square brick foundation	1
84	Excavation	Cruciform-shaped brick foundation representing part of the original working floor of the mill	1
85	Excavation	Westernmost stone foundation block	2
86	Excavation	Easternmost stone foundation block	2
87	Excavation	Sunken brick floor of chamber at the eastern limit of foundation <b>84</b>	1
88	Excavation	Concrete infill beneath foundation <b>85</b>	2
89	Excavation	Concrete infill beneath foundation <b>86</b>	2

90	Excavation	East/west-aligned brick wall underlying in fill <b>89</b> . Possibly associated with early phase of the mill	1
91	Excavation	Brick surface running beneath wall <b>93</b> and <b>96</b>	1
92	Excavation	Brick surface butting the northern side of wall <b>99</b>	1
93	Excavation	North./south-aligned brick wall laid above floor <b>91</b>	1
94	Excavation	East/west-aligned brick wall attached to wall <b>95</b>	1
95	Excavation	East/west-aligned brick wall sloping onto surface <b>92</b>	1
96	Excavation	North/south-aligned brick wall cut by wall <b>45</b>	1
97	Excavation	East/west-aligned brick wall capped with stone (floor?)	1
98	Excavation	East/west-aligned brick wall butted by surface <b>91</b>	1
99	Excavation	East/west-aligned brick wall keyed into wall <b>97</b> , butting wall <b>96</b>	1
100	Excavation	Levelling clay butting the northern face of wall <b>45</b>	1
101	Excavation	Sandstone block in northern part of the mill	1
102	Excavation	Brick surface located beneath foundation <b>103</b>	1
103	Excavation	Brick load-bearing foundation overlying <b>101</b> and <b>102</b> across the northern part of the mill	1
104	Excavation	Sandstone block keyed into the western side of <b>103</b>	1
105	Excavation	Brick and stone block foundation for possible machine, overlaid by <b>104</b> .	1
106	Excavation	Row of four ashlar between steps <b>119</b> and foundation <b>105</b> along the western edge of <b>105</b>	1
107	Excavation	Row of two stone steps built into the eastern side of the stair tower	1
108	Excavation	Brick surface (decayed) with residual adhered iron, possible flue that extended east beneath wall <b>24</b>	1
109	Excavation	Northern external wall of mill. The south-eastern face reinforced with bricks with wear marks from machinery	1
110	Excavation	East/west-aligned iron pipe at the southern end of the flues	1
111	Excavation	Brick floor surface attached to wall <b>44</b>	1
112	Excavation	Cast iron pipe entering the roof <b>36</b> of flue <b>27</b>	1
113	Excavation	Western retaining wall of flue <b>27</b> (same as <b>35</b> )	1
114	Excavation	Narrow east/west-aligned channel along the ground surface exiting flue <b>27</b>	1
115	Excavation	North-west/south-east-aligned wall repointed after the insertion of pipe beneath wall	1
116	Excavation	Narrow wall close to flue <b>27</b> detached from the western side of wall <b>115</b> after the insertion of a cast-iron pipe cutting the wall below its upper surface	1
117	Excavation	Crushed brick and cinder deposit along the eastern side of flue <b>27</b> at its northern end, compacted to create a level surface beneath the tarmac	3
118	Excavation	East/west-aligned brick wall within the southern end of flue <b>27</b>	1
119	Excavation	Semi-circular-shaped brick structure perhaps representing a stair tower	1
120	Excavation	North-western extension of structure <b>120</b>	1

121	Excavation	Foundation of structure <b>119</b>	1
122	Excavation	Brick surface located directly east of structure <b>119</b> , truncated by block <b>85</b>	1
123	Trench 7	Natural clay exposed at a depth of 1.6m within a sondage	-
124	Trench 7	Ash and rubble deposit butting block <b>48</b> and wall <b>49</b>	3
125	Trench 7	North/south-aligned brick wall truncated by wall <b>126</b>	1
126	Trench 7	East/west-aligned brick wall measuring 0.25m wide formed from re-used moulded brick bonded with lime mortar	1
127	Trench 7	Orange brown clay used to fill the gap between structures <b>125</b> , <b>128</b> and <b>129</b>	1
128	Trench 7	Wall of machine-made brick bonded with hard grey mortar, measuring 0.7m long	2
129	Trench 7	North/south-aligned brick wall heavily compacted with tarmac	3
130	Excavation	Cast-iron railway track	2
131	Excavation	Cast-iron railway track	2
132	Excavation	Cast-iron sleeper fixing	2
133	Excavation	Cast-iron rail cradle	2
134	Excavation	Wooden sleeper	2
135	Excavation	Sleeper	2
136	Excavation	Cobble sets	2
137	Excavation	Cast-iron railway track	2
138	Excavation	Cobble surface	3
139	Excavation	North/south-aligned brick wall forming the western external wall of the mills eastern range	1
140	Trench 1	Yellow clay representing a natural geological horizon	0
141	Trench 1	Orange gravel above clay <b>140</b>	3
142	Watching brief	Brick surface butting the possible continuation of wall <b>20</b> in the watching brief test pit	1
143		Not used	0
144	Excavation	Brick buttress against wall <b>139</b>	1