



University of
Salford
MANCHESTER

Archaeological Excavation

Vesta Street,
New Islington,
Ancoats,
Manchester

Client:

Manchester Life
Development Company 2
Ltd

Planning Ref:

115947/FO/2017

Technical Report:

S Tamburello

Report No:

SA/2017/60



Site Location: The study area is bounded by Vesta Street, Old Mill Street and a new section of canal in the New Islington area of Ancoats, Manchester

NGR: Centred on NGR 385370 398310

Project: Vesta Street, New Islington, Ancoats, Manchester

Planning Ref: 115947/FO/2017

Internal Ref: ELCA1087

Report No: SA/2017/60

Prepared for: Manchester Life Development Company 2 Ltd

Document Type: Archaeological Excavation Report

Version: Version 1

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Contents

Summary	1
1. Introduction.....	2
2. Historical Background	4
3. Methodology	7
4. Excavation Results.....	8
5. Discussion.....	19
Acknowledgements.....	25
Sources.....	26
Appendix 1: Figures.....	28

Summary

Manchester Life Development Company 2 Ltd has obtained planning consent (Ref: 115947/FO/2017) to redevelop a brownfield site bounded by Vesta Street, Mill Street and a branch of the Ashton Canal in the New Islington area of Ancoats, Manchester (centred on NGR 385370 398310). The consented scheme allows for the construction of 171 residential units and ancillary amenity space, including 168 apartments. The delivery of these proposals will necessitate considerable earth-moving works, which will impact on buried archaeological remains.

The development area lies within the Ancoats area of Manchester, generally considered to be the world's first true industrial suburb. The application of steam power to the factory-based textile industry, achieved successfully in the late 18th century, resulted in a massive expansion of production, and the erection of numerous new mills and associated textile-machinery works and iron foundries. The development area, however, remained undeveloped until c 1850 when William Fairbairn, a hugely influential 19th-century engineer, chose to expand his established engineering company in Ancoats, and built a new foundry and engineering works on the development site. The iron foundry was abandoned in the late 19th century and replaced with a four-storey mill that became known as York Mill.

In order to secure archaeological interests, Manchester City Council attached a condition (Condition 3) to planning consent that required a programme of archaeological works to be undertaken in advance of development. In the first instance, the site was subject to evaluation trenching, commissioned by Manchester Life Development Company 2 Ltd and carried out by Salford Archaeology in April 2017, which revealed some significant buried structural elements of the former iron foundry. In the light of these results, the Greater Manchester Archaeological Advisory Service recommended that further excavation was merited to ensure a detailed record of the buried remains was made prior to their ultimate loss, in line with the guidance provided by the National Planning Policy Framework.

The recommended excavation was carried out by Salford Archaeology in July 2017, and revealed some well-preserved remains of one of William Fairbairn & Son's mid-19th-century iron foundry and engineering works. The remains of internal brick surfaces were recorded together with a basement casting area, two refractory-brick lined features and the partial remains of a flue system. Excavation also showed that the construction of York Mill in the late 19th century had removed other elements of the foundry entirely. Buried remains of the York Mill had also been completely removed subsequently, presumably during the redevelopment of the site as a works depot in the late 1980s.

The excavation has enabled a detailed record of all the surviving archaeological remains on the site to be compiled in advance of development. Whilst the results are not of especial significance in isolation, they make an important contribution to the growing body of archaeological evidence for the development and character of a key industry in mid-19th-century Ancoats.

1. Introduction

1.1 Background

Manchester Life Development Company 2 Ltd has obtained planning consent (Ref: 115947/FO/2017) to redevelop a brownfield site bounded by Vesta Street, Mill Street and a branch of the Ashton Canal in the New Islington area of Ancoats, Manchester. The consented scheme allows for the construction of 171 residential units and ancillary amenity space, including 168 apartments within a part nine-, part eight- and part seven-storey block and three townhouses, car-parking provision, hard and soft landscaping, access and servicing and other associated works. The delivery of these proposals will necessitate considerable earth-moving works, which will impact on buried archaeological remains.

The site lies in the heart of New Islington (formerly the Cardroom Estate), which was identified in the late 1990s as one of English Partnerships (now the Homes & Communities Agency) 'Millennium Communities' that was to be delivered as a public/private partnership. A key component of this major regeneration scheme was the construction of a new section of canal that links the Rochdale Canal and the Ashton Canal, immediately to the north of the proposed development area (Plate 1).



Plate 1: Recent aerial view across the proposed development site, showing the recently opened section of canal that provides a link between the Rochdale and Ashton canals

In order to secure archaeological interests, Manchester City Council attached a condition (Condition 3) to planning consent that required a programme of archaeological works to be undertaken in advance of development. In the first instance, the wording of the condition required a programme of evaluation trenching, which was intended to establish whether any buried remains of archaeological interest survived *in-situ*, and thereby inform a decision as to the merits of implementing a strategy to mitigate the impact of development.

In April 2017, Manchester Life Development Company 2 Ltd commissioned Salford Archaeology to carry out the initial scheme of trenching, which revealed some significant buried structural elements of the former iron foundry. In the light of these results, the Greater Manchester Archaeological Advisory Service recommended that further excavation was merited to ensure a detailed record of the buried remains was made prior to their ultimate loss, in line with the guidance provided by the National Planning Policy Framework.

1.2 Location, Geology and Topography

The study area (centred on NGR 385370 398310) is situated within the New Islington area of Ancoats, which lies on the north-eastern side of Manchester city centre. The site is currently wasteland used as a temporary car park, bounded by Old Mill Street, Vesta Street and a new section of canal that links the Ashton-under-Lyne Canal and the Rochdale Canal. The centre of the site lies at a height of *c* 49m above Ordnance Datum (aOD).

The solid geology 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).

Topographically, the Manchester Conurbation as a region is within an undulating lowland basin, which is bounded by the Pennine uplands to the east and to the north. The region as a whole comprises the Mersey river valley (Countryside Commission 1998, 125), although the topography of the study area 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 19th century, and the topography of the valley has since been masked considerably by urban expansion.

2. *Historical Background*

2.1 *Introduction*

The following section is intended to provide a contextual background to the results obtained from the archaeological excavation.

2.2 *Development of Ancoats*

The study area is situated within the Ancoats area of Manchester. By the beginning of the 13th century, the area was known as *Elnecot*, derived from the Old English *ana cots* which means ‘lonely cottage’ (Cooper 2002, 13). A 14th-century document refers to Ancoats as one of eight hamlets within the township of Manchester, itself forming part of the Salford Hundred (Tait 1904). Ancoats retained a semi-rural aspect until the late 18th century, but by 1800 the area had been transformed into an effective industrial suburb (Miller and Wild 2007).

This transformation 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 (Little 2002, 31). William Green’s *Map of Manchester and Salford*, surveyed between 1787 and 1794, shows the focus for initial development to have been at the corner of Great Ancoats Street and Oldham Road, and depicts 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-iron pattern of streets being sold for development. The principle driving force of development was the national demand for textiles, particularly cotton, and the introduction of steam-powered spinning mills (Williams with Farnie 1992, 3).

The earliest textile factories in the area included several water-powered mills erected along Shooter’s Brook, to the south of Union (now Redhill) Street. There is some evidence to suggest, for instance, that New Islington Mill and Salvin’s Factory originated in the late 1780s as water-powered textile mills situated on the bank of Shooter’s Brook (Miller and Wild 2007). However, this was a small watercourse, and in seeking a solution to the inadequate power supplied to their waterwheels from the brook, some manufacturers experimented with steam power. Notably, John Kennedy is reputed to have first applied steam power to one of his spinning mules whilst renting space at Salvin’s Factory in 1793 (Lee 1972, 9). The application of steam power to the factory-based textile industry essentially resulted in a massive expansion of Ancoats as an industrial district of Manchester.

Numerous trades ancillary to textile manufacturing were also established in Ancoats during the 19th century, including iron foundries and engineering works to serve the textile industry. One of the most important firms was that established by William Fairbairn, which occupied several separate premises between the Rochdale and Ashton canals in Ancoats, with its main works and offices on Canal Street.

2.3 Development of the Study Area

Whilst the proposed development site is shown as undeveloped on the Ordnance Survey map of 1850 (surveyed in 1848-9), Adshead's map of 1851 shows a foundry and engineering works occupied by William Fairbairn & Sons to have been erected across the northern part of the site (Plate 2). William Fairbairn was a hugely influential 19th-century engineer in Ancoats, who set up business initially with James Lillie '...having hired a miserable shed for about twelve shillings a week' (Pole 1877, 112). After completing a highly successful contract with the leading local cotton-spinning firm, A & G Murray, in 1817, Fairbairn supplied all of the line shafting to McConnel & Kennedy's Sedgwick Mill, on an improved design that he had devised. Shortly after completing this contract, Fairbairn moved to new premises on Canal Street in Ancoats, where his business expanded greatly to become one of the leading engineering concerns in the country (Musson 1960, v).

Over the following years, Fairbairn & Sons expanded their business, and established additional premises in Ancoats, which included the foundry and engineering works within the present study area. A trade directory for 1863 lists Fairbairn & Sons as 'engineers and machinists', and accredits the firm with works on Canal Street, Mill Street and Mather Street in Ancoats, together with an office on Booth Street in the city centre (Slater 1863, 44). The same directory identifies the firm as manufacturers of locomotives and stationary engines at their Canal Street Works, and also as iron founders and millwrights. Curiously, the street index in this directory gives the address of the iron foundry in the study area as 16 Mill Street, which Fairbairn & Sons apparently shared with an earthenware dealer (*op cit*, 93).

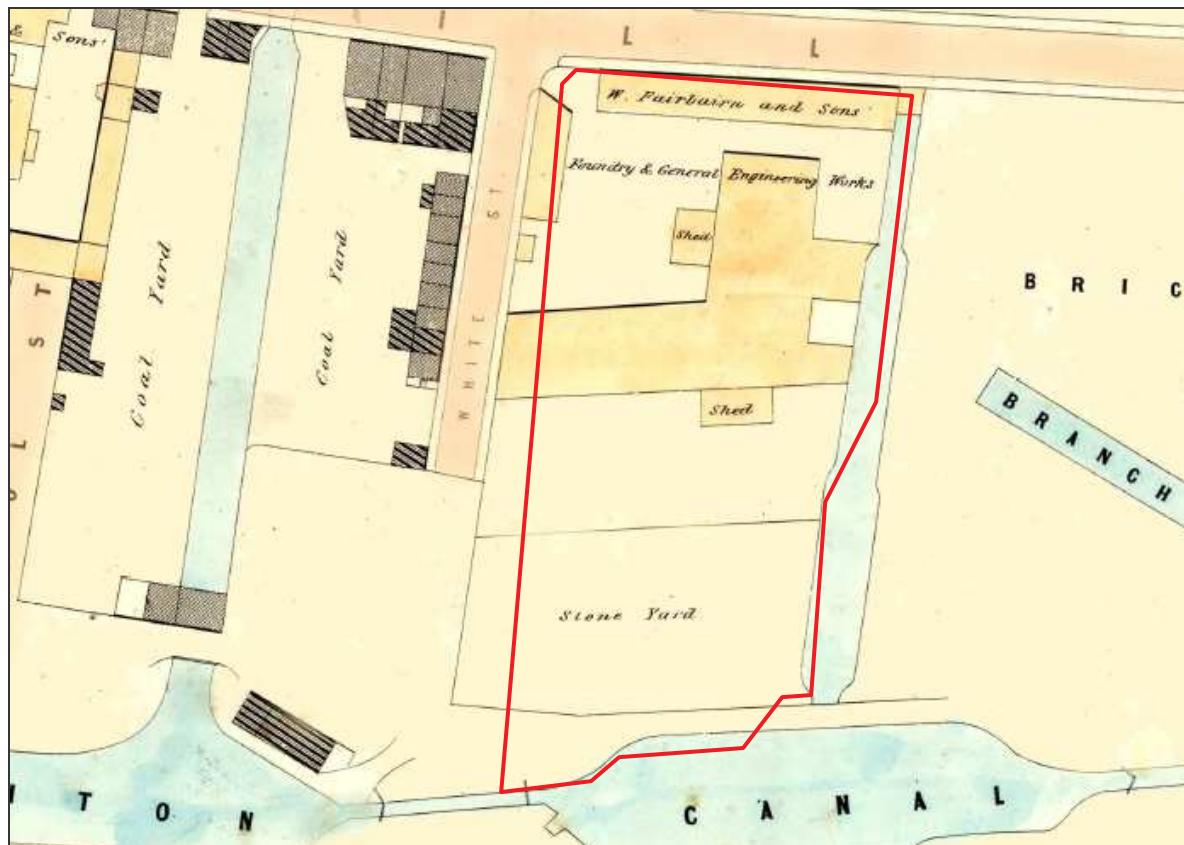


Plate 2: Extract from Adshead's map of 1851, showing the development area boundary

It is uncertain precisely when the iron foundry and engineering works was abandoned, although it is likely to have been around 1875 when the Fairbairn & Sons filed for liquidation, and notice was given of an auction of tools and machinery at the company's Canal Street Works (*Liverpool Mercury*, 1 October 1875). Whilst unlabelled buildings shown on the Ordnance Survey map of 1891 may have been part of the foundry, it is more likely that they represent a new phase of buildings on the site. The largest of these comprised a rectangular block with a chimney abutting the external south-western corner. This building is shown on the next edition of Ordnance Survey mapping, published in 1908, to have been expanded with an extension to the south-eastern side, enveloping the chimney marked on the 1891 map. An entry in a trade directory for 1909 indicates that the building was known as York Mill and was occupied by E Tweedale & Sons, cotton waste dealers (Slater 1909, 611).

A view of the study area is captured in an aerial photograph taken in 1949 (Plate 3). This clearly shows the four-storey building identified in documentary sources as York Mill, together with its attendant chimney. None of the buildings shown occupying the northern part of the development site correspond to the footprint of the iron foundry captured on Adshead map of 1851, suggesting that they had been largely cleared.

The Ordnance Survey map of 1891 shows the southern part of the development site to have contained a U-shaped range of single-depth buildings, which had been occupied in the 1870s by the Manchester Val de Travers Asphalte Paving Company Ltd, a company that supplied tarred limestone for road building and construction purposes (Slater 1879). However, the company applied for voluntary liquidation in 1884, and this part of the site was used subsequently as an eyelet factory and engineering works. The majority of the buildings occupying the site were demolished piecemeal between the early 1970s and the mid-1990s.

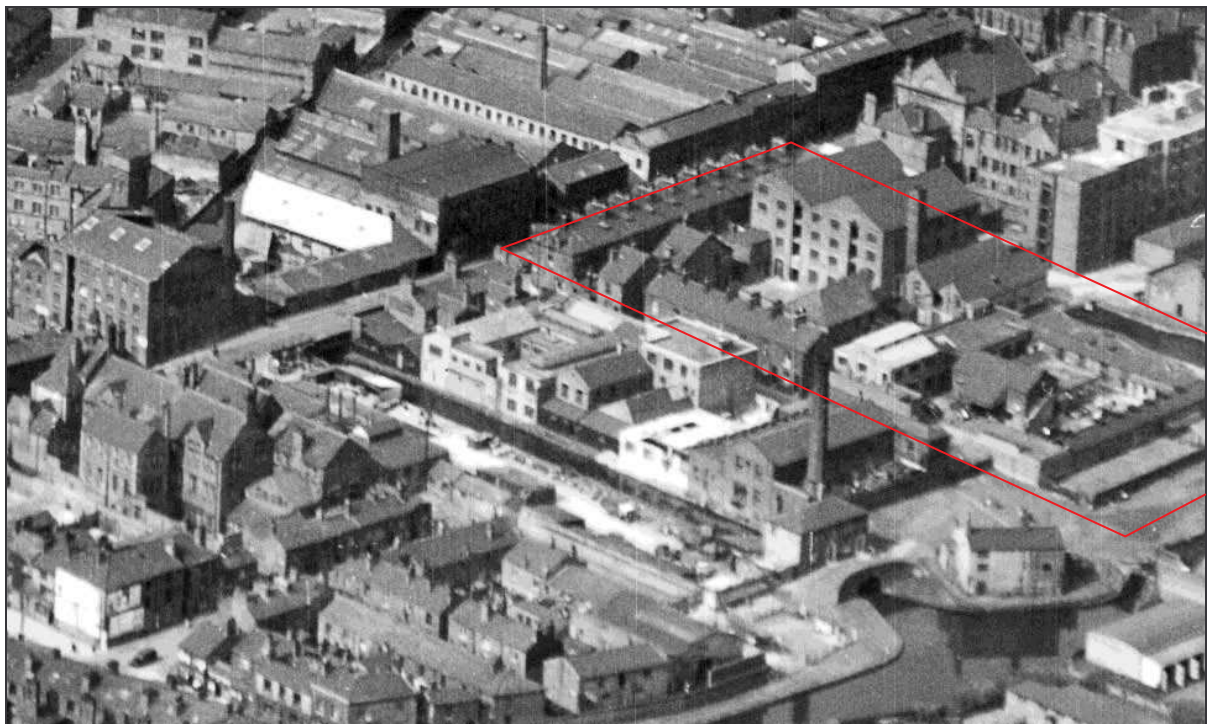


Plate 3: Aerial view across of the study area in 1949

3. Methodology

3.1 Excavation Methodology

Before excavation, the client provided Salford Archaeology with service plans for the area, and the position of the trench and surrounding areas were scanned with a cable avoidance tool to ensure that no live cables would be disturbed during the programme of works. Following the results of the initial evaluation, an open area measuring 30 x 18m was proposed across the middle of the development area. The detection of live services running into the middle of the site from the north-west boundary and the presence of deep concrete foundations, both presumed to relate to the late 20th-century work depot, meant that part of the proposed areas could not be excavated safely.

The trench was excavated using a tracked mechanical excavator with a 1.80m wide toothless ditching bucket down to the level of surviving archaeological features or natural geology. A breaker was used to initially remove areas of hard standing. The machine excavation was supervised by a professional archaeologist at all times.

3.2 Recording Methodology

Separate contexts were recorded individually on Salford Archaeology *pro-forma* trench sheets. The trench was located and planned by total station theodolite using EDM tacheometry. Levels were established using an Ordnance Datum height taken from a station used for the client's initial topographic survey of the site area.

Photography of all relevant phases and features were undertaken in digital format using a digital SLR camera. General working photographs were taken during the archaeological works, to provide illustrative material covering the wider aspects of the archaeological work undertaken.

All fieldwork and recording of archaeological features, deposits and artefacts were carried out to acceptable archaeological standards. All archaeological works carried out by Salford Archaeology are carried out to the standards set out in the Code of Conduct of the Chartered Institute for Archaeologists.

4. Excavation Results

4.1 Introduction

The excavation consisted of two trenches rather than the single proposed area due to the presence of live services and deep reinforced concrete foundations. Consequentially, Trench 1 consisted of an L-shaped trench (measuring 22 x 18m) aligned north-west/south-east and north-east/south-west along the eastern edges of the northern half of the development area (Plate 4). Trench 2 (11 x 6m) was aligned north-west/south-west along the western edge (Fig 2)

The trenches were excavated to a maximum depth of 1.25m, at which point the natural geology, comprising clay **00**, was observed.

Unless otherwise stated, all bricks mentioned in the text were hand-made and of varying sizes, although each roughly measured 230 x 110 x 70mm and were bonded with lime-based mortar. The trench was overlain by reinforced concrete **01** with a thickness of 0.25m, which had been lain over blue plastic sheeting. Below this was a layer of modern gravel levelling (**02**) of approximately 0.75m in depth.



Plate 4: General shot of the Trench 1 looking south

4.2 Trench 1

The north-west/south-east orientated arm of Trench 1 contained the most extensive surviving archaeological remains to be excavated (Figure 3). These included the remains of a brick floor (**03**) that was exposed at a depth of 0.8m below ground level, and beneath the modern concrete surface (**01**) and associated gravel levelling layer (**02**). The surface was aligned north-west/south-east along the north-eastern edge of the excavated trench (7 x 1.5m), continuing into the north-west and north-east limit of excavations. The fabric of the floor comprised a combination of hand-made red brick and yellow refractory brick. Patches of the surface had been worn smooth, and generally appeared to be heat affected, consistent with its location in the heart of the iron foundry.

To the south-west of the brick floor **03**, a number of walls formed an L-shaped basement area delineated by walls **04**, **05** and **06**. This sunken feature was orientated north-west/south-east along the south-western edge of Trench 1, and measured almost 5 x 2.5m with a narrower 1.25m wide passage at the south-western end extending north-east towards surface **03** (Plate 5).

The perimeter walls of the sunken feature, where visible, were three bricks wide (0.35m) and survived to a depth of 11 courses (1m). They were laid in an English Garden Wall pattern and bonded with a lime-based mortar. The three lower courses of the walls were stepped out to form a wider foundation which sat directly upon the natural clay (**00**). No floor was observed in this sunken feature, which rapidly filled with ground water upon excavation, precluding careful manual excavation. However, mechanical excavation of the fill revealed that it contained a clean fine, black silty sand (**07**), which was 0.5m deep and overlay a 0.15m thick layer of heat-affected clay (**08**) which in turn overlay natural clay (Plate 6). The presence of the black moulder's sand, and clear evidence for the high-temperature processing indicated by the heat-affected clay led to the positive identification of the sunken feature as a casting pit for the foundry.

The south-eastern wall (**06**) of the brick-lined casting pit, and the black moulder's sand infill (**07**), were overlain by a north-west/south-east-aligned brick wall (**09**) along the south-west edge of the excavated trench (Plate 6). This was constructed of hand-made bricks and bonded with a sandy grey mortar. The wall was just 0.24m wide, and survived to a length of 3m and to a height of 0.3m.



Plate 5: Internal brick surface 03 and casting pit walls 04, 05 and 06, looking south-west.



Plate 6: Wall 09 overlying the black moulder's sand infill (07) of the casting pit, looking south-west

Brick surface **03** was abutted at its south-eastern end by a square platform (**10**) composed of hand-made bricks, which was supported on its south-eastern exterior by a two-brick wide (0.45 x 0.35m) buttress (**12**). The platform measured 2.3 x 2.13m and was 0.56m deep, with a 0.8m wide and 0.50m deep concave channel (**11**) built through the centre (Plate 7).

Concave channel **11** was lined with three courses of yellow refractory brick laid to form a cylinder shape, enclosed on three sides and originally open at the south-west end (Plate 7). The channel was filled with fine black, silty sand (**13**) identical to that found within casting pit **07**, and similarly considered to be burnt moulder's sand used in the casting of iron objects. A bluish-green, copper alloy waste residue was found encrusted to the bricks around the opening at the south-west end (Plate 8).



*Plate 7: Brick platform **10** with concave refractory brick lined recess, looking south-west*



Plate 8: South-west-facing elevation of refractory brick-lined feature 10, brick surface 15 and the remnants of flue 37

A brick floor (15) extended for 2.3m to the south-west from the opening of feature 10, at a level of 0.05m below its base. The remnants of a 1m wide arced wall (37) comprising refractory brick, within the brickwork floor, suggests that originally a flue had passed across this area but had been removed subsequently and the layout reconfigured.

Brick surface 15 and the arced wall line of the original flue (37) were cut by a later flue (16) which extended south-west from the refractory brick-lined opening of feature 10 (Plate 9). After 5m, the flue curved slightly to the west at which point it was found to be truncated by deep modern concrete foundations (18). The internal passage of the flue (0.58m wide) was lined with a single skin yellow refractory brick, supported by up to six skins (0.35m – 0.65m) of normal hand-made brick on either side. The internal faces of the firebricks were blackened and encrusted with a soot residue and a bluish-green linear discolouration on the brick floor (15), indicating that the north-west side of the flue originally extended to the north-west side of feature 10 (Plate 8).

A rectangular brick platform (17), measuring 2 x 1.3 x 0.5m deep and constructed on a looser brick foundation, was situated to the north-west of flue 16 on a north-west/south-east orientation (Plate 10). Three courses (0.23m) of brick, lined internally with a single skin of yellow refractory bricks formed a 0.90m wide recessed channel through the platform, suggesting it may have functioned as a boiler housing bay. The south-east end of the platform had been truncated by the construction of flue 16 whilst the opposite north-west end had been truncated by north-east/south-west-aligned wall 22.



Plate 9: Looking north-east along flue 16 towards feature 10



Plate 10: Truncated platform 17, looking south-east

There appeared to have been several further alterations in addition to the realignment of flue **16** to the west of brick surface **03**, between the walls of the casting pit (**04**, **05** and **06**) and the concave feature **10** (Plate 7).

An L-shaped, stepped brick wall (**19**) overlay brick surface **15** and abutted the north-west side of the opening to feature **10**, blocking the northern route of the original flue **37**. The wall was 2m long on a north-east/south-west orientation with a 2m long north-west/south-east return at the south-western end. The top of the wall was 0.34m wide, widening to 0.54m as it stepped out in its lower courses. A subsequent block of stepped walling measuring 1.8 x 1.12m had been inserted within the internal corner of wall **19**, having truncated the south-east end of brick floor **03** to make sufficient space for the additional foundation courses. This wall alignment was continued on the south-west side of wall **19** with a 2m long, 0.67m wide stepped, brick wall (**21**) which overlay the foundation courses of wall **19** and continued to the south-west, originally terminating in line with the firebrick lined platform. An additional section of unstepped wall (**22**) appears to have been added, extending wall **21** at the point when platform **17** was truncated, and the resulting gap being blocked (Plate 10).

A section of wall **14** was situated across the opening of feature **10**. The wall (0.56m high and 0.22m wide) was bonded with an ashy grey mortar and not tied into any of the surrounding walls. The inner course followed the concave inverted arch of feature **10** whilst the outer skin overlay the stepped foundation courses of wall **16**. This wall, placed to block the opening, was removed during the excavation to gain access further access to the boiler housing. Further sections of brickwork (**23** and **24**) also appear to have also been added to block gaps adjacent to the north-west end of L-shaped wall **19**.



*Plate 11: South-west-facing elevation of blocking wall **14** across the opening of feature **10***

The area to the south of flue **16** in the south-east corner of Trench 1 had been heavily disturbed by modern concrete foundations (**18**) with no archaeological remains surviving. Natural clay (**00**) was recorded in this area at a depth of 1.25m below the existing concrete ground surface (**01**). A 1m wide modern drainage pipe trench was orientated north-east/south-west for 14m along the south-east edge of Trench 1, truncating further remains of bricks walls and surfaces towards the south-west end of Trench 1. This area was delineated by a north-west/south-east-aligned brick wall (**25**), located 12m from the south-west end of Trench 1 (Plate 12). To the south-west of this wall was a brick floor surface (**26**), measuring 4.3 x 1.3m and consisting of five course of hand-made bricks bonded with a sandy lime based mortar. This floor surface and the adjacent wall had both been truncated through the middle by the modern pipe trench.

A further section of brick surface (**27**) measured 6 x 1.3m and was situated along the south-east trench edge (Plate 12). It was recorded at a similar height as brick surface **26**; however, it was much shallower at only two courses deep (0.15m) and sat directly on natural clay. Brick surface **27** was overlain midway along by a rectangular patch of slag waste material (**28**) that measured 1.4 x 0.90m.



*Plate 12: Looking north-east across brick surfaces **26** and **27** at the south-west end of Trench 1*

Wall **25** and brick surfaces **26** and **27** were found to have been further truncated by the placement of later walls and a sandstone crane base. Wall **29** was orientated north-east/south-west, truncating the north-west ends of wall **25** and surface **26**, although slightly out of alignment with these features. Wall **29** was double skinned and bonded solidly with a hard black mortar, indicative of a 19th-century construction date. A rectangular sandstone crane base (**31**), measuring 1.35 x 1m, was positioned at the south-west end of wall **29**, abutting a short length of black mortared wall **30**. At its centre was the remnant of an octagonal iron fixing to support the crane upright (Plate 13).



*Plate 13: Crane base **31** abutting the south-west-facing elevation of wall **31***

Isolated remnants of brick surfaces (**32** and **33**) along with a linear foundation scar (**34**) filled with brick rubble to the south-east of crane base **31** suggested that any further remains at the south-east end of the trench had been almost entirely removed.

4.3 Trench 2

Trench 2 was aligned north-east/south-west along the west side of the site, and measured 11 x 6m. Below the 0.25m thick modern concrete (01) was the modern gravel levelling deposit (02), which was significantly deeper in this area, with a depth of up to 1.10m. This lay directly on top of natural clay across most of the excavated area, apart from a 2 x 1.6m section of brick flooring (35) that was exposed at the north-western end of the trench. The brick floor was constructed of hand-made bricks, two courses deep and bonded with a sandy, lime-based mortar, consistent with a mid-19th-century construction date.



Plate 14: The vestiges of brick surface 35 at the north-west end of Trench 2, looking north-east

4.3 *Finds*

Despite the large size of the area excavated, virtually no artefacts of archaeological interest were recovered. Due to the significant reduction of the site following the demolition of York Mill between 1982 and 1992, the archaeological remains of the foundry immediately overlain by up to 0.75m of modern gravel levelling deposits. A substantial quantity of mixed slag and cinder was found across the site. The mixed nature of the slag pieces suggests it was introduced as a dump of material, perhaps from another area of the foundry.

A transparent glass rod measuring 0.12m with a 0.01m diameter was found within deposit **13**, which filled the refractory brick lined channel **11**. The rod appears to be part a water level gauge from the side of a steam boiler. The gauge glass would have used prismatic glass to resist the high pressure of the boiler.

5. Discussion

5.1 Discussion

The open-area excavation on Vesta Street built upon the results of the previous evaluation trench, which identified structural remains associated primarily with William Fairbairn's mid-19th-century foundry and engineering works, which was established as an extension to Fairbairn's famous Canal Street Works in Ancoats. The excavation targeted the footprint of the foundry as captured on Adshead's map of 1851, along with later structural developments associated with the later 19th- and 20th-century use of the site to house a textile mill and warehouse. The excavation uncovered some surviving elements of the foundry, including internal brick surfacing, a casting pit and other features associated with the iron-founding processes, including a section of flue. In contrast, there were very few buried remains relating to the later York Mill, which replaced the foundry in the late 19th century.

5.2 Fairbairn & Son's Foundry and Engineering Works.

The Ancoats area of Manchester is widely acknowledged as the first industrial suburb based on steam power, and an early centre for the textile machinery and engineering trades that were essential to support the burgeoning cotton-spinning industry during the 19th century (Miller and Wild 2007). As such, there was already an established trade in iron founding and textile machinery engineering by the time Fairbairn & Son's expanded their operations to the Mill Street Works around 1850.

The 1853 *Directory of Manchester and Salford* documents the nature of William Fairbairn's operation which was already thriving at his Shooter's Brook Iron Works on Canal Street, located to the south-east of the new Mill Street Works. The account rates the Fairbairn's Shooter's Brook Iron Works as one of the principal establishments of Manchester at the time, which visitors to the city would seek out to see for themselves (Plates 15 and 16). The works were noted for producing the 'heaviest description of machinery including steam engines, water wheels, locomotive engines and mill gearings' for which the engineer William Fairburn had become internationally renowned for developing. Some of these castings were immense in size, producing steam engines of 400 horse power using over 200 tons of metal. This complex manufacturing process required a variety of skilled workers including smiths, strikers, moulders, millwrights, mechanics, boiler makers and pattern makers. At the time of the 1853 account Fairbairn was recorded as employing 'from 550 to 600' workers in the various departments at his Shooter's Brook Works alone.

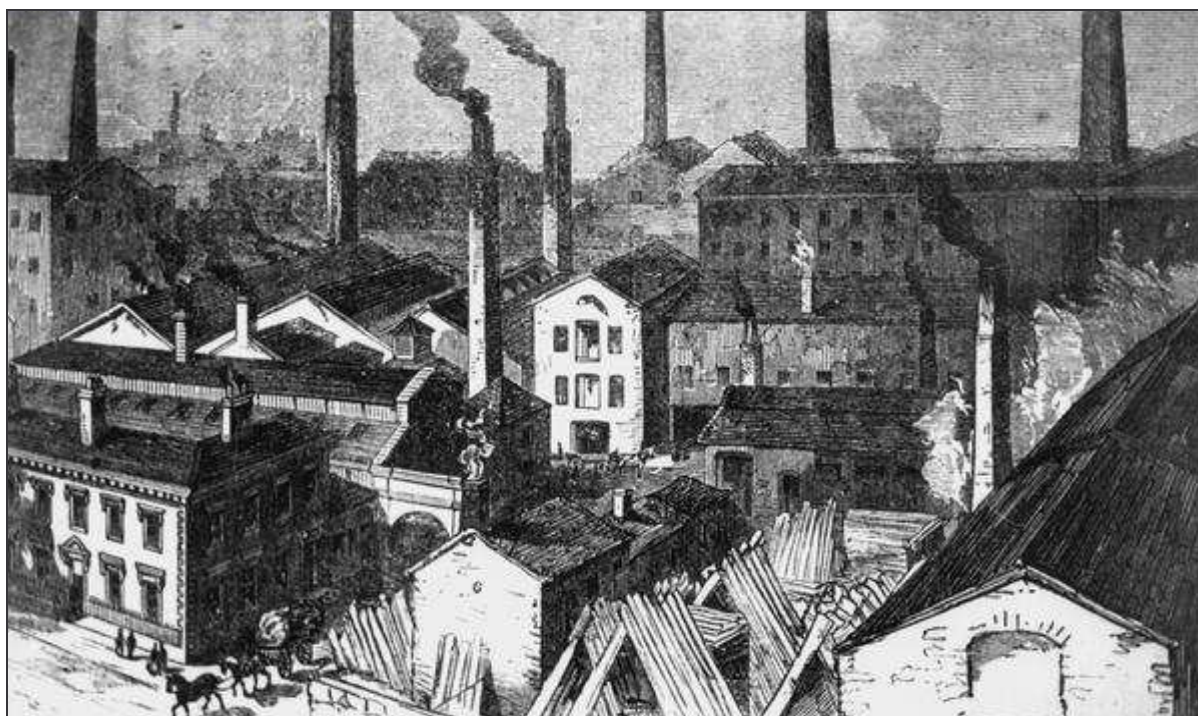


Plate 15: An 1853 etching of William Fairbairn's Shooter's Brook Works, on Canal Street, featured originally in a Great Northern Railway Guide Book

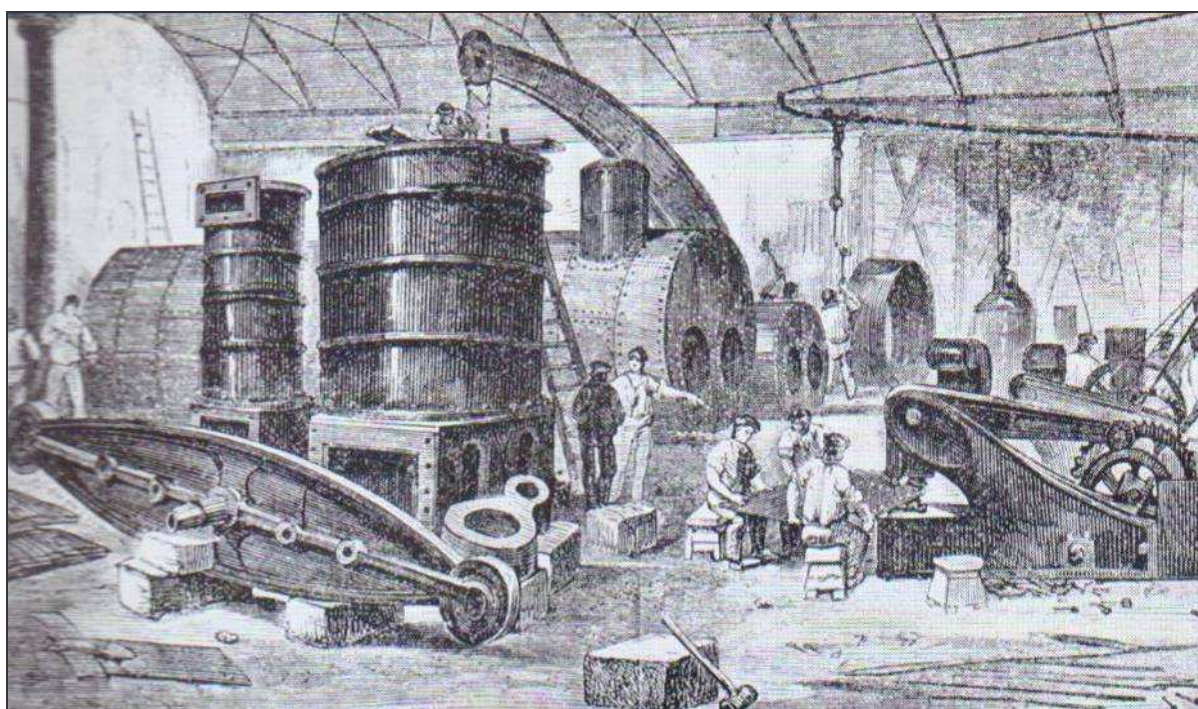


Plate 16: A 19th-century engraving of the interior of part of Fairbairn's Works

The Mill Street Works joined an already dense concentration of iron production works in the plots bordering the Ashton Canal. The Soho Iron Works, established in the early years of the 19th century, were located along the opposite side of the canal on Pollard Street. By the 1820s, the owners, Peel & Williams had become the largest and most profitable engineering company in Manchester, producing steam engines and gas lighting equipment at the Soho Works. Excavation work carried out in 2011 by Northern Archaeological Associates as part of the Metrolink expansion revealed parts of three ranges of the Soho New Foundry between the Soho canal branch and Lowe Street, adjacent to the Ashton Canal and showed considerable alteration and development of the building throughout the 19th century. Within the building a number of surfaces were revealed comprised of considerable quantities of spent casting sand, cinder and foundry waste along with a number of substantial machine bases (NAA 2011).

The extents of the proposed Mill Street Works were demarcated on the Ordnance Survey map of 1849; however, the sole depiction of the foundry and engineering works appear on Adshead's 1851 map of Manchester (Plate 4). The main L-shaped foundry building is depicted as a single block with no internal divisions apart from two 'shed' areas adjoined to the sides. Direct access from the foundry to the adjacent branch of the Ashton Canal is implied by the proximity of the east side of the building to the waterway.

The vast majority of the internal brick surfaces, walls and features appear to date to this initial phase of W Fairbairn & Sons Foundry and Engineering Works with evidence of ongoing rearrangement and repair throughout the second half of the 19th century. The geo-referenced survey plan of these remains fall within the footprint of the building depicted on the Adshead's 1851 map with wall **04**, along the north-west edge of Trench 1, aligning approximately with the exterior wall of the foundry.

There are no contemporary descriptions of the works being carried out at on the site, although as Fairbairn's business expanded in the mid-19th century it is probable that the manufacture of some of the smaller castings were outsourced to the his various smaller works, including those on Mill Street.

Walls **04**, **05** and **06** revealed at the north-west end of Trench 1, corresponding roughly with the inside corner of the foundry as shown on Adshead's map (Fig 4), looks to have functioned as a casting pit for production of ironwork pieces. Evidence of an industrial process, such as the casting of molten metal was indicated by the vast quantity of spent casting sand (**07**), within the confines of the walls and a possibly heat affected layer of clay (**08**) observed at its base, overlying the natural clay.

A remnant of an early flue (**37**) indicated that initially the exhaust gases were directed northwards from feature **10** before later alterations and an addition of flue **16** took the gases to the south-west. Although Adshead's map of 1851 does not detail the position of the any chimneys within the foundry complex, the Ordnance Survey Map of 1891 notes a chimney base located on the south-east exterior of the York Mill building. This position would approximately correspond with an area partially overlying the south-east edge of feature **10** and flue **16**.

Considering the close proximity to the boiler housing and the flue it would seem unlikely that the chimney featured on the 1891 map had its origins in Fairbairn's foundry. Rather the north-east/south-west alignment of flue **16** would indicate the chimney for Fairbairn's foundry would have been located somewhere on the east side of the site, an area unfortunately found to be completely truncated by modern concrete footings.

Two brick platforms, both lined internally with refractory brick, were recorded in the area of flue **16**. The remnants of platform **17** were 2m long and had been truncated at both ends at some point subsequent to the realignment of flue **37** with flue **16**. The rectangular recessed platform measured 0.9m wide internally, and may have originally housed a Lancashire style boiler, of which William Fairbairn himself is credited with introducing in 1844.

The concave, refractory brick-lined recess set into brick platform **10** measured 1.7m long by 0.8m wide and was 0.5m deep at its lowest point. The unusual shape of this feature may in fact be the result of the ongoing development and experimentation of William Fairbairn as he worked to improve the efficiency of his boilers throughout the 1840s and 1850s. The flue system servicing this feature was seen to have been altered from exiting in a north-east direction through the original flue **37**, to a south-west direction through flue **16**. This in turn appeared to have been decommissioned when a section of wall (**14**) was built across the opening of feature **10**. Later brickwork additions, such as the stepped foundation walls (**16**, **20** and **21**) recorded to the north the boiler platforms and flues, may indicate further alterations and the placement of heavy machinery during the development of the foundry.

Despite the extensive truncation to natural clay of the south-east and south-west corners of the site some internal brick surfacing from the southern wing of the foundry was recorded during the excavation. It was not possible to ascertain the specific function of these surfaces due to their own significant truncation however the widespread presence of foundry waste such as the slag deposit overlying brick surface **27** implies a close proximity to the various industrial processes at work in the foundry.

The precise date of the end of W Fairbairn & Son's involvement on the site is unknown. A short history documenting the early years of the firm written by Ernest Leopold Ahrons and published in *The Engineer* in 1920 notes that the four separate Ancoats works owned by Fairbairn & Sons were amalgamated in 1866 following the formation of the limited company. After that point the operations were said to have been concentrated 'in the engine side and the former boiler yard' which presumably referred to the larger Shooter's Brook Works. Work at this site would prove to be short lived as the company filed for liquidation in 1875, just one year after the death of William Fairbairn. The *Liverpool Mercury* of October 1st 1875 gave notice of an auction the following day of all the 'tools, plant, machinery and stores of the Fairbairn Engineering Company Limited' at the Works, Canal Street, Great Ancoats Street Manchester. These included steam engines and boilers of the company's own design, such as high pressure steam engines and Fairbairn's patent five tube steam boiler, along with all manner of travelling cranes, portable forges and anvils.

5.2 *York Mill*

The results obtained from the excavation appear to indicate that the foundry building was demolished and a purpose-built range of mill and warehouse buildings were built over the foundations of the earlier engineering works. When the geo-rectified survey plans of the excavation are compared with the unlabelled buildings depicted on the Ordnance Survey map of 1891 it is clear there is very little alignment (Fig 5). Significantly, the main correlation is the absence of any brick remains relating to the 19th-century foundry in the south-western part of the site, specifically within the footprint of the smaller building. Goad's Insurance map of 1928 notes that site is occupied by 'E. Tweedale and Son, Waste Warehouses', with this smaller building referred to a 'Rag Warehouse'. The construction of the smaller warehouse building appears to have removed almost all traces of the earlier iron foundry within its footprint, leaving only the scar of a former foundry wall (34) and a possible section of internal brick surfacing (35) observed on the western side of the site.

Perhaps surprisingly, the excavation did not reveal any remains that could positively be associated with the later York Mill. A possible later wall (09) was recorded overlying the backfilled deposits (07) of the casting pit at the north-western end of Trench 1, although this falls outside the line of the buildings depicted on the 1891 map and may represent additional alterations to the foundry. Two further walls (29 and 30) recorded in the middle of the north-east/south-west-aligned arm of Trench 1, were found to have truncated the earlier foundry brick surfaces and wall on a slightly different alignment. These walls were bonded with a much harder, black mortar, consistent with a later construction date. Wall 30 was abutted on its south-west elevation by a sandstone crane base (31). These features also fall outside the footprint of the buildings depicted on the 1891 Ordnance Survey map, but within an unidentified narrow, semi-circular structure which possibly could be associated with the placement of a yard crane and track.

York Mill and its associated building were finally demolished at some point between 1985 and 1992, and replaced by a works depots built on a deep concrete pad foundation. During the excavation modern gravel levelling deposits were found to an average deep of 0.75 below the concrete pad and 1.1m deep on the west side of the site. Likewise, the concrete foundations of the depot were recorded at over 1.2m. This would suggest that the construction of the work depot at the end of the 20th century removed virtually all the fabric of the later York Mill, whilst preserving pockets of William Fairbairn's Mill Street foundry and general engineering works.

5.3 Conclusion

Manchester developed a pre-eminence in engineering, and large numbers of foundries and engineering firms were established during the 19th century (McNeil and Nevell 2000, 8). Whilst some examples of these foundries still survive in districts surrounding Manchester, such as Gorton, Newton Heath and Openshaw, very few, if any, survive in the inner suburbs such as Ancoats. These areas of the city were dominated by buildings associated with the textile industry, particularly the large spinning mills and the ornate warehouses (Taylor *et al* 2002), and it is easy to overlook the contribution that many other associated industries made to the character of this important industrial townscape.

Archaeological excavations at the large Soho Foundry in Ancoats (NAA 2011), and at the Bradford Ironworks, approximately 2km to the east of Vesta Street (Miller 2011), revealed well-preserved foundations of large-scale iron works, but without surface buildings. A former iron and brass foundry on Piercy Street in Ancoats that was recorded in advance of its demolition in 2004 is likely to have been typical of the smaller foundries that were numerous in the area, although it retained very few features that could be identified as characteristic architectural elements of an iron foundry (OA North 2004). Similarly, there are remarkably few descriptions or images portraying 19th-century foundries in Manchester, and those that are available tend to focus on the larger and better-known works.

It is within this context that the archaeological excavation at Fairbairn & Son's Mill Street Works needs to be considered. The excavation has enabled a detailed record of all the surviving archaeological remains on the site to be compiled in advance of development. The results obtained from the excavation are not of especial significance in isolation, as only a small part of the building's foundations survived *in-situ* and little firm evidence was obtained for the range of processes undertaken in the foundry, but they nevertheless make an important contribution to the growing body of archaeological evidence for the development and character of a key industry in mid-19th-century Ancoats.

Acknowledgments

Salford Archaeology would like to thank the Manchester Life Development Company 2 Ltd for commissioning the archaeological works, and to Richard Hattan and Matthew Edwards of Mace Ltd and David Lakin of Arup for logistical support. Salford Archaeology would also like to thank Norman Redhead for providing monitoring support and advice through GMAAS.

The on-site excavations were conducted by Steve Tamburello, assisted by Andy Coutts and Sarah-Jayne Murphy, with support from Graham Mottershead. This report was compiled by Steve Tamburello and illustrated by Sarah Mottershead. The report was edited by Ian Miller, who was also responsible for project management.

Sources

Cartographic

Plan of the Townships of Manchester, Adshead, 1851

Ordnance Survey First Edition 60":1 mile, surveyed 1848, published 1850

Ordnance Survey First Edition 25":1 mile, Lancashire, surveyed 1888-9, published 1890

Trade Directories

Slater, I, 1852 *General and Classified Directory and Street Register of Manchester and Salford*, Manchester

Slater, I, 1863 *General and Classified Directory and Street Register of Manchester and Salford*, Manchester

Slater, I, 1909 *General and Classified Directory and Street Register of Manchester and Salford*, Manchester

Secondary Sources

Ahrons, EL, 1920 *Short Histories of Famous Firms - (No. II) William Fairbairn and Sons in The Engineer*

Ashworth, G, 1987 *The Lost Rivers of Manchester*, Altrincham

Brennand, M, (ed), 2007 *Research and Archaeology in North West England. An Archaeological Research Framework for North West England: Volume 2. Research Agenda and Strategy*, CBA North West, 9 (19), Manchester

Cooper, G, 2002 *Illustrated History of Manchester's Suburbs*, Manchester

Countryside Commission, 1998 *Countryside Character, Volume 2: North West*, Cheltenham

English Heritage, 2006 *Management of Research Projects in the Historic Environment*, London

Hall, D, Wells, CE, and Huckerby, E, 1995 *The Wetlands of Greater Manchester*, Lancaster Imprints 3, Lancaster

Kidd, A, 1993 *Manchester*, Manchester

Lee, CH, 1972 *A Cotton Enterprise 1795-1840: A History of M'Connel and Kennedy, Fine Cotton Spinners*, Manchester

Little, S, 2002 Ancoats - The First industrial Suburb, in R McNeil and D George (eds), *The Heritage Atlas 4: Manchester - Archetype City of the Industrial Revolution*, Manchester, 31-3

McNeil, R, and Nevell, M, 2000 *A Guide to the Industrial Archaeology of Greater Manchester*, Leicester

- McNeil, R, and Newman, R, 2007 The Industrial and Modern Period Research Agenda, in M Brennand (ed) *The Archaeology of North West England: An Archaeological Research Framework for North West England: Volume 2*, CBA North West, **9** (19), Manchester, 133-58
- Miller, I and Wild, C, 2007 *A&G Murray and the Cotton Mills of Ancoats*, Lancaster
- Miller, I, 2011 Rediscovering Bradford: Archaeology in the Engine Room of Manchester, *Greater Manchester's Past Revealed*, **4**, Lancaster
- Musson, AE, 1960 An Early Engineering Firm: Peel, Williams & Co of Manchester, *Business Hist*, **3** (1), 8-18
- Musson, AE, and Robinson, E, 1960 The Origins of Engineering in Lancashire, *J Econ Hist*, **20**, 209-33
- Musson, AE, and Robinson, E, 1969 *Science and Technology in the Industrial Revolution*, Manchester
- NAA, 2011 *Manchester Metrolink Phase 3A East Manchester Line*, unpublished client report
- Pole, WM (ed), 1877 *The Life of Sir William Fairbairn, Bart, Partly Written by Himself*, Newton Abbot (1970 facsimile)
- Taylor, S, Cooper, M, and Barnwell, PS, 2002 *Manchester: The Warehouse Legacy*, London
- Tupling, GH, 1962 Medieval and Early Modern Manchester, in CF Carter (ed) *Manchester and its Region: A Survey Prepared for The British Association*, Manchester 115-130
- Williams, M, with Farnie, DA, 1992 *Cotton Mills in Greater Manchester*, Preston

Appendix 1: Figures

- Figure 1: Site location
- Figure 2: Location of the excavation areas
- Figure 3: Plan of the excavated trenches
- Figure 4: The excavated remains superimposed on Adshead's map of 1851
- Figure 5: The excavated remains superimposed on the Ordnance Survey map of 1891



Figure 1: Site location



Figure 2: Location of the excavation areas

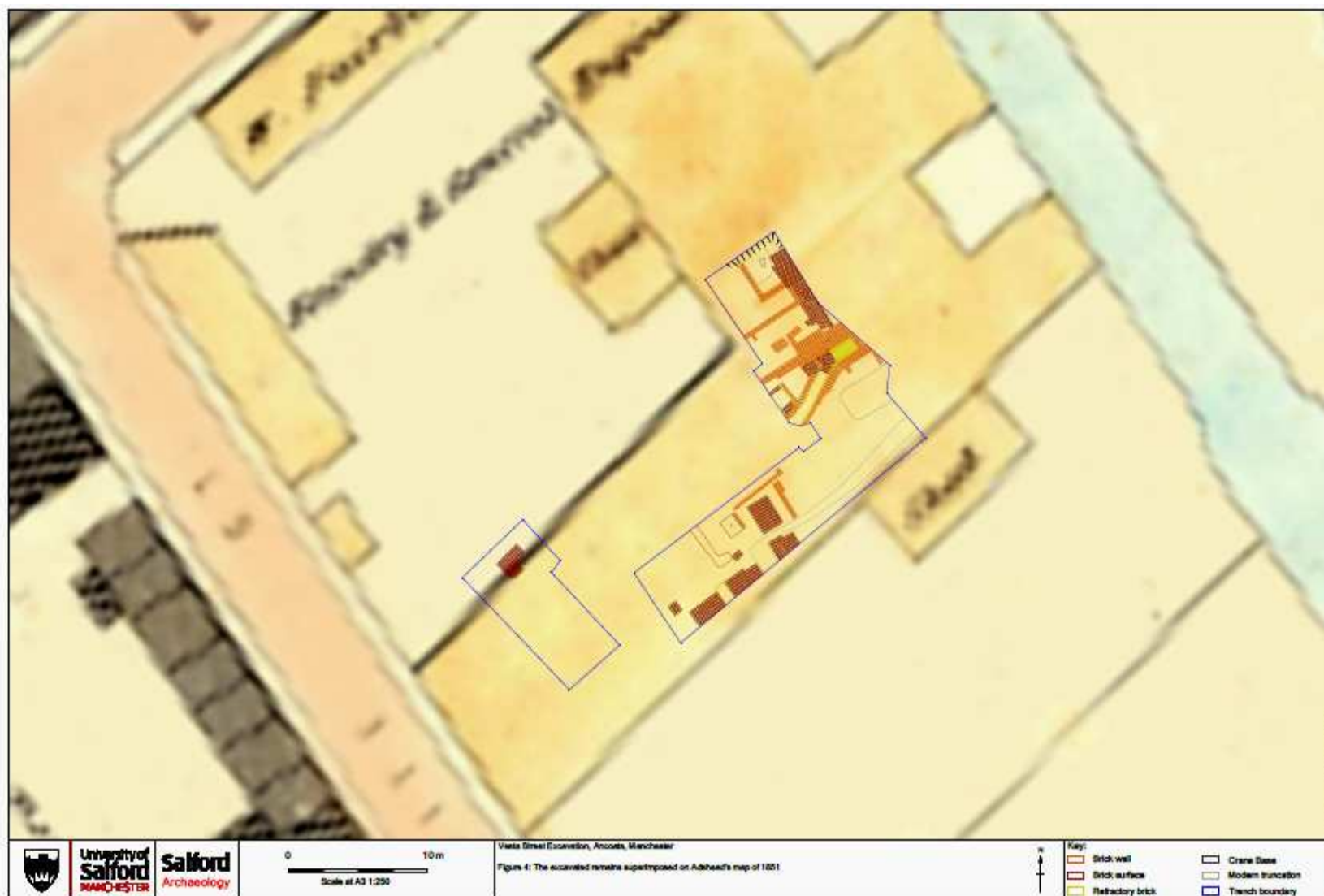
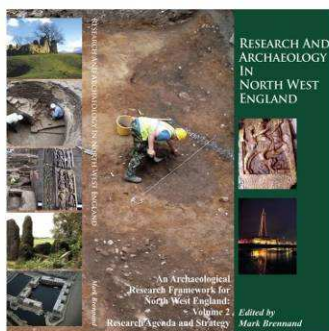


Figure 4: The excavated remains superimposed on Adshead's map of 1851

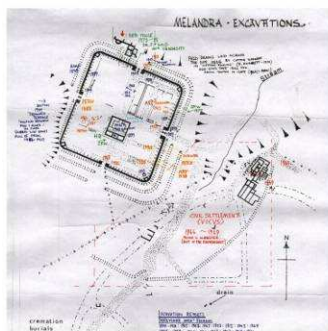


Figure 5: The excavated remains superimposed on the Ordnance Survey map of 1891

CONSULTANCY



DESK BASED ASSESMENTS



WATCHING BRIEF & EVALUATION



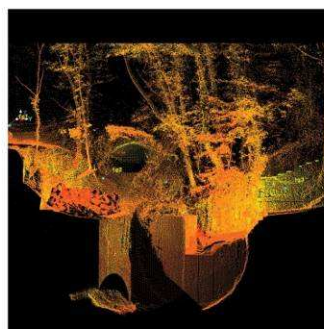
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BUILDING SURVEY



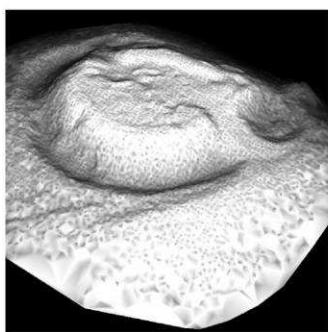
3D LASER SCANNING



COMMUNITY INVOLVEMENT



LANDSCAPE SURVEYS



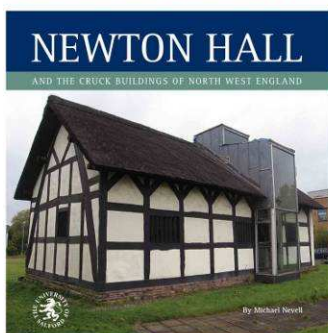
GEOPHYSICAL SURVEYS



WORKSHOPS & VOCATIONAL TRAINING



RESEARCH PUBLICATIONS



SEMINARS, DAYSCHOOLS CPD EVENTS

