



University of
Salford
MANCHESTER

**Archaeological
Excavation Report**

Durban Mill,
Hollinwood, Oldham

Client: Countryside
Properties (UK) Ltd

Technical Report:
Simon Hinchliffe

Report No:
2016/29



Site Location: Site of Durban Mill, Mill Gate, Hollinwood, Oldham

NGR: SD 91490 03130

Internal Ref: ELCA61

Planning Ref: PA/338241/16

Prepared for: Countryside Properties (UK) Ltd

Document Title: Durban Mill, Hollinwood, Oldham: Archaeological Excavation

Document Type: Archaeological Excavation Report

Version: Version 1.0

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Date: July 2016

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Summary

Countryside Properties (UK) Ltd has obtained planning consent (Planning Ref PA/338241/16) to construct 80 new dwellings on the site of an early Edwardian textile mill, known as Durban Mill, situated in the Hollinwood area of Oldham (centred on NGR SD 91490 03130). The construction programme will require earth-moving works that have the potential to impact on any buried archaeological remains. The archaeological interest in the site, comprising the buried remains of Durban Mill, was highlighted in an archaeological desk-based assessment of the site that was compiled in 2016 to inform the design proposals for the development.

In order to secure archaeological interests, Oldham Council attached a condition to planning consent that allowed for a programme of intrusive investigation of the site prior to construction works. Following consultation with the Greater Manchester Archaeological Advisory Service, in their capacity as archaeological advisors to Oldham Council, it was recommended that a ‘strip and record’ excavation of an area measuring approximately 30 x 30m over the footprint of the former boiler house, engine house and chimney was undertaken. This work was undertaken by Salford Archaeology in June 2016, and provided a valuable opportunity to investigate the below-ground remains of the steam-power plant of Durban Mill.

1. Introduction

1.1 Circumstances of the Project

Countryside Properties (UK) Ltd has obtained planning consent (Planning Ref PA/338241/16) to construct 80 new dwellings on the site of Durban Mill, Hollinwood, Oldham. The construction programme will require earth moving works which have the potential to impact on any buried archaeological remains. The archaeological interest in the site was highlighted in a desk-based assessment produced by Salford Archaeology. This study concluded that although Durban Mill is a non-designated heritage asset, not considered to be of national importance, the remains of the steam-power plant for the mill would warrant preservation by record. This was carried out as part of Condition 18 on the permission granted for development:

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

- a) A phased programme and methodology of investigation and recording to include: - background documentary study - a scheme of targeted archaeological evaluation, possibly leading to - open area excavation and recording*
- b) A programme for post investigation assessment to include: - analysis of the site investigation records and finds - a detailed analysis of the fieldwork records - production of a final report on the significance of the archaeological and historical interest represented.*
- c) Deposition of the final report with the Greater Manchester Historic Environment Record and dissemination of the results in a manner commensurate with their significance.*
- d) Provision for archive deposition of the report and records of the site investigation.*
- e) Nomination of a competent person or persons/organisation to undertake the works set out within the approved WSI.*

Reason: In accordance with NPPF Section 12, Paragraph 141 - To record and advance understanding of heritage assets impacted on by the development and to make information about the archaeological heritage interest publicly accessible.'

In June 2016, Salford Archaeology, within the Centre for Applied Archaeology at the University of Salford, was commissioned by Countryside Properties (UK) Ltd to carry out the recommended scheme of archaeological investigation, which comprised of a 'strip and record' excavation. This was targeted over the sites of the original engine house, boiler house, economiser, chimney and associated flues.

1.2 Government and Local Planning Policies

The significance of the archaeological resource identified within this report has been assessed as recommended in National Planning Policy Framework (Department for Communities and Local Government, March 2012). NPPF sets out the Government's planning policies and outlines the presumption in favour of sustainable development, which is defined by three dimensions: economic; social; and environmental. Of the 12 core planning principles underpinning plan and decision making, conserving 'heritage assets in a manner appropriate to their significance, so that they can be enjoyed for their contribution to the quality of life of this and future generations' is one. Section 12 deals specifically with the historic environment (paragraphs 126-41), and local planning authorities should consider:

- The desirability of sustaining and enhancing the significance of heritage assets and putting them to viable uses consistent with their conservation;
- The wider, social, cultural, economic and environmental benefits that conservation of the historic environment can bring;
- The desirability of new development making a positive contribution to local character and distinctiveness; and opportunities to draw on the contribution made by the historic environment to the character of a place.

Paragraph 128 states that local planning authorities, when determining applications, should require the applicant to describe the significance of any affected heritage assets.

This should be sufficient so as to understand the potential impact on their significance and this should be done using the appropriate expertise where necessary.

Paragraph 135 indicates that the effect of a development proposal on non-designated assets (designated assets are covered in paragraphs 132-134) should be taken into account. In addition, Paragraph 141 requires developers to record and advance understanding of heritage assets to be lost, in a manner proportionate to their importance and impact.

1.3 Local Development Framework

The NPPF outlines the need for local planning authorities to create local plans and frameworks to implement the NPPF at a local level. The future use and development of land and buildings in the borough is currently guided by the Oldham Local Plan, was adopted in December 2013. This document sets out a framework of policies to: control the location and quality of new development; encourage and stimulate development, where appropriate; protect and improve the environment; and safeguard the borough's most important natural and built assets.

Policy 24 specifically deals with the historic environment:

Oldham has a rich historic environment with many significant and valuable features, structures and characteristics. The council will protect, conserve and enhance these heritage assets and their settings which adds to the borough's sense of place and identity.

Development proposals must have regard to:

- *National and local guidance and policies on the historic environment;*
- *Oldham Rochdale Housing Market Renewal Pathfinder Heritage Assessments;*
- *Greater Manchester and Oldham Urban Historic Landscape Characterisation Study;*
- *Conservation Area Appraisals and Management Plans, where appropriate.*

When allocating sites and determining applications for planning and advertisement consents, the council will seek to protect, conserve and enhance the architectural features, structures, settings, historic character and significance of the borough's heritage assets and designations including:

- a. Listed buildings;*
- b. Conservation areas;*
- c. Registered parks and gardens (their historic character and setting);*
- d. Scheduled ancient monuments (their archaeological value and interest);*
- e. Significant archaeological remains;*
- f. Locally significant buildings, structures, areas or landscapes of architectural or historic interest (including non-designated locally significant assets identified in the local lists compiled by the council).*

The council will support heritage-led regeneration, including the reuse of historic buildings such as mills, to achieve economic, community and regeneration objectives, where appropriate.

2. The Setting

2.1 Site Location

The site of Durban Mill (centred on NGR SD 9149 0313) lies to the south-west of Oldham town centre, in the Hollinwood area. It is bounded on the north by Mafeking Street, on the east by Collier Hill, on the south by Colenso Street and on the west by Vaal Street. The area of archaeological interest, however, is limited to the southern part of the development site, close to the corner of Mill Gate and Colenso Street.



Plate 1: Recent aerial view across the study area prior to demolition works, showing the study area boundary and area of archaeological interest

The Site Area lies at a height of approximately 138m above Ordnance Datum (aOD), and comprises the cleared site of an early 20th-century textile mill that was demolished in 2015.

2.2 *Geology*

Oldham lies on the eastern part of the Lancashire coalfield which, in broad terms, occupies a band of land lying east/west. At its widest, the coalfield is over 50km long and 10km wide (Hull 1861, 121-4). The geological strata in Oldham is broken up by several major faults, including the Chamber fault which runs through Chadderton Park, Cowhill, Werneth and Chamber Hall, giving a downthrow to the north-east. This fault produces a great thickness of coal measures in the Hollinwood area, which was exploited at Oak Colliery (Fanning 2001, 9), situated approximately 225m SW of Durban Mill. Specifically, the underlying strata is the Pennine Middle Coal Measures with Chamber Rock towards the western part of the site. The underlying drift geology consists of alluvial sand, gravel and till (www.bgs.ac.uk).

3. Historical Background

3.1 Background

The following section summarises the historical development of the study area, and is intended to place the excavated remains in their wider context. The historical information is drawn largely from the desk-based assessment and Written Scheme of Investigation document drawn up by Salford Archaeology (Miller 2016).

3.2 Historical Development of the Study Area

There is very little evidence for prehistoric, Roman or medieval activity in the general study area. During the post-Medieval period, the Oldham area was little more than a scattering of settlements across the Moorland until the late 18th century, including Hollinwood. Development was focused along the roads to Manchester, Rochdale and Saddleworth, rather than focused on a central core (Tindall 1981). By the late 18th century, the manufacture of hats and strong fustians for the Manchester market were important local trades as well as cotton and woollen manufactories already in place (Aiken 1795, 236-7).

During the 18th century, Oldham developed as one of the satellite towns supplying Manchester in its role as the epicentre of the developing textile trade. The town expanded considerably, particularly between 1775 and 1821 with a total population estimated at 12000 by the end of the 18th century. Initially, Oldham's industry was handloom weaving but it became a centre for coarse-spinning of American cotton. By the early 1820s, there were around 100 mills in production, increased to 150 by 1843.

Oldham's earliest mills were simple, hand-made brick structures narrow in width and with small windows. By the 1850s, mills were higher, longer and wider and by 1860, around 200 mills were in operation. Oldham rose to dominate the cotton spinning industry during the second half of the 19th century. Eventually it became the leading mill town in the world (Williams with Farnie 1992, 35) and, in particular, 1873-5 brought unprecedented growth to the town. By this time, there were 375 mills in production. Brick-vaulted ceilings supported by cast-iron beams and columns were introduced around this time and by the end of the 19th century, concrete floor joists replaced brick arches.

Mills, architecturally, became more decorative and the principal feature was the tower which often had the name of mill emblazoned on, so it was visible from afar. Architectural details were often Italianate in style as it had a visual association with the Manchester textile warehouses and were often focused on the tower. The rest of the building was generally a flat wall punctuated by windows, which had gradually got larger to respond to the need for better ventilation for the faster machines which generated higher temperatures.

Oldham reached its zenith by 1890 and its spindles accounted for 12.4% of the global total. By 1901, Oldham's population was 137,000 and a further boom between 1904 and 1908 saw the number of mills increase to 335 by 1911. It is within this period that Durban Mill originated. In 1926, Oldham reached its maximum production capacity and Elk Mill, completed in 1928, was the final spinning mill to be built within the area. After this period, a combination of trade depressions, coal shortages, the General Strike and financial tightening meant that the spindleage began to decline. Nevertheless, Oldham retained its position as largest single cotton spinning centre until 1964.

3.3 Development of Durban Mill

The first of the four mills to be built in Hollinwood was Brook Mill N° 1, which stood approximately 100m west of Durban Mill. This was constructed for John Worthington and Sons between 1844-7 in what was then a rural landscape. In 1867 Brook Mill N° 1 was purchased by the newly-formed Oldham Twist Company, who 16 years later built Brook Mill N° 2. With a combined spindleage of 157,000, the Oldham Twist Company's operations were the most extensive of all the mills on the site. Durban Mill and Heron Mill were both built in 1905, occupying sites immediately adjacent to the Brook Mill complex, transforming the local townscape.

Durban Mill was designed by the eminent local mill architect, Philip Sidney Stott, for the Durban Mill Company Ltd. PS Stott was born in 1858, and briefly went into partnership with his father and brothers in 1881, before setting up his own business in Oldham in 1883. He is accredited with designing more mills than any other in the Oldham area. His first commission was for the Chadderton Mill Company Ltd, and his last was the Maple N° 2 in 1915, although he continued to design extensions and additions to mill complexes after this date. During a career of more than 40 years, PS Stott claimed to have designed mills all over the world, with an aggregate of nine million spindles.

Durban Mill was erected in 1905-06, occupying an undeveloped site just 15m to the north of Brook Mill N° 2. It housed 120,000 spindles, which were powered by a 1750hp four cylinder triple expansion steam engine supplied by the Blackburn firm of Yates & Thom in 1906. The mill comprised a five-storey block (including a semi-basement), with huge dimensions of approximately 114 x 48m. The spinning floors occupied the upper floors of the five-storey block, with preparatory machinery housed on the lower floors and in the semi-basement, which did not extend across the full width of the building. A detached office block lay to the south of the main block, at the entrance to the mill complex from Mill Gate.

The large engine house was attached to the south-east-facing elevation of the main block. This powered a series of ropes in a full-height rope alley, which supplied the motive power to each floor in the mill.

The steam required by the engine was raised in a bank of four Lancashire boilers that were housed immediately to the south-east of the engine house, with a common flue to the rear that led via an economiser to a free-standing chimney in the mill yard.

The water required for condensing purposes and for the steam-raising plant was stored in two reservoirs situated to the east of the mill. This layout is captured on a series of original plans for the mill, poor-quality copies of which are held by Oldham Local Studies & Archives (Plate 2).

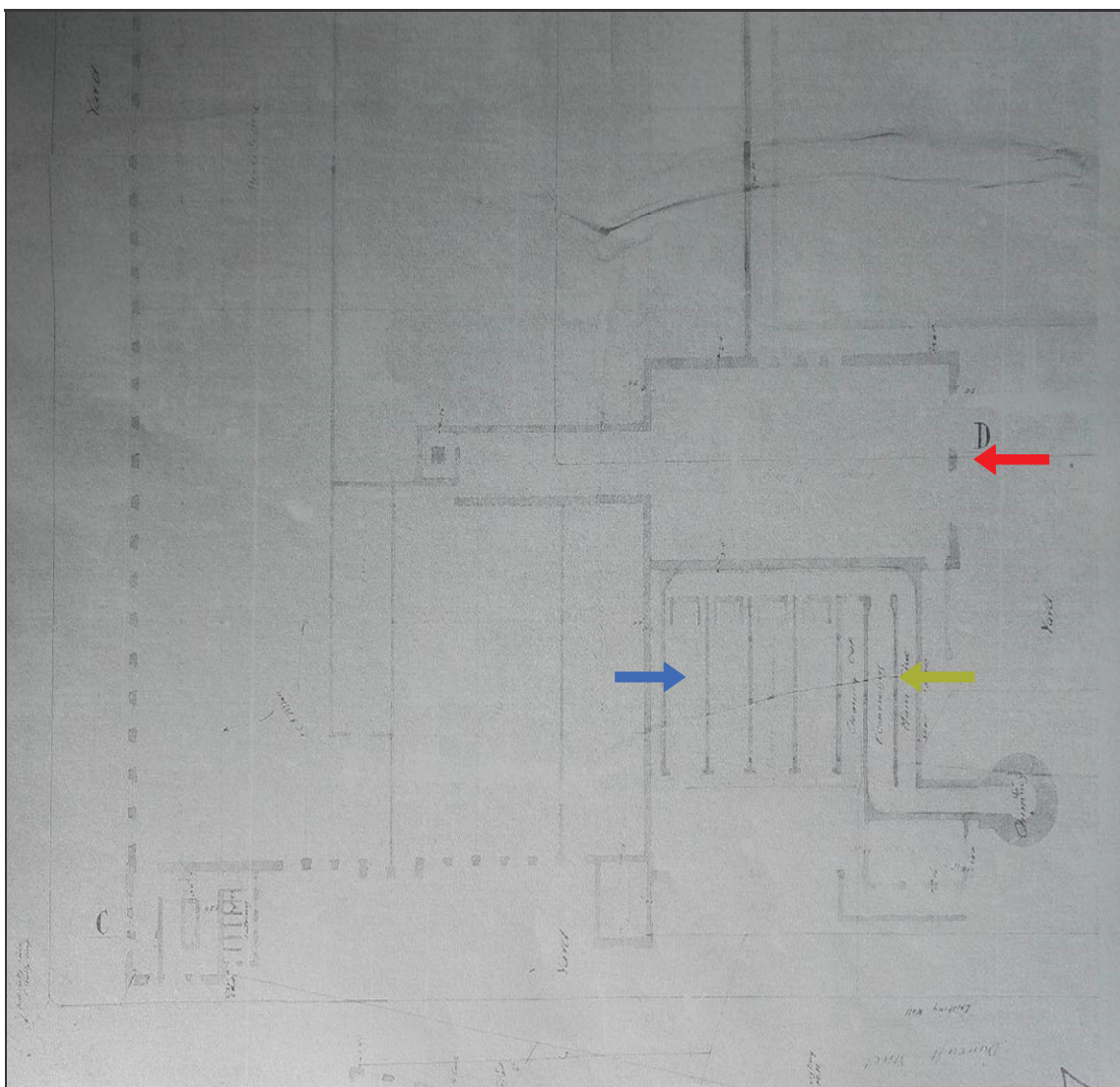


Plate 2: One of the original architect's drawings for Durban Mill, dated January 1905, showing the position of the engine house (red arrow), Boiler House (blue arrow) and economiser (green arrow)

The layout of the mill complex is depicted on the Ordnance Survey map of 1909 (Plate 3). This clearly shows the arrangement of the main block with the engine and boiler house against the south-eastern corner, the detached chimney and the two reservoirs to the east. The physical relationship of Durban Mill to the surrounding Brook Mills and Heron Mill, however, is captured vividly on an aerial photograph taken in the early 20th century (Plate 4)

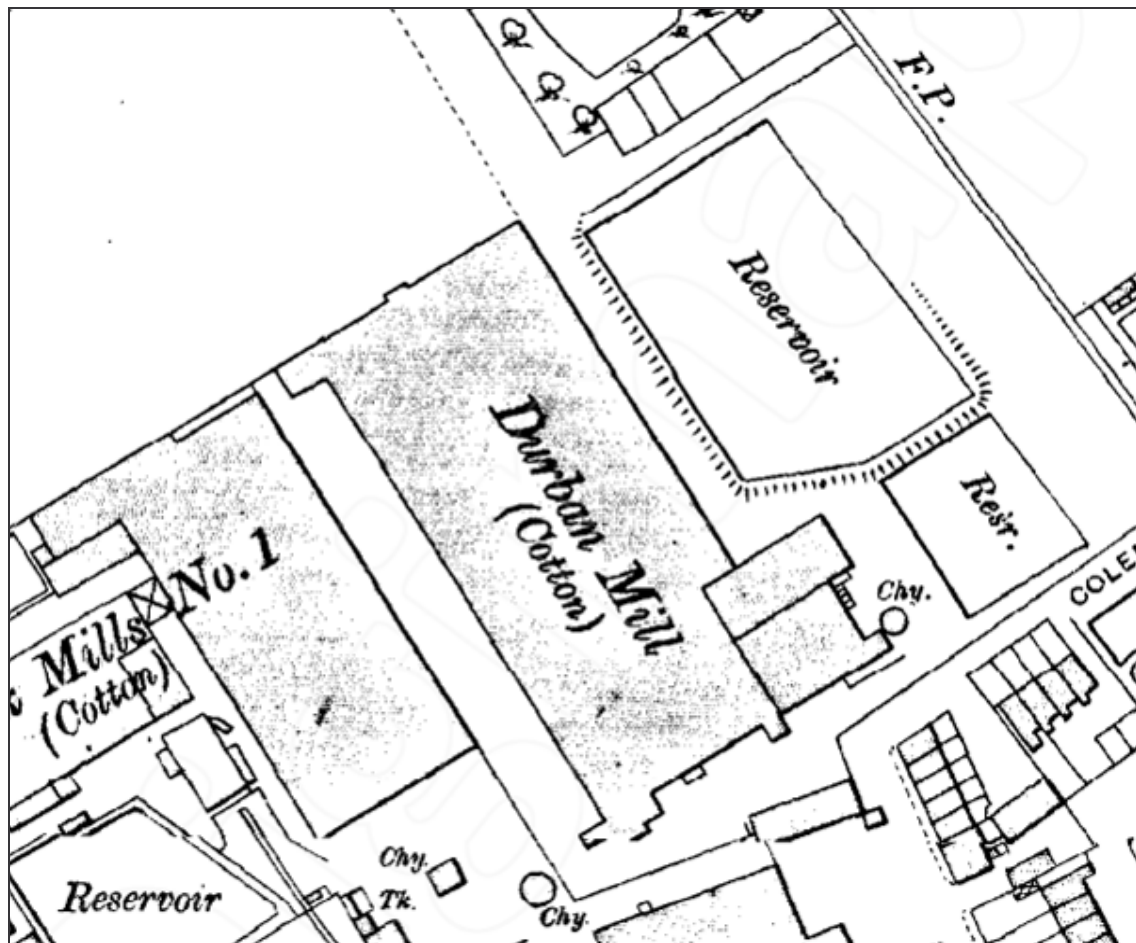


Plate 3: Extract from the Ordnance Survey map of 1909, showing the layout of the Durban Mill complex

Durban Mill was taken over by the Lancashire Cotton Corporation in 1957. Production finally ended in 1962 and, in 1967, the premises were reoccupied as a mail order warehouse of the Littlewoods organisation. The building was last occupied by the Findel Education Company, which vacated the premises in c 2008.

The mill was demolished to slab level during October and November 2015 (Plate 10-Plate 14). All standing structures were cleared, with the exception of one of the reservoirs in the eastern corner of the site (Plate 14). However, concrete surfacing is visible across much of the site, representing elements of the internal floors.

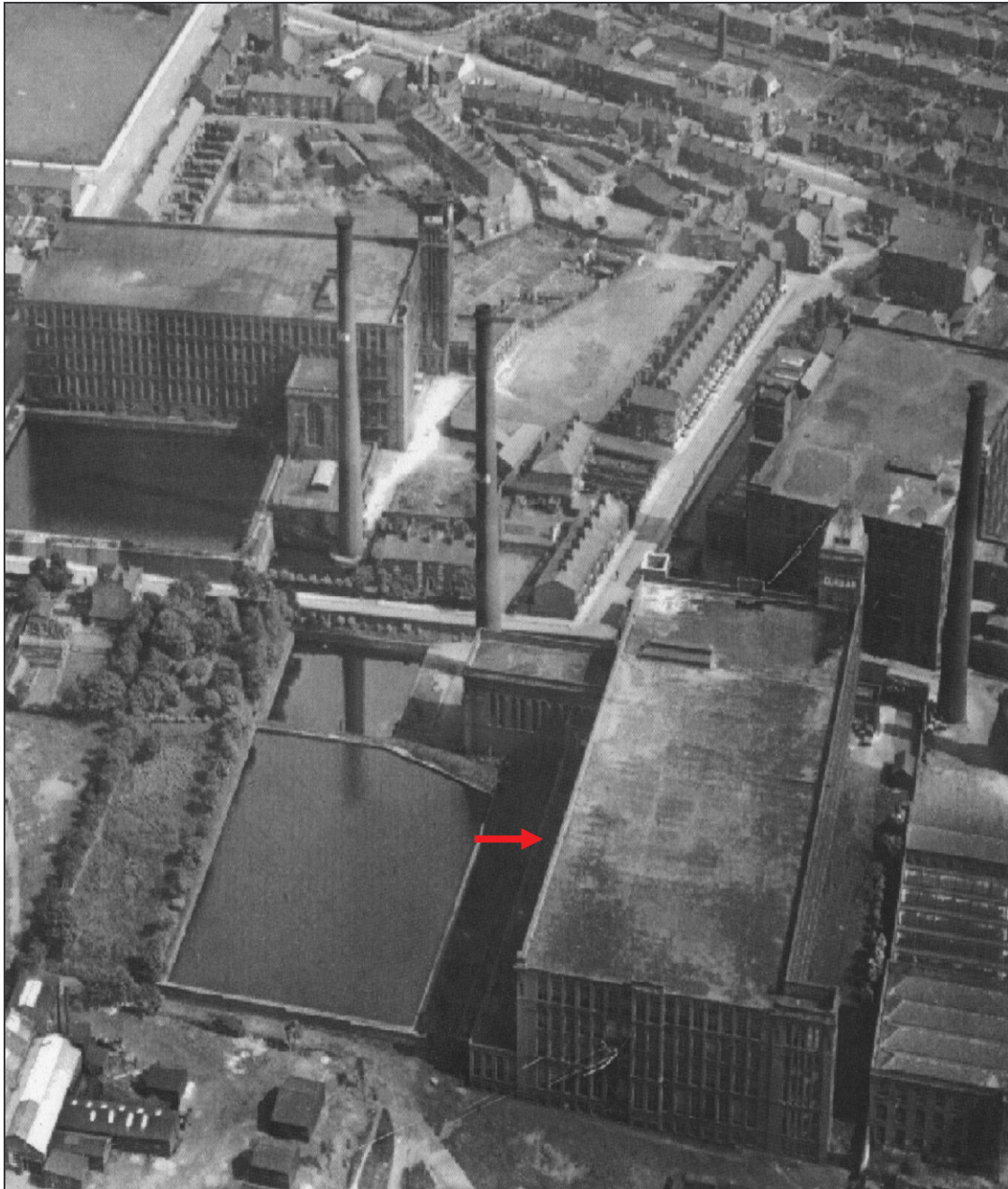


Plate 4: 20th-century view looking south-east across the Hollinwood area, showing Durban Mill in the foreground (arrowed), with Heron Mill to the south-east and Brook Mill N° 2 to the south. Part of Brook Mill N° 1 is also visible to the west of Durban Mill



Plate 5: A view across Hollinwood from the south-west in 2012, showing Durban Mill to the left, Brook N^o 2 to the right, and Heron Mill to the rear



Plate 6: The east elevation of Durban Mill in 2014, showing the engine house in the foreground and possible staircase revealed during excavation (Plate 20)

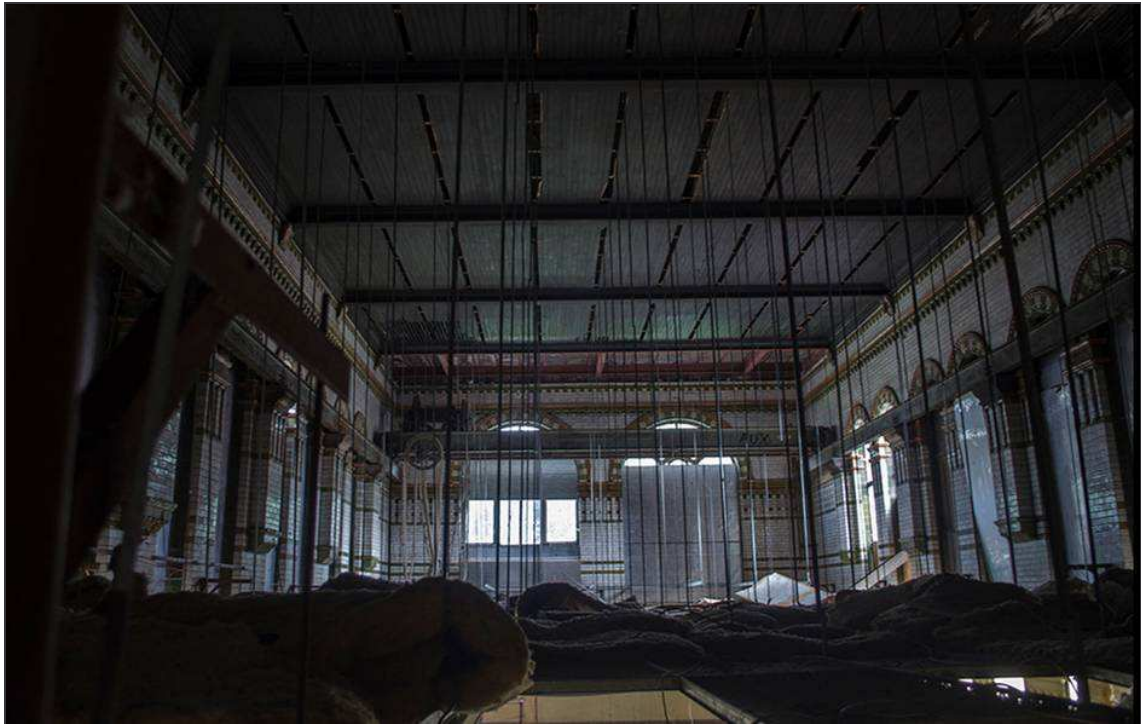


Plate 7: The interior of the magnificent engine house in 2014 (reproduced from www.28dayslater.co.uk)



Plate 8: Another view of the interior of the engine house in 2014 (reproduced from www.28dayslater.co.uk)



Plate 9: A view of the interior of the boiler house in 2014, showing one of the original boilers converted for use to store heating fuel (reproduced from www.28dayslater.co.uk)



Plate 10: General view across the cleared site in 2016, looking east towards Heron Mill



Plate 11: General view across the cleared site. Looking north



Plate 12: General view of the cleared site. Looking west



Plate 13: View looking south-east across the north- eastern boundary of the site, showing the wall of the mill lodge and Heron Mill in the background



Plate 14: View across the mill reservoir in the eastern corner of the site

4. Methodology

4.1 Excavation Methodology

All archaeological excavation was conducted following the CIfA Standards and Guidance for archaeological field evaluation (Published October 1994, Revised September 2001 and October 2008).

Excavation of the modern ground surface was undertaken by a machine of appropriate power using a toothed bucket and, where necessary, a breaker. The uppermost levels of overburden/demolition material were then removed using the same machine, but fitted with a toothless ditching bucket, to the top of the first significant archaeological level. This process was supervised closely by a suitably experienced archaeologist.

Machine excavation was then used to define carefully the extent of any surviving foundations, floors, and other remains. Thereafter, all structural remains and areas of archaeological interest were cleaned manually to define their extent, nature, form and, where possible, date. The hand excavation was undertaken by trained professional archaeologists.

All the recording of below ground archaeological features of interest was compiled in line with the Chartered Institute for Archaeologists: Standard and guidance for Archaeological Excavation, Published September 1995, revised October 2008.

4.2 Recording Methodology

Separate contexts were recorded individually on (CfAA) pro-forma context sheets. Plans and sections were recorded on CfAA pro-forma drawing sheets at an appropriate scale of 1:10, 1:20, or 1:50, depending on the complexity of the data and features encountered. All drawings were individually identified and cross referenced, contexts enumerated and principal layers and features annotated with OD level information.

Photography of all relevant phases and features was undertaken with digital formats. General working photographs were taken during the duration of the archaeological works, to provide illustrative material covering the wider aspects of the archaeological work undertaken.

All finds were recorded by context. All fieldwork and recording of archaeological features, deposits and artefacts was carried out to acceptable archaeological standards.

4.3 Archive

A full archive of the work has been prepared to a professional standard in accordance with current English Heritage guidelines (1991) and the *Guidelines for the Preparation of Excavation Archives for Long Term Storage* (UKIC 1990). The archive will be deposited with the Greater Manchester County Record Office on completion of the project. In addition, a copy of the report will be forwarded to the Greater Manchester Historic Environment Record (HER).

5. *Excavation Results*

5.1 *Introduction*

This section summarises the results obtained from the excavation of the outlined study area. Identifiable areas known to be the boiler house, engine house, economiser and chimney were stripped of all overlying deposits to expose the surviving archaeological remains. All the exterior walls seen as part of the buildings footprint were aligned slightly off a north-north-west/south-south-east axis, but for the descriptions these have been simplified to north/south. Due to the single area clearance of the study area, the results of the investigation have been broken down into the identifiable areas described above.

5.2 *Engine house*

The footprint of the engine house was revealed as measuring 26.00 x 13.00m, and excavation showed that the majority of the structural fabric had been removed to foundation level. A natural, sterile ground deposit was not encountered at any point during investigations within the engine house.



Plate 15: Aerial view of the surviving footprint of the mill's engine house. Looking north-east

Compacted aggregate concrete containing brick fragments was visible across the internal dimensions of the engine house. Areas of this material lay flush with the levelled footprint of the engine house, although towards the east of the house it was seen at a much greater height (Plate 16). Two test pits were dug into the concrete to establish depth and a natural ground level, however, neither were seen due to rising water at a depth of 0.50m below the working slab level.



*Plate 16: Engine house structural wall remains encasing badly damaged concrete levelling/ floor deposit.
Looking East*

A red brick wall acted as a partition between the engine and boiler houses running east/west for a length of 26.00m and having a width of 0.65m (Plate 17). The fabric of this wall comprised machine-made bricks, each measuring 0.12 x 0.24 x 0.08m branded Smethurst Lowside laid in an English bond using a dark grey mortar. Although cleared to surface level, it was possible to see five courses of brickwork in depth below this inside a possible brick-built pit to the immediate north of the dividing wall.



Plate 17: Remains of dividing wall between the engine and boiler houses. Western end (left), Eastern end (right)

The surviving remains of the dividing wall between the engine house and the boiler house stepped up as it progressed east. At approximately 25.20m from its western end the wall was seen to be standing to a height of 1.85m. Its construction could be seen to be keyed in to a wall aligned north/south which was considered to be the eastern limit of the engine house. Constructed in the same style, this wall was seen to be 0.63m in width and had a length of 12.00m. To its east natural sandy clays were exposed at the same depth as the surviving brickwork. This formed the study areas limit of excavation.

At the eastern end of the boiler house, machine excavation revealed that the concrete deposit seen across the boiler house banked up, with ledges 1m higher than at the western end of the engine house (Plate 16). A badly damaged brick wall was also seen emerging from the concrete towards the south-east. The wall measured 2 x 0.24m. To the north of this wall beyond a further area of concrete a brick constructed pit was seen (Plate 18). The walls of the pit on three sides were constructed two brick courses in width (0.24m) and the entire construct measured 2.20 x 1.40m. Removal of the pit fill which was made up of demolition material and large quantities of Accrington brick, revealed the pit to be 2m in depth. However, the base of the structure was not seen due to accumulation of water and oil within the pit. There were no distinguishing features to hint at the pits usage apart from a partially blocked drainage pipe constructed into the eastern wall of the pit near its base.



Plate 18: Engine house brick-lined pit. Looking east

Above the brick-lined pit, extending east and south, deposits of modern concrete were uncovered. The concrete had been laid over the top of the rustic earlier aggregate material forming three tiered platforms



Plate 19). The two outer tiers sat level to each other whilst the central thicker ledge rose approximately 0.25m higher. This modern concrete plateau looked down over the engine house to its west and abutted the structural wall to its east. The overall length of the concrete ledges seen was 6.40m and they stepped out from the eastern wall by 1.20-1.80m. No engine house fittings were seen associated with these tiers. A cast-iron pipe within a brick culvert was noted running east beyond the limit of excavation from the northernmost concrete ledge, although this became dislodged during machine excavation. The location of the culvert was plotted on the site plan.



Plate 19: Tiered concrete ledges to the west of engine house wall. Looking south-east

Beyond the eastern wall limit of the engine house, it was discovered that there was a continuation of the dividing wall between the engine and boiler house (Plate 20). This continuation of the wall extended the footprint of the engine house an additional 4.00m to the east. At this point the partially exposed brick wall turned 90 degrees to the right and continued north. The wall was then lost beneath the site spoil. However, at 1.20m along this wall there appeared to be a slight step down in the brickwork for approximately 0.80m, at which point it stepped back up and continued to the wall corner for a further 1.60m. Although not shown on the plans, when viewed alongside the image of the eastern elevation in Plate 6, it is likely that area was the end of the engine house and an external staircase was visible.



Plate 20: Continuation of southern wall of the engine house. Possible entrance located to the left of the scale. Looking west

The area to the south of this wall which would contain possible further evidence of the external brick staircase was not excavated. However, to the east of the economiser beyond an area of natural sandy clays a large wall was uncovered (Plate 21). This wall measured 0.60m wide and 7.60m long was not tied in to any other structures, but did appear to abut the southern elevation of the engine house. This should therefore be considered to be a yard boundary wall and part of the lower external staircase which can be seen in Plate 6.



Plate 21: Possible yard wall associated with the engine house (looking north)

The northernmost wall of the engine house measured 0.60m wide, and had an east/west alignment running a length of 26.00m. The make-up, construction and surviving condition of this wall were similar to the above described walls. At 8.20 m from its western end a further wall was seen heading north from the engine house wall (Plate 22). This wall was the eastern external wall of the mill building, and matched with the OS 1909 map (Plate 3).



Plate 22: North-west corner of the engine house with the upstanding remains of the mill's eastern wall seen heading north (to the left). Looking east

The final wall that framed the engine house was to the west. Seen as a footprint at a cleared slab level the remains of the wall were seen to be approximately 0.65m in width being made up of five brick courses and running the entire length; 31m of the engine and boiler houses. The northern most 13m of the wall forms the western limit of the engine house (Plate 23). Two walls aligned east/ west, running parallel to each other at a distance of 3.80m were seen connected to and heading west of the engine house wall. These relate to a rope race, which can be seen on the architects' plans (Plate 2), but fall outside of the study area.



Plate 23: Western wall of the engine and boiler houses. The rope race (arrowed) can be just seen to the right

5.3 Boiler House

The area classified in this study as pertaining to the boiler house was an almost square building measuring 16.20 x 16.00m, and also included an attached rectangular area to the south of the economiser, measuring 8.40 x 4.00m. The boiler house area was framed on its north and western sides by the dividing wall with the engine house, and western exterior wall mentioned in the engine house descriptions. There were no natural levels encountered during the excavation of this area. This was due to the nature of the materials uncovered preventing further investigation.



Plate 24: General shot of engine house (foreground) and boiler house (background), looking south

A large external wall was uncovered at the southern end of the excavation area which matched up to the southern limit of the boiler house on the architects plans. This wall was still standing to a height of 2.00m, and ran east/west from the eastern external wall for 14m with a width of 0.60m (Plate 25). The fabric of the wall comprised a mixture of machine-made red bricks, some branded Accrington and bonded together in an English pattern using a dark grey mortar.



Plate 25: Internal elevation of the boiler house southern wall. Looking south

At the eastern end of this 14.00m section of wall, bull-nose bricks were seen and a gap of approximately 1.70m noted before the continuation of the external wall for a further 8.40m to the east. This entranceway was framed on both its east and west sides by the remains of two north/south-aligned walls, which were ran northwards but had been demolished to foundation level. These walls measured 2.50 x 0.40m. The wall to the east at its northern limit turned to run east and was 0.51m wide, forming a division between the boiler room and the economiser (Plate 26). The wall to the west probably met an internal dividing wall but due to the presence of contaminants this was not investigated further.



Plate 26: Boiler house entrance in southern wall. Looking south

Continuing along the southern external wall, to the east of the entrance, the surviving wall height uncovered was seen to be 1.46m and was also constructed from Accrington machine-made red brick. On the internal face of this wall section, a small area of white tiles survived, giving an indication of the boiler houses' décor (Plate 26). Further remains of a plaster wash were also visible across the internal faces of the walls in this section of the boiler house.

At the eastern end of the southern wall, another machine-made brick wall with a north/south alignment was keyed into this one. This wall ran north for 3.69m before it met the surviving foundational structure of the economiser/flue wall (see below). In the south-east corner of the boiler house a concrete platform was seen (Plate 27), which abutted the walls and measured 3.80 x 2.00m, although it was truncated on the west side.



Plate 27: Remains of a modern concrete surface in south-east corner of boiler house. Looking south-east

The central area of the boiler house immediately south of the engine house/boiler house dividing wall was excavated down to the slab level with the aim of finding features associated with the boilers. The remains of the lower levels of brick structures and bays were seen aligned north/south within this area. A total of four firebrick-lined bays each containing fill material was seen. These, as with the majority of the site, had been demolished to slab level (Plate 28). Investigation of the easternmost boiler structure found the remains of shallow pits lined with a single course of fire brick. Excavation into the fill material was stopped due to large accumulations of water and oil being exposed at this lower water table level.

Within the fill of the bays and also visible across the boiler house area, patches of fibrous material were noted. The amount of hazardous contaminant exposed informed the decision to cease investigation of this area and to immediately recover the area to prevent any further breaking up and spreading of the material. Due to this decision, no measurements were taken within this part of the boiler house. However, the areas where contamination was immediately visible were roughly plotted (Fig.4)



Plate 28: Mid-excavation shot of boiler housing bays with fill material. Looking west

Beyond the southern limit of the boiler house, a wall was seen forming an external passage (Plate 29). This wall constructed of Accrington stamped brick was two courses in width and ran for 10.10m before becoming truncated. At its eastern end the wall angled slightly towards the chimney stack and continued beyond the limit of excavation.

The western end of this wall was also lost just beyond the entranceway in the boiler houses southern wall. Comparing the remains of the wall with the 1909 OS map, a passageway matching this wall can be seen (Plate 3).



Plate 29: External passageway linked to an entrance at the southern end of the boiler house. Looking east

5.4 Economiser and Chimney

To the immediate east of the backfilled boiler house area, the surviving structural remains of the economiser was seen. The brickwork could be seen cut into an area of natural yellow silty clay to the west of the external stair case/yard wall. The economiser was constructed of red machine-made brick and internally lined with a single course of firebricks, forming a flue 0.80m in width. This extended east from the boilers alongside the dividing wall of the boiler and engine house. The exposed brick flue ran east for 1.00m and then split into two separate channels, the first turning 90 degrees to the north and the second continuing east through the remains of a metal gate (Plate 30). Beyond this the flue continued for 1.20m then the brickwork structure curved to the right diverting the flue direction northwards and aligning its axis parallel to the first flue. The two flues ran north for 12.00m before returning to the east/west alignment and re-joining. From here they extended east for 5.00m, entering the chimney flue.



Plate 30: The north end of the economiser, abutting the south end of the engine house. Metalwork for the gate is visible in oil pool (looking N)

Excavation of the economiser flue fills / soot traps was abandoned due a level being reached below the water table and the presence of oil, which can be seen in both Plate 30 and Plate 31. The wet weather conditions endured throughout the excavation also contributed to flooding around the feature.



Plate 31: Elevated view of the backfilled economiser flue channels. Looking west

The economiser flue continued east into the chimney. The chimney stack was found to be of circular form, and had been levelled to a slab level height which was approximately 2.00m above the economiser remains in what would have been the mill yard (Plate 32). Surrounded by modern flags and demolition materials, the exposed chimney footprint measured 5.60m in diameter. Excavation into the soot fill revealed the chimney to be double skin in construction with the flue running to its centre.



Plate 32: Chimney footprint. Looking west

The flue entering from the economiser had a width of 1.35m and was seen to be flanked on either side by surviving walls to a height of 1.86m. The full flue soot fill was not excavated and no base was seen. Working in from the external face, the chimney stack had an external single course of Accrington bricks followed by six courses of damaged red brick stamped with either; Chamber Colliery, Hollinwood or Smethurt Lowside. The width of these courses was approximately 0.86m. In front of this a lower brick shelf filled with soot was seen before the inner course of specially moulded bricks formed the eye of the chimney (Plate 33 and Plate 34).



Plate 33: Inner chimney flue wall and structural brickwork to central eye. Looking north- west



Plate 34: Exposed cross-section of the chimney stack. Looking west

6. Discussion

The archaeological excavation has established the nature, depth, extent and level of survival of the below-ground remains of the steam-power plant of Durban Mill. The walls that were exposed can be seen to align with the architects drawing of 1905 (Plate 2) and also the external shape can be relatively aligned with the OS mapping (Plate 3 and Figure 5). The majority of structural walls and features uncovered are all considered to have been part of the original mill construction.

Within the engine room, there was no evidence of the original machines left *in-situ*. The crude aggregate concrete which was seen surviving in banked ledges would have originally formed a sturdy foundation for the placing of the machine beds. It is also unclear as to what the purpose of the internal east/west short wall was. It could be suggested that the remains form the foundation courses of a pit feature. At the southern end of the site however, large stone slabs were seen being utilised as site security. The upturned slabs had protruding steel bolts and carved footings similar to what would be expected for the footings of the engine house machinery (Plate 29).



Plate 35: Large stone blocks, possibly related to the engine house. Looking south

The boiler house was not fully excavated due to the presence of contaminants in the pits which would have originally housed the boilers. As with the engine house there was no original machinery present on site. Desk-based research found images of the boilers *in-situ* during the mills demolition and an illustration of the workings of a Lancashire boiler (Plate 36 and Plate 37). These images demonstrate that the archaeological remains seen on site relate to the boiler flue pits. The contaminants within these pits will be related to the later phase of the boilers after their conversion to heating fuel storage.



Plate 36: Durban Mill boilers in-situ during demolition. Looking south-east (Image taken from www.28dayslater.co.uk)

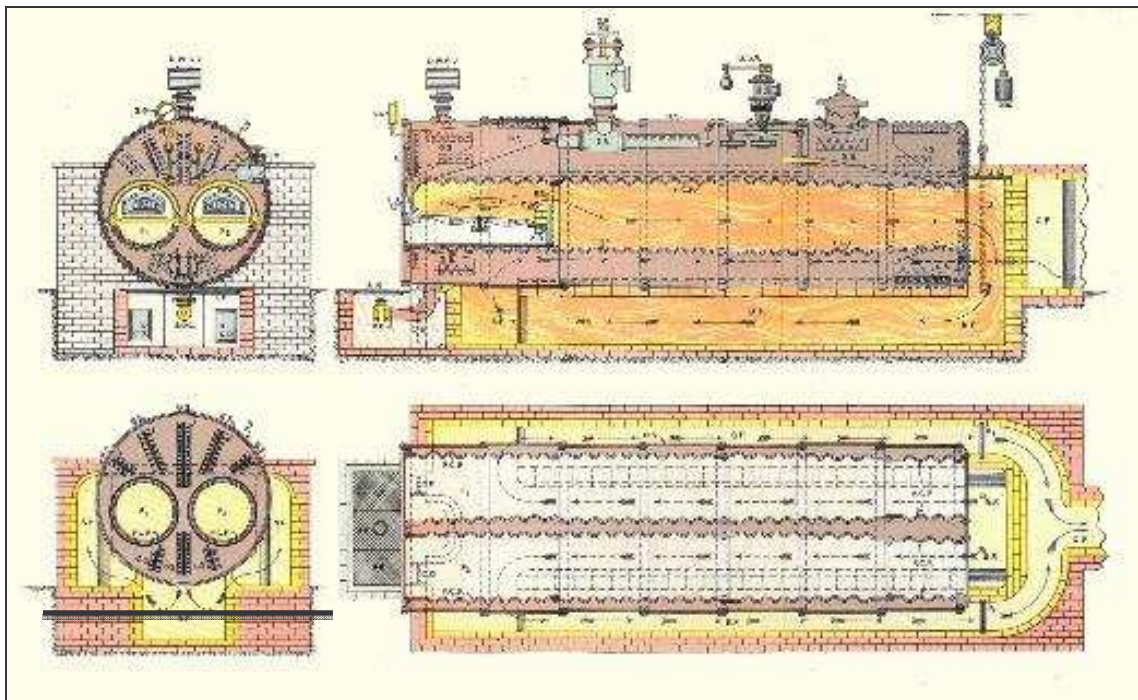


Plate 37: Illustration of the workings of a Lancaster boiler. Edited black line represents the survival height of the boiler remains seen. (Image from Andrew 1911)

The efficiency of the Lancashire boilers and the running cost of the mill would have been improved by having an economiser, an energy saving device invented by Edward Green in 1845. This economiser comprised a bank of cast-iron pipes mounted in the flue between the boiler and the chimney (Plate 38). Water entering the boiler was first passed through the pipes and heated by the exhaust gases in the flue, this reduced the fuel costs for the mill. The remains of the economiser were seen to the east of the boilers with only the footprint of the flue and soot chambers.

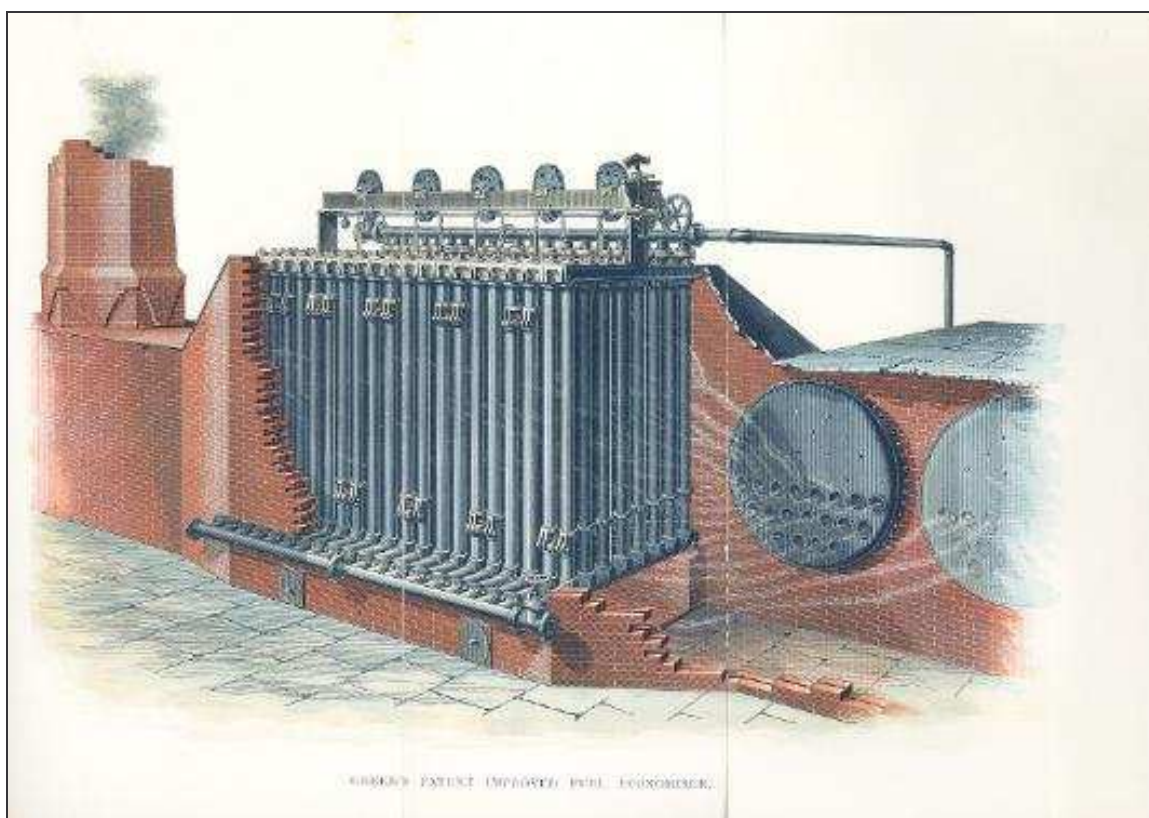


Plate 38: Illustrated cross-section of the relationships between the boilers, economiser and the chimney.

The excavation of the mill's engine house provided an opportunity to examine the buried remains of a textile mill in the nucleus of Oldham's cotton industry. It was noted that a number of different collieries provided the bricks for Durban Mill's construction (Plate 39). The collieries noted were:

- Accrington
- Smethurst Lowside
- Hollinwood
- Glossop
- New Hey



Plate 39: Multiple Collieries produced the bricks used in the mills construction

The likely reason for the diversity of the bricks used here will be related to the rapid boom of industrialisation of the Oldham area during the latter part of the 19th century and beginning of the 20th. The Greater Manchester Textile Mills Buildings at Risk Survey cites 44 mills, including Durban mill, being built within Oldham within the first decade of the 20th century (Miller *et al* 2016). The use of multiple collieries should be seen as an indication of the demand for materials.

Final excavation of areas previously cleared during the demolition of the mill exposed the footprint of the early 20th-century mill power houses. Unfortunately, there was no physical remains for any internal features or workings of the engine house and also very little that could be inferred from the structural footings of the boilers and economisers. Excavation of the boiler house was abandoned due to health and safety precautions in the area around the boiler footings. Quantities of fibrous materials were noted within the areas. These have been marked on the site drawing (Figure 4). It should also be noted that all excavation below the original slab level encountered the water table and rising oil across the boiler house and economiser foundations.

The archaeological excavation has demonstrated that there is very little potential for the survival of further buried archaeological remains. Any unrecorded remains that may survive are unlikely to have any significant potential for further research as outlined in the Archaeological Framework for North West England (Brennand 2007).

7. Archive

7.1 Archive

The archive comprises annotated field drawings, digital photographs and written records. This archive is currently held by Salford Archaeology, and a copy of this report will be forwarded to Countryside Properties (UK) Ltd.

A copy of this report will also be deposited with the Greater Manchester Historic Environment Record, held by the Greater Manchester Archaeological Advisory Service.

8. Acknowledgements

The Centre for Applied Archaeology would like to thank Countryside Properties (UK) Ltd for commissioning the archaeological works. CfAA would also like to thank Dr Andrew Myers, the Senior Planning Archaeologist with the Greater Manchester Archaeological Advisory Service, for providing monitoring support and advice. The on-site excavations were conducted by Simon Hinchliffe, Rachael Reader and Stuart Harris. The report was written and compiled by Simon Hinchliffe and edited by Rachael Reader. The project was managed by Ian Miller.

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Appendix 1: Figures

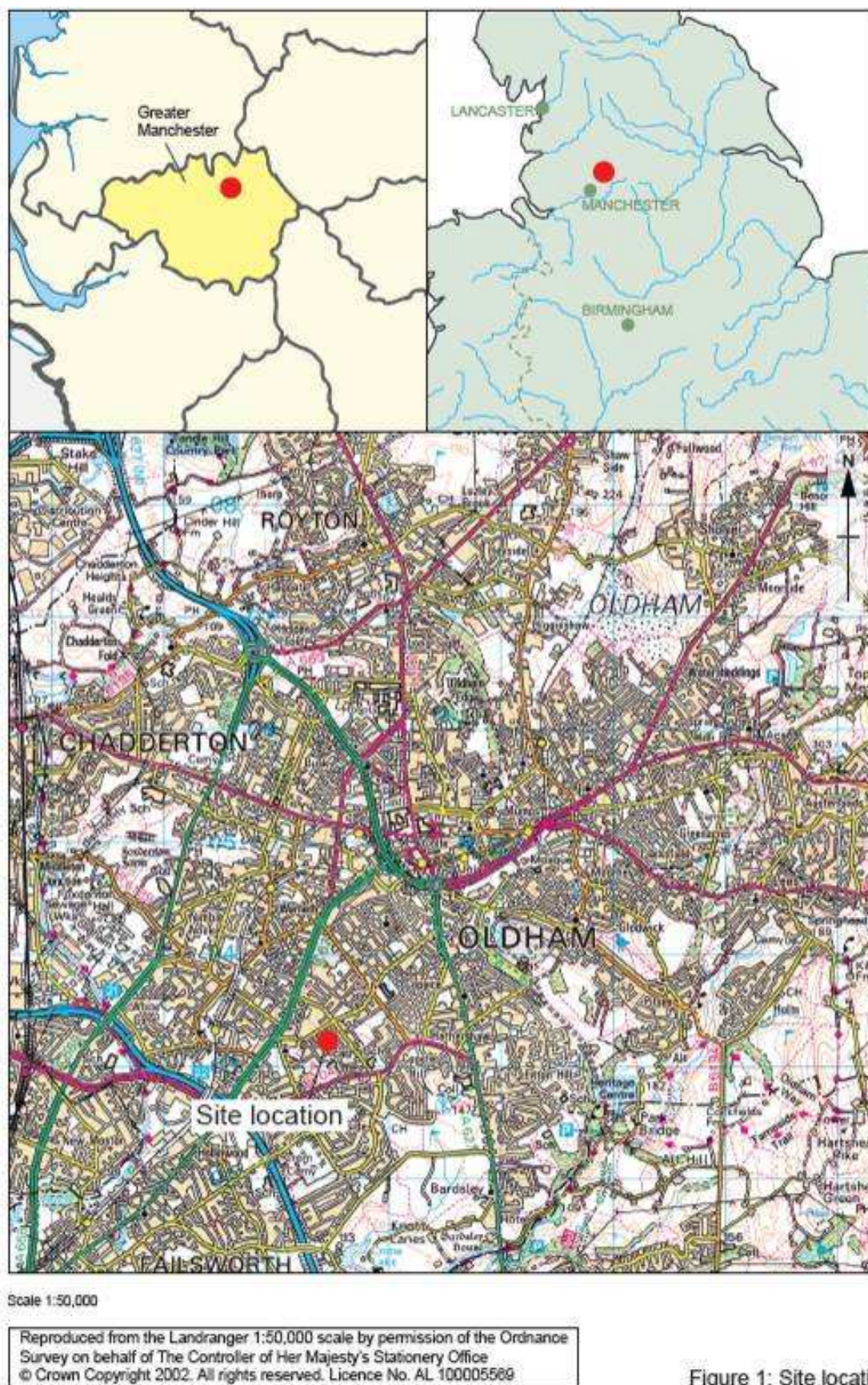


Figure 1: Site location



Figure 2: Study Area

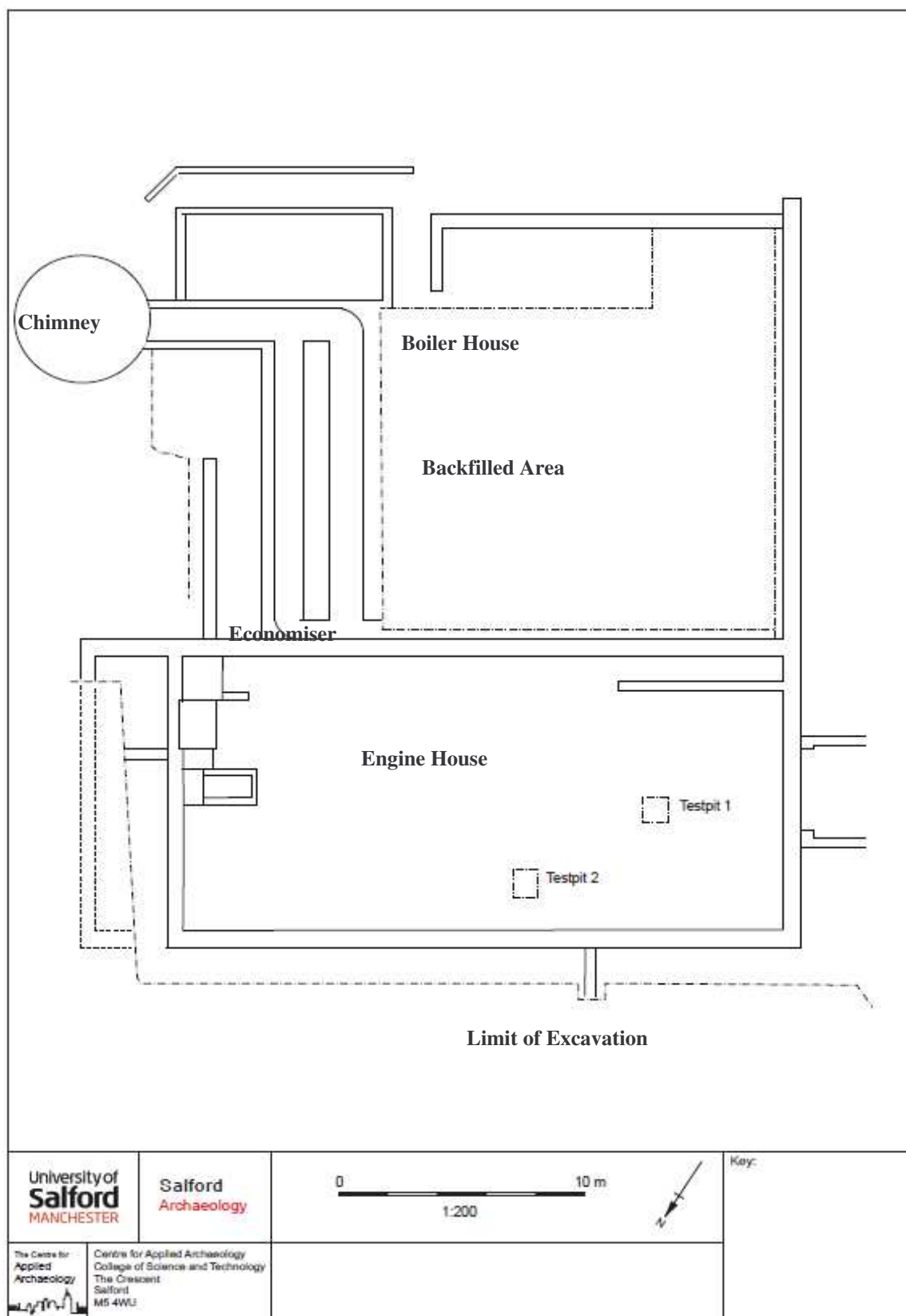


Figure 3: Plan of Study Area

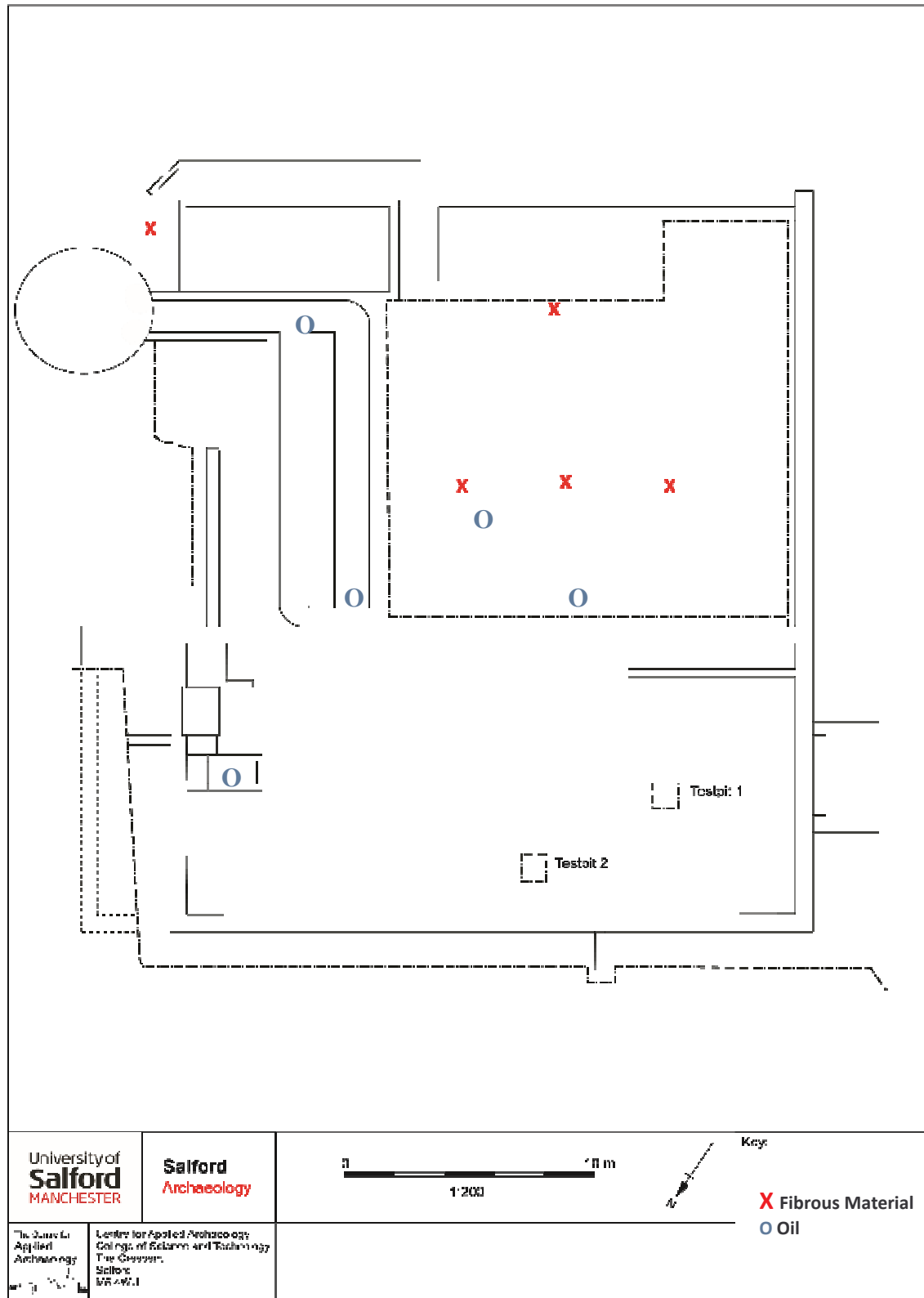


Figure 4: Hazardous Material Locations

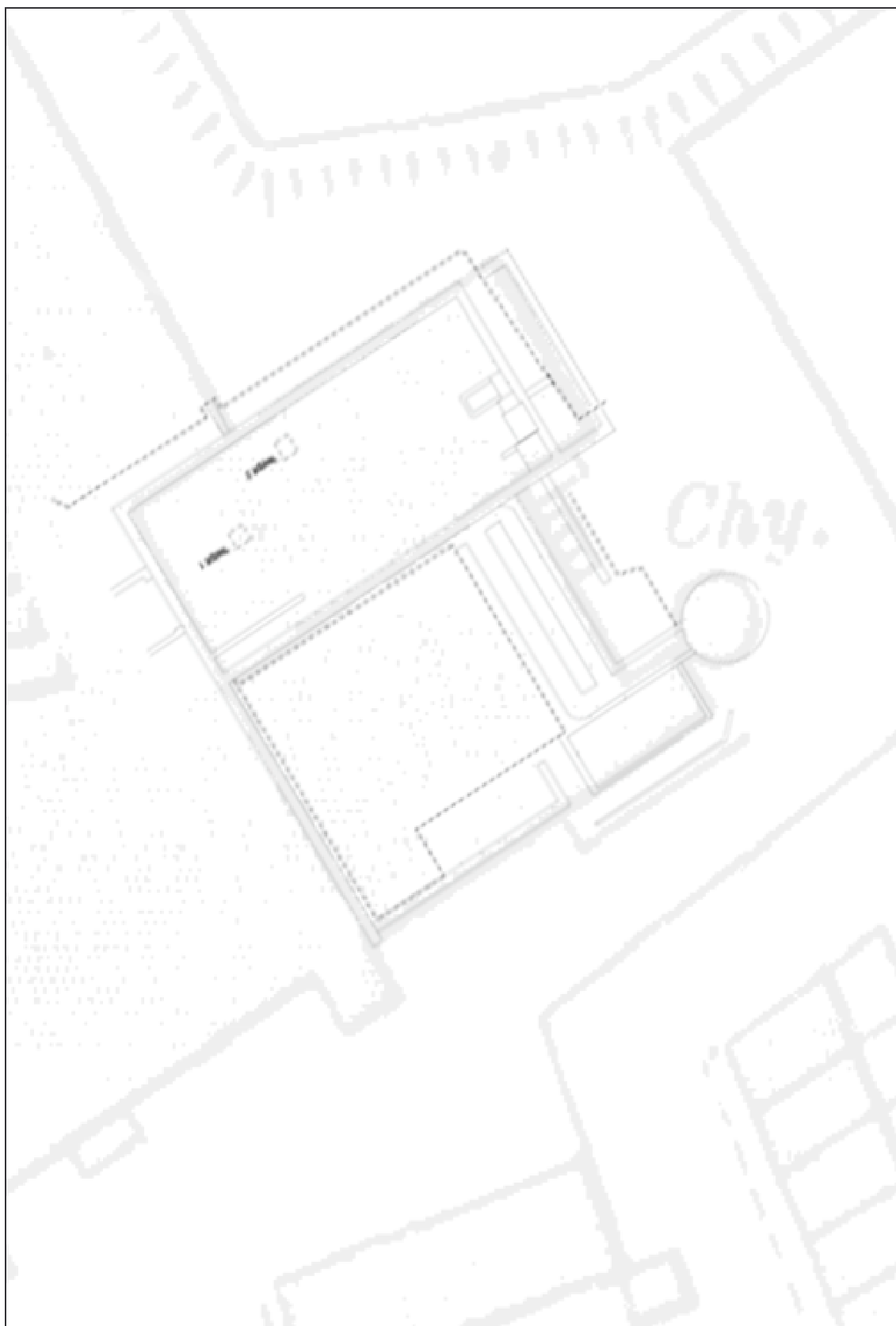
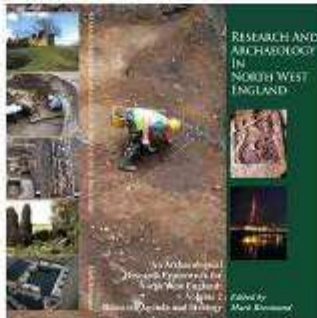


Figure 5: OS 1909 Map with Site Plan Overlay

CONSULTANCY



DESK BASED ASSESMENTS



WATCHING BRIEF & EVALUATION



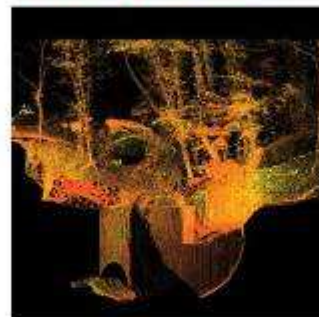
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BUILDING SURVEY



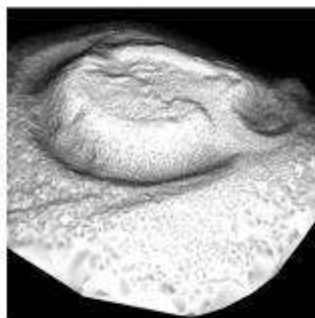
3D LASER SCANNING



COMMUNITY INVOLVEMENT



LANDSCAPE SURVEYS



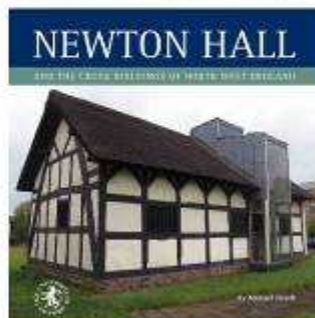
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