WYAS Archaeological Services

87 Rochdale Road, Manchester, Greater Manchester

Building Recording, Archaeological Evaluation and Watching Brief

Report no. 4054
November 2023

Client: Lanpro Services Ltd

CIfA Registered Organisation

West Yorkshire Joint Services

87 Rochdale Road, Manchester
Greater Manchester

Building Recording, Archaeological Evaluation

and Watching Brief

Summary

Archaeological Services WYAS were commissioned by Lanpro Ltd on behalf of McGoff Construction Ltd to carry out a historic building recording, an archaeological evaluation and, later, a watching brief. The works revealed structural remains dating from the 19th and early 20th centuries relating to the gasworks which occupied the site. The site contained the remains of structures largely related to the import, management and export of materials through rail. Deep cellars were recorded across the site, the precise purpose of which remains unclear.

WYAS
Archaeological
Services

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Project Management:	Matt Wells
Fieldwork supervisor:	Matt Wells, Tim Cobbold, Marina Rose
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Nepshaw Lane South, Morley, Leeds LS27 7JQ
Telephone: 0113 535 0163
Email: admin@aswyas.com

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1 Introduction

Archaeological Services WYAS (ASWYAS) were commissioned by Lanpro Services Ltd (on behalf of McGoff Construction) to carry out a programme of archaeological trial trenching, building recording and a watching brief at the former Rochdale Road Gasworks, Manchester. The work was undertaken prior to the redevelopment of the site to fulfil the archaeological condition of the approved planning application (131708/FO/2021).

An initial phase of work including the evaluation and building recording was undertaken between the 16th and 27th of January 2023. These two phases of work were the subject of two interim reports (Cobbold 2023, Wells 2023). The watching brief comprised a later phase, carried out intermittently between the 7th of August and the 5th of October 2023.

The work was carried out in accordance with the National Planning Policy Framework (NPPF), and a Written Scheme of Investigation (WSI, Appendix 1) produced by Lanpro Services Ltd and approved by Greater Manchester Archaeological Advisory Services (GMAAS).

Site location, topography and land use

The development site lies adjacent to the A664, Rochdale Road approximately 1.3km to the north-east of Manchester City Centre (centred at NGR SJ 84699 99133; Fig. 1).

The site covers an area of 0.5ha and includes a concrete hardstanding car park along with several upstanding buildings of various dates. The site itself is level but the surrounding area slopes to the north, and the northern boundary of the site is approximately 6m above the level of the adjacent CCP car park. There are several open and bricked up arches visible from the car park, extending below and into the site. Some of the open arches contain open and blocked doors possibly extending further below the site. It is probable that the area of car park to the north of the site was levelled at the time of the expansion of the gas works and construction of the railway arches, thereby truncating any earlier below ground remains.

The site is bounded by the car park to the north, Gould Street to the west, Clive Street and Back St George's Road to the east and Rochdale Road to the south, including the upstanding buildings and associated car parks of the Marble Arch public house and a convenience store.

Several lengths of brick walls and fragments of former building elevations of varying dates form part of the upstanding boundaries of the site and there are also several upstanding structures of varying dates within the site, the earliest dating to the late 19th century.

Soils and geology

The recorded bedrock geology within the site consists of the Chester Formation – Sandstone overlaid by superficial deposits of Till, Devensian - Diamicton (BGS 2023). The soils are unrecorded urban deposits (SSEW 1983).

2 Archaeological and Historical Background

The archaeological background below is a summary of information provided by the desk-based assessment (DBA) and heritage statement (HS) produced by Salford Archaeology (Salford Archaeology 2020, 2021).

Prehistoric, Roman and medieval (*c.* 9500 BC – *c.* AD 1540)

There is no known evidence for prehistoric, Roman or medieval activity within the boundaries of the site. As such, the potential for any such remains from these periods is considered to be very low, particularly due to the intensive development of the site since the late 18th century.

Post-medieval, industrial and 20th century (*c.* 1540 – present)

The onset of rapid industrialisation in Manchester from the 18th century onwards resulted in rapid and extensive expansion of the town's population. From the late 18th to early 19th century, workers' housing formed the most common site-type within the site boundary (Salford Archaeology 2020). Laurent's map from 1793 clearly shows the start of development within the site with streets laid out and houses constructed along Ashley Street and Back Ashley Street (Salford Archaeology 2020, plate 9).

By 1824, Rochdale Road Gas Works had begun operation and Swire's map of 1824 shows two 'gasometers' and a long range of the Works. The map also shows houses along Back St George's Street and at the junctions between Dewhurst Street and Ashley Street (Salford Archaeology 2020, plate 10). Banck's map of 1831 shows a similar arrangement in greater detail (Salford Archaeology 2020, plate 11).

In 1837, Gould Street School was constructed and is shown on the 1851 Ordnance Survey (OS) town plan (Salford Archaeology 2020, plate 12). The map also shows, in great detail, back-to back housing along Ashley Street, with almost the whole site being occupied by streets and housing. By the time of the 1891 OS town plan, the gas works had expanded into the site, with only a few houses remaining (Salford Archaeology 2020, plate 13). A single large building occupies the site and there are several railway lines and additional structures.

By the 20th century, a joiners shop was added along Gould Street and several photographs dating to the early part of the 20th century (Salford Archaeology 2020, plates 14, 16, 17 and 19) show the arrangement of the buildings. An aerial photograph from 1939 (Salford Archaeology 2020, plate 17) shows the arrangement of buildings at the zenith of the gas works development, including the triple-pile warehouse building.

By the time of the 1951 OS map, the large warehouse building had been partially demolished revealing once internal railway lines (Salford Archaeology 2020, plate 18). The 1970 OS map shows the site to have mostly cleared apart from the very southern end of the west range of the triple-pile warehouse and (now labelled 'Depot') and a further 'Warehouse' structure. A further 'Depot' has been constructed along the south boundary of the site. The 1989 OS map

(Salford Archaeology 2020, plate 21) shows a further 'Depot' has been constructed in the far north-east corner of the site and the 'Warehouse' has gone.

3 Aims and Objectives

Historic building recording

The primary aim of the historic building recording was to record surviving evidence for the original use and subsequent historical form, function and development of upstanding historic building remains bounding and within the site through the production of a record consisting of measured plans and a detailed photographic record, in line with Historic England Level 2 historic building survey standards (Historic England 2016). The Level 2 historic building recording has been enhanced with additional archival research, including accessing the National Gas Archives for plans of the site.

The results provided below have been collated with available documentary, cartographic and photographic evidence for the original use, and subsequent historical development, form and function of the buildings, as well as the results of a measured survey. The results of the survey have been analysed and interpreted to gain a clear understanding of the buildings' uses, and phases of alteration and addition to the structures, focusing on evidence allowing for the reconstruction of historical structural and functional arrangements.

Evaluation

The overall aim of the archaeological evaluation trenching was to obtain sufficient information to establish the presence/absence, character, extent, state of preservation and date of any archaeological remains relating to the former gas works and potentially, back-to-back terraced housing within the development site. This was to allow reasoned and informed recommendations to be made on the application for development of the site, and any requirements for further archaeological mitigation.

The specific aims were to:

- determine the location, extent, date, character, condition and significance of any archaeological remains within the development site.
- excavate and record identified archaeological features and deposits to a level appropriate to their extent and significance.
- assess vulnerability/sensitivity of any exposed remains.
- assess the impact of previous land use on the site.
- assess the potential for survival of environmental evidence.
- inform a strategy to avoid or mitigate impacts of the development on surviving archaeological remains.

- undertake sufficient post-excavation assessment to confidently interpret identified archaeological features.
- report the results of the investigation and place them in their local, regional or national context and to make this record available by disseminating the results in an appropriate form.

The objective of the work was to excavate four trial trenches and assess the resultant areas for their archaeological potential. Any remains were then subject to archaeological excavation. Recovered artefacts were subject to analysis.

Watching brief

The aim of the watching brief was to mitigate the destruction of gasworks structures in the area of site around Trenches 3 and 4. The objective was to provide archaeological monitoring of the site during remediation works carried out to prepare the site for redevelopment. Excavations were monitored and structures and deposits were photographed and recorded.

Research framework

The programme of archaeological investigation and recording was conducted within the general research parameters and objectives defined by in the regional research agenda for archaeology, the North West Regional Research Framework (NWRF 2021). The previous research agenda The Archaeology of North West England: An Archaeological Research Framework for North West England, Vol 2 Research Agenda and Strategy (Brennand 2007) was also considered. The following research questions are considered in the discussion below:

- Ind7.25: Excavate areas of now undeveloped and cleared former working class areas regarded as slums;
- Ind22: Take forward our understanding of the impact of industrialisation on the working class and their living conditions;
- Ind7.35: Undertake industry specific studies of those industries that have received little archaeological attention; and
- Ind52: What Industrial and Modern period type sites need further study?

4 Methodology

A full written, drawn, and photographic record was made of all archaeological work undertaken. An inventory of the primary archive is presented in Appendix 2 and a concordance of contexts containing finds is given in Appendix 3. Appendix 4 contains tabulated results of the trial trench evaluation, Appendix 5 contains a catalogue of consulted historic maps, plans and photograph and Appendix 6 contains photograph registers. ASWYAS currently hold the site archive in a stable and secure location.

Historic building recording

A detailed photographic survey of both the internal and external areas of the structural remains of the former gasworks (Fig. 2) was undertaken in the areas to be affected by development, to the accepted standards and guidance (CIfA 2020a, Historic England 2015, 2016). Buildings constructed in the late 20th century were excluded from the detailed survey.

Photographs were taken in RAW format with a high resolution DSLR camera and all photographs included an appropriate scale where possible.

The photographic record was produced to record the building in its setting, with detailed shots taken of specific architectural and structural elements. A full index of the photographic record was made (Appendix 6), with the location and direction of each photograph marked on an annotated plan (see Figs 3-5).

Documentary research

Documentary research was carried out both at Manchester Libraries, Information and Archives and The National Gas Archive. All records relevant to the former gas works were reviewed and relevant information incorporated into the discussion below. The sources consulted are listed in Appendix 5.

Evaluation

All work was undertaken in accordance with accepted professional standards and guidelines (Historic England 2008; CIfA 2020b), in accordance with the ASWYAS site recording manual (ASWYAS 2020) and in compliance with the WSI (Appendix 1).

All archaeological features were accurately recorded in plan at a scale of 1:20 or 1:50. Feature sections were drawn at a scale of 1:10 or 1:20. All plans, elevations and sections include spot heights that relate to Ordnance Datum in metres.

The work involved the excavation of four trenches of various sizes, positioned to target potential archaeological features identified from historic mapping (Salford Archaeology 2020, 2021) as well as to provide a wide sample across the remaining areas of the site (Fig. 2). The size of each trench is listed below:

- Trench 1 – 8.40m x 7.00m
- Trench 2 – 8.50m x 3.20m
- Trench 3 – 7.00m x 5.00m
- Trench 4 – 9.50m x 6.80m

All trenches were set out and the limits resurveyed using a Trimble VRS differential GPS accurate to +/-0.01m. The trenches were opened in a controlled manner using a 360° excavator using a flat-bladed ditching bucket under direct archaeological supervision. All topsoil deposits were removed in level spits (not more than 0.20m) with the topsoil and subsoil being separated to allow for re-instating in reverse order. Machining stopped at the

first archaeological horizon or natural deposits, whichever was encountered first. All excavations of archaeological deposits were undertaken manually with the stripped surface being cleaned and investigated for archaeological remains.

An appropriate sample was excavated through all archaeological features. These were undertaken to investigate the full depth, profile, and fills, where possible, and to recover dating evidence from the fills. All excavated sections were, where possible, located adjacent to the trench edge to provide a full stratigraphic sequence. Spoil heaps were visually scanned for artefacts. Modern artefacts were noted but not retained.

Watching brief

GMAAS did not require a fresh WSI to cover the watching brief element of the project and the methodology for the evaluation was broadly followed. Excavations as part of remediation works within the watching brief area were subject to constant archaeological monitoring. The extent of excavations was dictated by the required depth of remediation works which in some of the area included the excavation of the entire structure to natural deposits. The area around the southern and eastern edges was not fully excavated so as not to cause subsidence of neighbouring properties. Health and safety concerns of working at height, around unstable structures and deposits and on contaminated ground meant that in many cases it was only possible to record the remains from a distance.

5 Historic Building Recording

The following comprises a general description and analysis of the structures on site which were largely demolished by the time the watching brief was carried during remediation works, prior to redevelopment. Further elements of these structures were exposed and photographed during the watching brief phase (see below).

Structural layout

The site was originally developed in the later 18th and early 19th century, when rows of terraced houses were constructed. It is thought that at this time the site was characterised by a gentle slope down from Rochdale Road in the south to the north, to some degree probably following the present incline of Gould Street to the west. By 1880, the workers' housing had been demolished to allow for a large expansion of the gasworks, the southern edge of which is contained within the site (Fig. 2). This involved the construction of two terraced levels in this area. The lower, northern terrace was cut into the natural ground level, whilst the south terrace was built up to create a flat surface, roughly at the level of Rochdale Road. A network of cellars also lies beneath much of the upper terrace. There is a *c.* 6m difference in height between the two terraces.

Discussion of the structural remains which relate to the former gasworks have been divided into three areas. These are the structural remains associated with the former 'Warehouse',

former ‘Joiners Workshop’ and the ‘Northern Wall’. These are terms used in previous reports (Salford Archaeology 2021) and are re-used here for continuity.

The ‘Former Warehouse’ and ‘Former Joiners Workshop’, located on the upper terrace, were accessed from Rochdale Road. The structural remains on the upper terrace were, in general, poorly preserved and subject to widespread alteration and, in places, decay. This area has, from the later 20th century, been used for vehicle parking, storage and repair. The ‘Northern Wall’ was accessed from the north, through the CCP car park and is located on the lower terrace. It has continued to be used as a retaining wall and is in better condition, albeit subject to significant alteration and addition.

The walls were almost entirely constructed from brick with occasional fine-grained sandstone masonry. The bricks used to construct the gasworks were 9.5” x 3” and are mid-orangey or reddish-brown in colour. The mortar was lime-based and light yellowish-brown in colour. The bricks were generally laid in common bond, with occasional less regularly laid sections.

Upper Terrace

Later 20th-century buildings

Two modern garages occupied the southern edge of the site (Plate 1 and 2) and its north-eastern corner (Plate 3).

Former Warehouse (Fig. 3)

Walls in the south-west corner of the site made up the southern wall and part of the western wall and roof of a former ‘Warehouse’ building. The Warehouse had been constructed by the time of the 1891 OS map of the area and most was demolished in the later 20th century, with its southern end incorporated into a later ‘Depot’. The modern depot consisted of earlier Warehouse walls on its southern and western sides with later 20th-century walls inserted on its northern and eastern sides. Part of the western wall of the original Warehouse survived, externally, to the north of the modern depot. The current depot was accessed through a doorway in its north-west corner and a large roller-shutter door in its north-east corner.

On the southern elevation (Plate 4 and 5), the earliest wall is likely to be contemporary with the earlier phase of the Warehouse. Here, the space between the roof and the wall was left open, as it was in other areas of the Warehouse (Appendix 3, Photograph 3). Relative to its western elevation, the southern elevation of the Warehouse lay at a slightly wider angle to that of the iron beams which carried the roof. This wall was constructed in brick with a sandstone cope. A rounded cope stone marked a slight raise in height at its eastern end (Plate 6). Three buttresses on the interior were spaced along the wall. A scar at the western end of the wall suggests it carried a raised floor or loft (Plate 7), which may not be contemporary with the gasworks. Later the gap between the earlier boundary wall and roof was filled in with brickwork and the gap between the wall and roof two is covered by a wedge-shaped extension to the roof (Plate 8).

The western elevation (Plate 9-11) of the Warehouse was partly internal, where it was incorporated into the later 'depot', and partly external, where it was repurposed as part of an external wall to the site and is in much poorer condition. The elevation contained three broad phases of construction. A boundary wall, visible between and set back slightly from the Warehouse's arches, represents the first phase. The style of the wall matched the boundary wall of the gasworks elsewhere. One example is pictured in a photograph to the north in 1901 (Appendix 5, Photograph 3) and another was seen along the southern boundary of the site during the watching brief (see below, Plate 111-114). As in the southern elevation, the boundary wall was buttressed and topped with a sandstone cope, with a sudden increase in height at its northern end (Plate 12). Much of this elevation contained the Warehouse building wall which is characterised by large brick arches. Three arches were internal to the later depot building and a further four extant, externally, to the north. The columns were characterised by internal pilasters which rise to height of the roof. The arches themselves (Plate 13-15) were rounded in shape and constructed with two plain courses of brick and no keystone. They were *c.* 4.5m in height. The southern three arches, within the later depot, were entirely infilled, in at least two sub-phases, probably following the closure of the gasworks in the later 20th century. The four remaining arches were partially blocked by a partially collapsed boundary wall, which may have predated the gasworks. The northernmost arch was entirely filled with timber and much later dark grey brickwork (Plate 16). A similar timber construction is seen here on a photograph dated to 1901, suggesting it was an original feature (Appendix 5, Photograph 3).

The roof was probably originally supported largely by a series of iron beams and columns, some of which were extant at the time of the survey (Plate 6 and 17). The beams were 'built-up' - constructed of separate, riveted sections and are found along the southern and eastern sides of the building. Beams of this type were commonly constructed from wrought iron in the mid-19th century. The beams were supported by brick walls at the south-western corner and eastern sides of the building. One extant cast iron column, plain in style, was found centrally on the southern side of the building. It is likely that the Warehouse originally contained further iron columns which were removed following the closure of the gasworks.

The roof was of hipped design and supported by iron trusses (Plate 18), with a raised-scissor design. Close inspection was not possible during the survey due to its height. The components were probably consisted of both cast and wrought components and riveted. The roofing material was of corrugated board and was not original.

The eastern and northern elevations were not contemporary with the gasworks. The northern elevation was clearly inserted as a new external wall as the Warehouse was converted following the demolition of much of the gasworks (Plates 19 and 20). The date of construction of the eastern wall (Plates 21-23) is less clear. A reduction in the size of the Warehouse, suggested by aerial photography and historic mapping, took place between 1939 and 1951 (Salford Archaeology 2021, Plate 23; Fig. 17). At this time, this area became the eastern extent of the Warehouse, having previously extended much further to the east, and it

is possible a new external wall was built here at this time. However, this wall was built above a railway track, still visible in the floor, which historic mapping suggests was in use in 1951. It is therefore likely the wall was constructed after the closure of the gasworks.

Former Joiners Workshop (Fig. 3)

The Former Joiners Workshop lies along the western edge of the site. It was constructed between 1901 and 1907 and stands on the site of a lightly smaller, earlier building identified on historic photography and mapping (Appendix 5, Photographs, 1, 3 and 5; Fig. 14). At the time of the survey, the structure had been significantly reduced, almost to ground floor level. Areas such as windows had been filled in and its remaining elements repurposed as part of the site's boundary wall. The structure does not appear to incorporate any elements of earlier structures and its footprint appears to overlap with the Former Warehouse described above. Parts of the southern, western and northern walls visible during the survey are described below.

The southern part of the building was originally lower and was better preserved along its southern edge and south-western corner. Externally the brickwork was defined by six brick pilasters separating sections of indented brickwork (Plate 24 and 25). The base of the indents was marked by chamfered sandstone blocks or plinth bricks whilst the upper edge was defined by three stepped courses of standard bricks. Internally (Plate 26), on the southern elevation, two narrow horizontal niches were capped with sandstone blocks (Plates 27 and 28). During the watching brief (see below) these niches were seen to carry drainpipes. Seven other sandstone blocks were built into the top of the brickwork, the purpose of which remains unclear. At the eastern end of the southern elevation, the wall of the Joiners Workshop overlaps that of the Warehouse (Plate 29), demonstrating its later date and overlapping footprint. It is unclear if a wall once separated the Warehouse and workshop.

Little of the remainder of the western side of the workshop survives (Plates 30-35), the walls having been reduced to the base of the original windows observed in historic photographs (Plate 32). The workshop was underlain by a cellar, later observed during the watching brief (see below). The cellar was lit by a series of now blocked windows. The southern window was circular (Plate 36) whilst the four northern windows, in the main part of the workshop, were taller, arched windows (Plate 37). The arches were defined by at the base by chamfered sandstone masonry and a large, moulded brick keystone. Following demolition, much of this wall was filled in with brickwork and repurposed as a boundary wall.

The northern elevation (Plate 38) was only visible from the interior of the former workshop. At the far western end of the elevation, inserted brickwork may indicate the location of another door or window. Immediately east of this brickwork, a cast iron bearing box was built into the wall, roughly square and *c.* 0.50m in size (Plates 39-40). A power cable suggests an electricity supply once was fed through the box, but its original purpose was to hold a line shaft to supply a mechanical power to machinery in the building. Part of the bearing housing survived. Historic plans indicate the building to the north was the 'mechanics workshop' and

a line shaft is pictured running in line with this bearing box in a historic photograph (dated 1901; Appendix 3, Photograph 6). Four areas of inserted, later brickwork probably represent the former location of windows (Plates 41 and 43).

Northern Wall (Figs 4-5)

The Northern Wall forms a retaining wall, behind which a number of cellars are found. The historic structures, contemporary with the gasworks, were generally obscured by later brickwork.

Eastern Arches and Cellars (Fig. 5)

The far eastern area of the northern wall contained four arches (Plate 44) through which a series of cellars could be accessed. Originally a wider system of passageways and cellars could be accessed from here which underlie the site. Many of these areas have been bricked up or blocked with rubble and could not be accessed. The cellars are described by numbering 1-4, from east to west. It was not considered safe to enter the cellars during the survey and they were recorded as completely as possible from the exterior, with some further information provided by photographs taken during separate surveys and historic plans.

The opening of each cellar was defined by a separate brick arch (Plate 45-46). Each arch was constructed with a three-centred shape and is supported by sandstone abutments. These consisted of rusticated blocks, topped with a moulded impost (Plate 47). The arch was two brick lengths in thickness, consisting of alternate radially and vertically placed courses. Each arch had a sandstone keystone. The wall above contained a course of sandstone, broken by the tops of the arches. The cellars behind the arches were barrel-vaulted and backed with a brick wall that was angled south-westwards, such that the cellars became deeper to the west.

The eastern wall of Cellar 1 (Plate 48) contained a brick arched doorway, and a smaller partially blocked doorway, though which another cellared room could be accessed (Plate 49). The cellar ceiling contained two round openings along the central spine of its roof, *c.* 0.50m in width (Plate 50). Cellars 1-3 contained two or three identical features. A doorway in the centre of its western side accessed Cellar 2 (Plate 51).

Cellar 2 (Plate 52) contained three openings in its ceiling (Plate 53). A larger central arched doorway was found in the centre of the wall separating Cellar 2 and 3 with a smaller doorway at its southern extent (Plate 54).

Cellar 3 (Plate 46) contained a brick wall that had been inserted along the length of the cellar, dividing it into two equal halves (Plate 55). Two openings in its ceiling were partially blocked by this wall (Plate 56 and 57). Between Cellar 3 and 4, two arched doorways had also been blocked (Plate 58).

Cellar 4 (Plate 59) contained the most additional brickwork and lead to a series of cellared rooms to the west and south-west (Plate 60). The western side of the arch was blocked with two brick walls and a third wall marks the back of the cellar (Plate 61). A concrete ramp led

to a raised passageway into the cellar behind. It was not possible to safely view this area during the survey.

Remainder of the Northern Wall (Figs 4-5)

Across much of the remainder of the Northern Wall few original features of the gasworks were visible (Plates 62 and 63). Original features were likely to be obscured by 20th-century brickwork, added following the demolition of the gasworks, which was constructed in at least three different phases. Earlier phases blocked up the area beneath the iron beams with mid-orangey-brown bricks. Large buttresses and a wider stretch of walling were added in darker greyish-brown and mid-orangey-brown brick, presumably to reinforce the retaining wall. Finally, areas of the wall were capped, again with mid-orangey-brown bricks. Extensive areas of the wall were also obscured by vegetation. The visible features contemporary with the gasworks are described below from east to west.

A square opening in the foot of the modern walling (Plate 64) revealed an earlier brick arched passageway, running southwards (Plate 65). This met another passageway, aligned east-west. As with the cellars described above, it was not safe to access the cellar.

In centre of the Northern Wall, the wall consisted of brickwork largely post-dating the demolition of the gasworks with only a few original features left visible. The earliest features here comprised three horizontal iron beams (Plate 66 and 67), numbered Beam 1-3, in sequence from east to west. The build-up of soil and vegetation at the base of the walls meant accurate measurements of the height of the beams was difficult to obtain, but they were at a height of 3m above the current ground level. Beams 1 and 2 were at the same height, slightly above that of the Beam 3. They had a matching construction that was slightly narrower than Beam 3. All three beams were ‘made-up’ of separate riveted iron pieces, similar in construction to those in The Warehouse. It is likely that the beams were supported by both brick walls and cast-iron columns, similar to those seen in The Warehouse, on historic photographs of the gasworks (dated 1901; Appendix 5, Photograph 3 and 4) and recorded during the evaluation and watching brief. It is likely that the space beneath was originally open, and the beams supported the roof of a cellar.

Beneath the Joiners Workshop, at the far western end of the Northern Wall, four tall arches were clearly part of the original construction in this area (Plate 68-70). They were entirely covered in white and red render and measured *c.* 5.50m in height. It is likely that the arches were originally open and covered a cellar. The arches relate to the Mechanics Workshop, which extended northwards along the western edge of the gasworks, identified on historic plans of the site.

6 Evaluation

Below is a description of each trench containing archaeological remains. Trenches 1 and 2 (Figs 6-7; Plates 71-74) which were devoid of archaeological features are not discussed further but trench tables displaying the depths and widths of each context along with a brief description are shown in Appendix 4.

Trench 3 (Figs 8-9; Plates 5-17)

Trench 3 (Plate 75) was the north-easternmost of the four trenches. The concrete ground level 300 and associated bedding layer 301 were removed by machine revealing archaeological features spanning three broad phases.

1. The earliest features identified included a series of broadly contemporary brick and iron structures (Plates 76-83).
2. The second phase involves the demolition of the structure described above
3. The third phase included a modern brick structure 317 (Plate 84).
4. The fourth, and final phase demonstrates the demolition of structure 317 and the make up to the current ground level.

Wall 309 entered the trench form the southwest and was truncated at its northeastern end by a later 20th-century structure. It was built from handmade red brick bonded with a hard grey mortar. Buttress 307 was located on the southeastern side of, and was contemporary with, wall 309. It was built from handmade red brick bonded with white lime mortar, a form suggestive of at least a mid-19th-century construction. It was solidly built into a block rather than a series of walls surrounding a separate core or in-fill of the internal space. A course of bull-nosed bricks was present on the outer face in the southeast corner of the structure. A course of red brick 308 was laid on face over the upper course of the southern limit of the buttress 307, in a form suggestive of the base of a cellar ceiling formed by brick vaulting.

Contemporary with the brick walls described above were a series of brick vaults and brick and iron supports forming the fragmentary remains of cellar roof structures. The brick vaults (305, 313) were supported by an iron structure (312), which in turn rested on brick supports (308, 310 and 311). These brick structures were constructed with a mixture of handmade brick, fire brick and modern brick bonded with a particularly hard grey mortar. The mixture of brick types may indicate phases of repair and re-use of bricks from elsewhere.

A series of surfaces were built above, but likely contemporary with the structures described above. A possible brick surface surface (304) was present at a similar level to the upper portions of structure 307, possibly suggesting contemporaneous use, if not date of construction. Fragments of a stone sett surface (302) was likely a remnant of an external surface. Setts 302 were laid on a tarry bedding layer 303. Deposit 303 was seen in section to have been laid directly over the possible brick surface 304.

A second broad phase of activity involved an episode of demolition represented by deposits 306, 316 and 322, composed of brick rubble and clinker.

The third phase of activity caused the truncation of the eastern portions of the structures present along the west side of the trench by the digging of construction cut 315 followed by the laying of concrete 318 and building of structure 317. The concrete (318) had been laid in the base of the cut 315 and utilised as a foundation for the wall and the base of the chamber 317. Structure 317 was a large rectangular structure forming a chamber and was built from modern machine-made frogged brick bonded with a modern cement type mortar. A series of alcoves were present within the internal face of the structure (Plates 86-87).

The fourth and final broad phase of activity was represented by demolition deposit 320, mass levelling 301, and the laying of the current concrete ground level 300. Deposit 320 was entirely composed of brick rubble and concrete and formed a demolition related infill of structure 317. Deposit 301 was predominantly a black clinker deposit utilised as a levelling layer for the reinforced concrete 300.

Trench 4 (Figs 10-11, Plates 88-95)

Trench 4 (Plate 88) was the southeastern-most of the four trenches and was the trench nearest to Rochdale Road. The possibility of surviving elements of tenement housing predating the gasworks was possible in this location, although with a low probability due to truncation by the construction of the gasworks.

The earliest surviving structures in Trench 4 appeared to be a brick wall 402 (Plate 89) and an overlying flagstone surface 403 (Plate 90). Brick wall 402 was aligned broadly northeast to southwest and was built from handmade red brick bonded with black ash mortar. The exposed northeast face of wall 402 was excavated by machine to a depth of *c.* 3m but the base was not reached, suggesting a large open space had been present to the north of the wall. This space was on a scale too large to have been part of any early slum housing and was clearly part of the use of the site as a gasworks. The flagstone surface (403) was bonded with black ash mortar to the uppermost surviving portion of brick wall 402 and was likely in use at the same time.

The second broad phase in this trench included a large structure formed by iron beam 405 (Plate 91), roof/ceiling 406 (Plate 92), and a large stone block 404 (Plate 93). The stone block 404, likely a base for a removed structure and the iron beam 405 were later additions which had been built into the northeast face of wall 402. The beam ran northwest from the wall for the entire length of the trench. A series of brick arches 406 with iron beams between each arch was built up to the northeast side of the large beam 405. An open space was identified below the beams and arches (Plate 94). A metal plate (407) was laid on the upper surface of arches 406 (Plate 95) for which the purpose was unclear but possibly to support a structure which was subsequently removed.

It is possible that a clinker deposit 409 and a surviving stone surface gutter 410 (Plate 96) are remnants of a yard area to the southeast of the brick arches in use during the second phase of activity.

The third and final phase in Trench 4 was represented by a deposit of made ground 411, a levelling deposit 401 and the current concrete ground level 400. Deposit 411 filled much of the base of the trench and was present in the space formed by the wall 402 to the south and the arch and beam structures, 405 and 406 to the east and was likely laid down as part of a mass 'levelling up' prior to the laying of the modern concrete. It was largely made up of brick fragments, probably derived from demolished gas works buildings. The most notable inclusion were fragments of brick pipe supports. Another modern feature was brick structure 408.

7 Watching Brief

The watching was carried out intermittently between August and October 2023, following the building recording and evaluation. It targeted structures found in Trenches 3 and 4 of the evaluation and was designed to record the structures as they were demolished as part of remediation works, carried out the prepare the site for redevelopment.

The watching brief was able to investigate the structures to a much greater depth than was possible within the confines of the evaluation trenches (to natural geology) and it was possible to tie together structural elements and identified phases recorded during the previous two phases of work.

There were, however, a number of issues which prevented a comprehensive archaeological record being produced. The first of these was having to follow the pace of the groundworks which involved the use of heavy plant. This meant in many cases it was not possible to observe the surface archaeological deposits, such as the delicate brick arches seen in Trench 4. In this case the bricks collapsed as the overlying concrete slab was broken up and removed, despite attempts to remove it with care. At lower depths, it was not possible to record floor levels *in-situ.* Groundwater collected above the floors in the watching brief area and these were broken up and removed without entirely pumping out the water. The deposits and groundwater around floor level were also heavily contaminated with oil, which again restricted safe close inspection. Additionally, close access to the structures was restricted in almost all cases due to their instability and height and they were generally recorded from a safe distance.

The structures extended to a depth of *c.* 6m below ground level which comprised a series of deep cellars. Historic mapping suggests that railway tracks were found at the surface in this area (Figs 14-17) but did not suggest the purpose of the cellars. It was not possible to measure the depth accurately due to the health and safety issues described above. The development of the structures in the watching brief area could be divided into six broad

phases. The phasing is not directly interchangeable with the phases described in the evaluation phase of works but this is discussed below.

Natural deposits were not directly observed in the watching brief area but were seen to underlie the floor as it was excavated, consisting of a light yellowish-brown clay. They were also seen *c.* 7m to the south, beyond the watching brief area which was the extent of the terrace excavated into the natural slope, into which the gasworks was constructed. The results of the watching brief are mapped in Fig. 12.

Phase 1

The walls of this phase were constructed in handmade bricks bonded with lime mortar, generally constructed to a width of 1m, wider at the base narrowing towards the surface. Sandstone blocks were used intermittently at its uppermost course. The walls define a series of cellars, the purpose of which was not previously established, and support a ceiling structure and floor level above.

Walls 1001 and 1004 roughly followed the limits of the watching brief area and form the earliest phase of structures in this area. Though they were separated by an area of later truncation, it is presumed they originally formed a continuous wall. Wall 1001 (Plate 97) defines the northern and western edges. Two doorways were observed in the northern section of the wall (Plate 98). The western doorway was constructed with cast iron door jambs supporting a rounded brick arch. The eastern doorway had brick jambs constructed with bullnose bricks and had later been blocked with brickwork. The wall sprung a barrel vault on its northern (Plate 98) and southern side (1013, see below). Wall 1004 defined the southern and eastern sides of the watching brief area. The wall was wider at its base, with slight steps out at *c.* 0.50m intervals. The wall appeared to have been widened, with a single or double skin of bricks added to its western side (Plate 99). This wall was identified in the evaluation (as 402).

Deposit 1011 formed a backfill on southern and eastern sides of wall 1004 (Plate 100) and represents backfilling of the wall's construction cut. It was a mid-grey silt deposit with frequent brick and stone fragments. To the east of wall 1004 it was found to a depth of no more than 2m where it was used to 'make-up' the ground level, roughly to the current ground level. It also covered brick vault (1013, see below).

To the eastern edge of the watching brief area, a small rectangular brick foundation was identified (1012, Plate 101). The structure was fragmentary but found to a depth of 1.10m. Its western and southern sides were significantly more substantial than the other sides, measuring *c.* 1.10m in width, whilst the eastern side measured 0.35m. The northern edge was too fragmentary to record in any detail and no floor layers were evident. The feature correlates with a rail weighbridge indicated on historic mapping.

The walls supported a roof structure which was observed across much of the watching brief, though with varying qualities of preservation. The observed original structures fell into two

types. The first type comprises a brick barrel vault (1013) which spanned the gap between walls 1001 and 1004 (Plate 102). The vault was constructed in brick in a layer three bricks in thickness. Its uppermost layer was sealed with tar. The second roof type was previously identified in Trench 4 and best preserved to the north-west of the watching brief area. It comprised a series of iron columns which were spanned by iron beams and timber (Plate 103). These structures were fragmentary, either having been partially demolished or too fragile to survive the breaking and removal of the overlying concrete slab. The best-preserved area was found to the north of wall 1003. The main iron beams ran north-west to south-east, resting on walls 1001 and 1003. The main beams were constructed 'built-up' of smaller sections, riveted together. Two diagonal timbers spanned the gap between two of the beams. Sockets in the beams were visible on other beams suggesting further timbers were originally present. Above the main beams, narrower cast beams were laid, oriented south-west to north-east. One area of brick arch remained in-situ. The brick arches were aligned parallel with and spanned the secondary iron beams. The iron columns supported this roof structure in the area to the north and west of wall 1004, to support the roof structure where the spans between the brick walls were larger.

As discussed previously the floor levels were not observed directly due to groundwater and contamination and instead was observed from removed fragments. The floor was constructed from concrete with crushed stone and brick fragments, generally 0.20m-0.25m in thickness (Plate 104). The columns were set into sandstone block foundations which were generally similarly sized, averaging 1m long, 0.85m wide and 0.65m tall (Plate 105).

Phase 2

The walls of this phase were constructed in handmade bricks bonded with lime mortar and represent additions to the original gasworks structures in this area. The walls lack the sandstone blocks used in the uppermost course which distinguish those of the original phase of gasworks structures.

Wall 1003 appeared to be a later insertion running between 1001 and 1004. It had a square shaped buttress on the southern side of the wall – same as 307 (Plate 106). A doorway was also found at its base, constructed in the same style as the likely earlier walls described above (Plate 106). The wall may have been constructed as additional support to the iron beams and brick vaults which covered the top of the wall.

Wall 1005 was constructed on the southern side of wall 1001 and appeared to have been constructed to approximately double the width of the wall. The length of the wall was not established due to truncation on its south-western end and its northeastern end being obscured by a later structure.

Phase 3

A brick wall (1000) lay to the west of the wall to west of the watching brief area (Plate 107). The wall extended north-eastwards before turning sharply slightly to the north. Though lying

well beyond the watching brief boundary, the wall and columns were mapped as they are presumed to form a cellar west of wall 1001. Historic mapping indicates this wall was part of later alterations to the gasworks.

Structure 1006 (Plate 108) formed a much later cellar structure which truncated the south-western end of brick vault 1013. It was constructed of a much later brick type, largely lighter orange in colour with mid-grey patches. It may have been constructed to reinforce or repair this area of the cellars. The cellar was constructed of three parallel, south-west to north-east aligned brick walls. The cellar roof comprised a level concrete slab, cast above the brick walls. The concrete had been cast above two north-west to south-east oriented concrete beams and on a layer of steel tubes, laid north-west to south-east, with a diameter of roughly 0.10m.

Phase 4

Phase 4 comprised the infilling of the cellars and the rail weighbridge described above. The same sequence of deposits was observed across the watching brief areas, aside from the area south and east of wall 1004 where deposit 1011 was encountered. The two deposits were generally built up to the modern ground level.

The lower deposit of ash and clinker (1010) filled the base of the cellars. Oil and groundwater accumulated towards its base. It had stained both walls the eastern side of wall 1004 (Plate 109) and the western side of 1001 (Plate 110). The stains indicate the depth of this lower deposit and shows tip lines which marks layers of deposition. It is unclear whether this deposit was used to fill the cellars after the gasworks had shut down. Alternatively, it may indicate the use for some or all of the cellars as the clinker and ash and oil may be by-products of the production of gas from coal.

Overlying the clinker and ash was material from the demolition of the gasworks (1009), including brick, concrete fragments and stone. The same brick demolition also filled rail weighbridge structure 1012. The deposit is likely from the demolition of the gasworks and is the same deposit as 411.

Phase 5

Phase 5 post-dates the demolition of the gasworks and comprises the construction of a weighbridge (1007) which was described above (Trench 3, same as 317). The northern end of the structure was entirely exposed in the evaluation trench and the remainder exposed in the watching brief area. The structure was found to have a total length of 11m and had the same construction as that described in the evaluation.

Phase 6

Phase 6 comprises modern make-up layers and a concrete slab forming the car park (1008) found across much of the site.

Structural remains beyond the watching brief area

A general photographic record was made of structures observed elsewhere on the site where they were exposed during visits made for the watching brief element of the work. In some cases, this helped interpret the results of the previous building recording.

Former Warehouse

A section of the original boundary wall for the gasworks, which predates the warehouse, was present along the southern edge of the site (Plate 111). At the time of the building recording this wall was obscured by the now demolished walls of the later 20th-century 'depot'.

The foundations of the later warehouse were constructed against the original boundary walls (Plate 112). The base of neither of these walls was seen though it is presumed they defined cellars, in common with other areas of the site. A second foundation was seen extending eastwards, underlying the centre of the warehouse.

Former Joiners workshop

With the ground levels inside the former joiners workshop reduced, it was confirmed the building was cellared. A series of east-west oriented walls supported barrel-vaulted ceilings which were lit with windows facing Gould Street (Plate 113, also described above). The vertical niches in the southern wall (see above) were seen to contain a drainpipe which extended down through the cellars.

Northern Wall

North and north-west of the watching brief area cellaring appeared to extend across the site, with iron column and beam types predominating (Plate 114).

8 Artefact Record

Brick by Phil Mills

There were nine brick samples, weighing a total of 31716g, presented for assessment. Fabrics were recorded using a fabric series already in use in the region, with weight in grams, number of corners and complete dimensions in mm being recorded. If mortar was present this was recorded as 1 under mortar code. The complete catalogue is shown in Table 1.

TZ11

This is a dark red hard fabric with inclusion of common quartz at 0.2mm and moderate lime at -.4mm and occasional black grits.


A 6mm wide cross section of fresh break for fabric TZ11

TZ13

This is a red fabric with moderate quartz and possible coal inclusions, possibly from West Yorkshire


A 6mm wide cross section of fresh break for fabric TZ13

TZ14

This is a dark red fabric with common find sand and occasional black grits., possibly from West Yorkshire.


A 6mm wide cross section of fresh break for fabric TZ14

TZ21


A 6mm wide cross section of fresh break for fabric TZ21

This is a pale yellowish red fabric with common lime inclusions in a sandy matrix. This was used for a pipe support, stamped ‘WP18’.



TZ62

This is a yellow firebrick fabric with common clay pellets .


A 6mm wide cross section of fresh break for fabric TZ62

Stamps

There are two examples of a stamp, reading ‘CLIFF. AND SONS /LEEDS WORTLEY’, including one from vaulting 305 (below).



This was a product of Joseph Cliff and Sons, from Wortley, Leeds, founded in the mid-19th century and incorporated into the Leeds Fireclay Company Limited in *c*. 1889 (Penmorfa 2023).

Conclusion

This is a collection of bricks of 19th-century or later date. They are from a variety of sources, mostly in West Yorkshire, which is normally the case for industrial structures of Manchester in the 19th century.

No further analysis is required, and it is recommended that a photographic record should be made of the assemblage rather than the archive being retained.

Table 1. Catalogue of brick finds

Context	Sample no	Fabric Code	Function	NoSh	Wt	corner	Length	Width	Thickness	Mortaring	Period	Comments
304	4	TZ11	Brick	1	3123	8	230	115	65	1	C19+	solid brick with regular sharp arrises
305	5	TZ62	Brick	1	3914	8	55	110	70	1	C19+	Stamp: Cliff and sons LEEDS Wortley
307	1	TZ14	Brick	1	3259	8	230	110	70	1	C19+	regular rounded arrises, slightly bent extruded
308	3	TZ11	Brick	1	3474	8	230	115	70		C18/19	regular sharp arrises solid slightly diagonal pressure mark parallel on stretcher
309	2	TZ11	Brick	1	3556	8	230	110	70	1	C19+	solid brick with regular sharp arrises
310	6	TZ13	Brick	1	3464	8	230	110	70	1	C19+	regular sharp arrises - wipe marks
402	8	TZ14	Brick	1	3227	8	235	110	70		C19+	irregular sharp arrises, creasing on stretcher
409	7	TZ62	Brick	1	3517	8	225	115	70		C19+	stamp: Cliff and sons Leeds Wortley
411	9	TZ21	Pipe support	1	4182	8	223	180	110	1	C19+	w 90 - 110 stamp WP13

Post-medieval finds by Zoe Horn

An assemblage of five items of ceramic material were recovered. Each item was examined and quantified (Table 2). This assemblage is consistent with either construction or domestic refuse dating mainly to the first part of the 20th century.

No further analysis is required, and it is recommended that a photographic record should be made of the assemblage rather than the archive being retained for deposition.

Table 2. Catalogue of the ceramic finds

Context	Material	ID	Description	Quantity	Date
319	Pottery	Flatware	Sherds of a thin 'pyrex' plate	2	1915 onwards
319	Ceramic	Filter	The sieve part of a ceramic filter, with 1mm dia' holes	1	Modern
409	Pottery	Cup/Jug	Small rim sherd from a blue and white willow pattern cup or jug.	1	20th Century
409	Pottery	Cup/Jug	Small rim sherd from a black and white patterned cup or jug.	1	20th Century

9 Recommendations for Final Reporting

No further work is required on the finds and as such, this report can be considered to be the final archive report.

Any further dissemination of the results of these archaeological works will be decided following discussion between the consultant and GMAAS. The WSI (Appendix 1) suggests, as a minimum, that 'a short (*c.* 300) word summary of the project results to be sent to the editor of *Post Medieval Archaeology* for inclusion in their annual round-up of fieldwork'.

10 Discussion

A plan of the gasworks in the early 20th century onto which the main buildings referred to below are labelled is shown in Fig. 13. This information is taken from a range of historic plans held by the National Gas Archives and Manchester Libraries, Information and Archives (Appendix 5). The following discussion aims to draw together information gathered from the three phases of work and aims to understand the development of the structures within the site and, where possible, understand their use. The phasing combines information gained from the fieldwork combined with the map regression exercise show in in Figs 14-18.

The archaeological works on site have revealed a series of structures and deposits from different phases, seemingly spanning a time period from the mid-19th century through to the late 20th century. Both above and below ground structures were recorded.

The structures and deposits identified across the site relate only to the industrial use of the site. No evidence for earlier use of the site has survived, including tenement housing which was mapped on the southern part of the site.

In general, these features of archaeological interest have survived well, and it has been possible to characterise the structures which were found within the site, and in many cases understand their use.

The demolition of the gasworks and its subsequent reuse have had some impact on the survival of these earlier structure, particularly structures which lay at the surface. Some railway lines were still evident set into the concrete slab, in addition to remains of a stone sett surface and drainage gutters found in the evaluation. Other railway lines and turntables indicated by historic mapping, however, were absent.

The early development of the gasworks within the site (Fig. 14)

An illustration of an aerial view of the gasworks, dated 1880 (Wilson 1991), is the earliest pictorial evidence of the site following the expansion of the gasworks. It predates the construction of The Warehouse and shows an arrangement of railway sidings connected by turntables. The area of the later Joiners workshop is lower, possibly part of an open cellar, over which the railway lines are suspended. It is likely that the earliest boundary wall observed in the southern and western elevations of The Warehouse and along the southern boundary of the site during the watching brief dates to this period.

Cellars

The cellars which underlie the site appear to have been established during the expansion of the gasworks into the site. Cellars have been identified in Trenches 3 and 4, along the northern boundary to the site during the building recording and again during the watching brief. The cellars were not observed in Trenches 1 and 2 but a plans supplied by the National Gas Archive (see Appendix 5, combined in Fig. 15) suggests cellars were present throughout the site.

The most thorough investigation of the cellars were in trench Trench 3 and 4 and the watching brief area. Cellars supported by brick barrel vaults and by iron columns and beams were both observed. Little evidence was found to suggest their original use, though their construction across the site suggests they were of importance in the running of the gasworks. At present it appears most likely that they were used for storage of either imported materials such as coal or for waste materials to be exported. The ashy deposit present in the base of all the cellars in the watching brief area may represent such waste material.

Cellars 1-4 (identified during the building recording) were previously suggested to be used as coal stores with the ceiling chutes used as coal drops (Salford Archaeology 2021). It is possible that the cellars were used to store and manage coal or coke stockpiles either moving to or from the retorts. The Eastern Arches and Cellars face northwards onto an open area labelled ‘coke yard’ on a number of historic plans, between Retort House C and D (Appendix

5, Plan 11) and an illustration of 1880 shows much of the yard heaped with coke or coal (Wilson 1991). This may suggest the primary coal and coke stores were not in the cellars and it is most likely that coal was delivered to the retort houses directly, heaped internally, along the sides of the building so it could be fed the short distance to the retorts which were found along the centre of each retort house (Loverseed 1994). If not used as coal drops it is unclear what purpose the ceiling chutes performed.

Beams 1 and 2 identified during the building recording are found between The Warehouse and Retort House B. They supported the roof of the cellar which were observed later during the watching brief. Beam 3, was found along the northern edge of The Warehouse and probably represents part of the raised railway platform which ran along the western side of Retort House B. The line may have been used to deliver coal to the retort house or for the removal of coke. The line here appears also to have extended northwards into the gasworks and may have been used to remove other by-products of the works. The Western arches probably allowed access from the mechanics shop to the north and cellars to the south which underlie the area covered later by the Joiners Workshop. It is likely that they date to the initial expansion of the gasworks. Cellar 4 accesses further cellars beneath the site, which are in evidence elsewhere behind the Northern Wall. Historic plans of the site and the recent evaluation present further evidence of a network of cellars beneath the site.

Construction of the warehouse

By 1890 The Warehouse had been constructed. Plans, broadly of this period (Appendix 5, Plans 7, 9, 11, 16-18), suggest the same arrangement of turntables and it appears the area continued to be used as railway sidings but it was considered important to cover the area. It is likely that the iron columns, beams and roof of The Warehouse date to this period. It is likely that much of the sides of the structure were left open, either by spanning with iron beams or with brick arches to allow for the interior to be ventilated and for the passage of trains for storage, loading and/or unloading.

The use of The Warehouse is not labelled on historic plans as with other areas of the gasworks. Only one plan labels the area ‘Railway Sidings’ and the form of the arched wall is reminiscent of other Railway Warehouses (Minnis and Hickman 2016). It is possible that it was used for the storage of imported or exported materials, perhaps coal, coke or other by-products of gas production, but there are other more likely areas of the gasworks that these materials would be stored. It is considered more likely that it was used for managing and storing coal trucks, prior to their movement to the retorts.

Surface structures

Some surface structures were found during the evaluation and watching brief. The brick foundations of a rail weighbridge were identified along the western edge of the watching brief area. Similarly, a second weighbridge correlates with the location of three iron columns identified in the centre of the watching brief area. The weighbridges are presumed to have weighed coal trucks as they were brought into the gasworks by rail. The original surface

covering the site, though fragmentary, was identified in Trench 3 where stone setts were identified, covered by a later concrete surface. Drainage features were present in the evaluation and watching brief including a stone surface gutter and metal downpipes through the cellars.

Early 20th-century modifications to the gasworks

The addition of the joiners workshop (Figs 15 and 16)

A photograph dated to 1901 (Appendix 5, Photograph 5) was taken from the western edge of The Warehouse, looking west, prior to the construction of the Joiners Workshop. It is taken from a railway track, at close to the modern ground level, suspended perhaps 5m or 6m above ground level on an iron and timber structure above the open cellar. It shows stacks of bricks and timber in the base of the cellar. It is possible the photograph was taken as the construction of the Joiners Workshop was beginning.

By 1907 the Joiners Workshop had been constructed (Appendix 5, Photograph 2), replacing earlier building which stood on the site (Appendix 5, Photograph 1). It unclear whether the building was cellared but certainly its floor stood lower than the current ground level. Evidence from the survey shows the building contained machinery which was powered by a mechanical line shaft and electricity may have powered machinery or lighting, but the purpose of the building is unclear. The gasworks is unlikely to have employed a large number of joiners (i.e. those working in timber). The name may refer to joining gas pipework, though those employed in this work were usually referred to as ‘jointers’ (Loverseed 1994). The building itself does not appear to have developed over time and was largely demolished along with much of the gasworks.

Mid-20th-century modifications to the gasworks (Fig. 17)

By 1951 the structures and cellars within the site had been subject to significant alteration. The Warehouse had reduced in size, along with a rearrangement of the railways lines in the area. This may reflect a reduced need for the storage of railway trucks in this area, perhaps due to the introduction of more efficient mechanical movement of coal to the retorts. The OS map of 1951 indicates ‘conveyors’ around the retorts which may be part of a process of mechanisation.

A later cellar structure was inserted into an older barrel vault in the northeast of the watching brief area. This structure may relate to a structure labelled ‘WM’ on the 1951 Ordnance Survey Map covering the site. The abbreviation here is mostly likely to mean ‘Weighing Machine’.

Wall 1000, recorded during the watching brief, doesn’t correlate with historic mapping from the National Gas Archive (Fig. 15) though it clearly correlates with a feature shown on mid-20th-century mapping (Fig 17). This wall is likely to represent a rearrangement of the cellars underlying the site in this period, though the precise nature of these alterations is not clear.

It is unclear if deep made ground in Trench 1 and 2 date to this period. If so it suggests the cellars were no longer in use by this time and were backfilled. Alternatively the cellars, as thought elsewhere, were backfilled as the gasworks was demolished.

Demolition of the gasworks and reuse of the site (Fig 18)

By 1970, Ordnance Survey mapping indicates the gasworks was largely demolished (Fig. 18). Only a small number of structural elements were retained. These include parts of the Warehouse as part of the new 'Depot' and with other walls repurposed as boundary and retaining walls around the edge of the site.

Many of the deep made ground deposits found during the evaluation and watching brief date to the demolition of the gasworks. These comprise almost total infilling of the cellars with demolition material. The uppermost concrete slab observed at the surface in the trenches and watching brief also dates to this period.

The large concrete and brick structure seen in Trench 3 and the watching brief correlates closely with a weighbridge seen on the 1970 OS Map of Manchester (Fig. 18). Unlike the weighbridges or weighing machines of previous phases, it is presumably for road vehicles.

Research questions

The work carried out allowed some of the research questions outlined in the previously stated project aims to be addressed, including *(Ind22): How can we take forward our understanding of the impact of industrialisation on the working class and their living conditions?*. The presence of slum housing predating the gasworks at the site is identified on historic maps. It is likely that the housing was demolished wholesale to develop the site into the gasworks, as no sign of the housing was seen within the archaeological works. This would have a had an impact in the sense that an area of earlier, perhaps poorer-quality housing had been cleared with its occupants moved to different housing. Newer suburbs may have had better access to amenities, for example outside toilets and water supply, leading to improved living conditions for the working class of the area.

Another research question that is relevant is *(Ind52): What industrial and modern period type sites need further study?* It is apparent that sites such as these require further study in the form of archaeological investigation in the future as, although a number of structures were identified, it is difficult to say with certainty what the function of these structures were. Structures internal to an industrial building are of key importance as they can best demonstrate the type of activity that was taking place within the industrial buildings or work areas. Often, historic mapping merely shows the limits of industrial buildings with little hint as to the exact processes or techniques being employed within.

The work at this site demonstrated continuity of use as an industrial site from the 19th century into the 20th century and adds to the wider body of knowledge about Manchester during the Industrial period. This site provided an interesting view into the use and reuse of

the site throughout its life as an industrial area, demonstrating a reuse and repurposing of structures together with a reuse of materials and of spaces.

11 Conclusion

It has been possible to combine the results of the building recording, evaluation and watching brief, coupled with cartographic and photographic sources, to understand the role and purpose of the extant remains of the gasworks within the site.

Much of this part of the gasworks was concerned with the import of coal from the railway. The area was covered with railway sidings and turntables, used to manage the railway trucks for the delivery of coal to the retorts to the north. Much of the site was also underlaid with cellars, of brick barrel-vaulted type and others constructed with iron beams and columns, spanned with brick arches. Some of the cellars may be related to the management of coal or coke after transporting to and removal from the retorts. The Joiners Workshop forms part of a series of workshops along the western edge of the site.

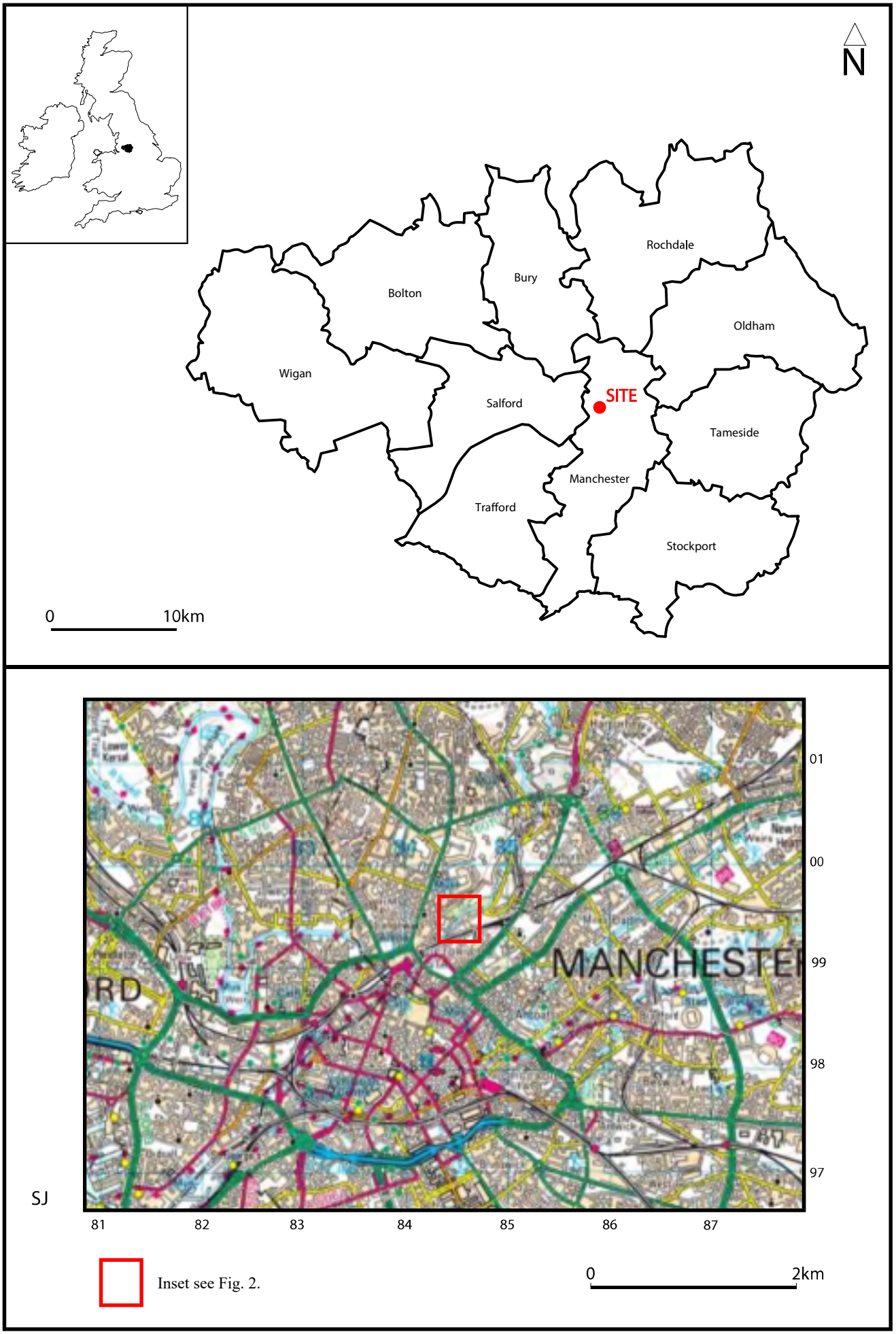
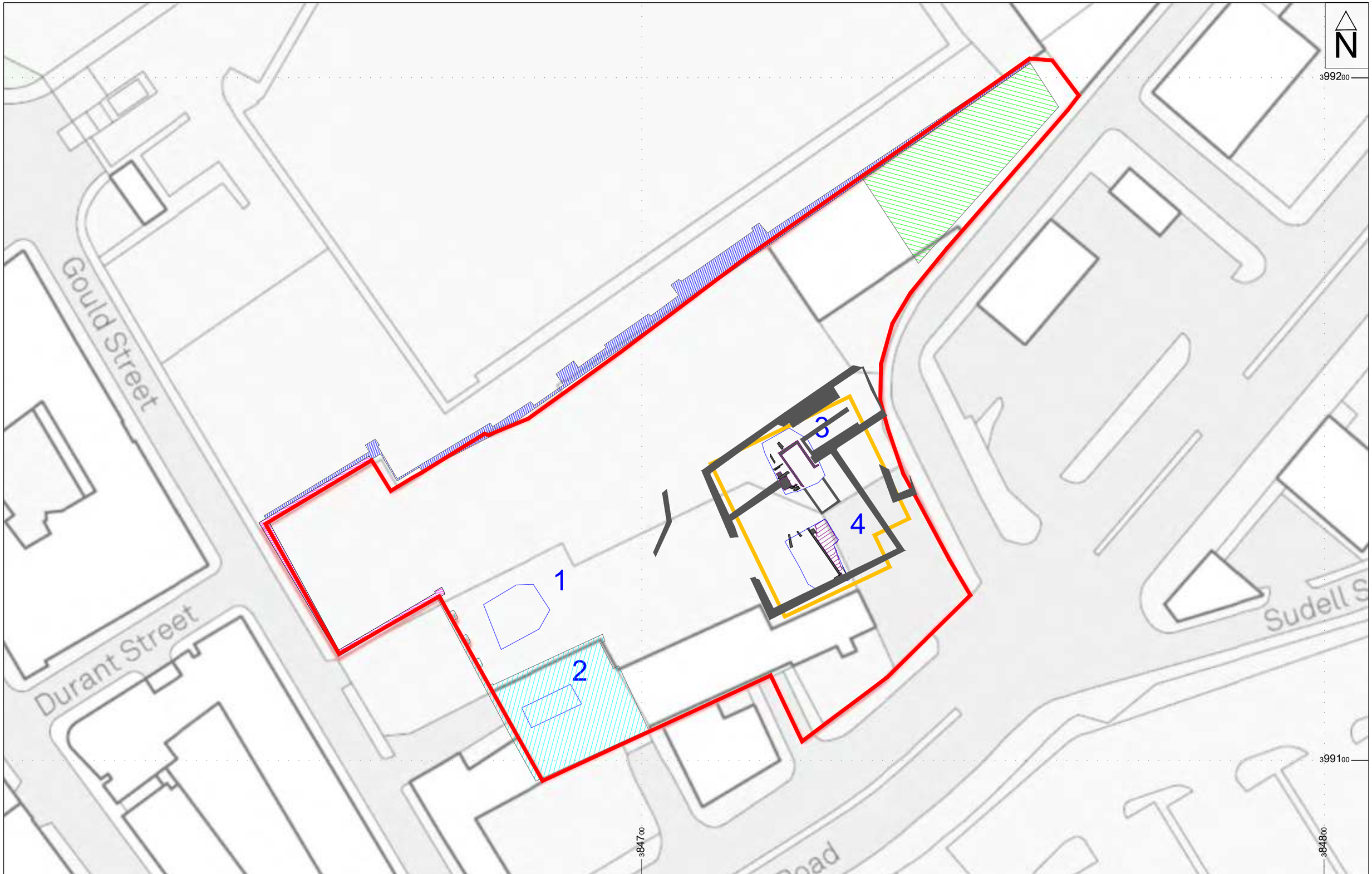


Fig. 1. Site location

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Fig. 2.

Site plan showing the location of historic structures, trenches and the watching brief area

SITE BOUNDARY		ARCHAEOLOGICAL FEATURE		NORTHERN WALL	
EVALUATION TRENCH		FORMER WAREHOUSE		ARCHES AND CELLARS	
WATCHING BRIEF AREA		FORMER JOINERS WORKSHOP			

0 25m

1:500 @ A3

N

FORMER JOINERS WORKSHOP

FORMER WAREHOUSE

043 042 041 040 035 039 032 031 026 033 027 037 038 034 028 029 010 022 016 019 021 036 025 011 015 018 004 014 007 009 012 023 020 017 013 006 030 024 005 008

Key

- SITE BOUNDARY
- EXTERNAL WALLS
- 001 PLATE LOCATION AND DIRECTION

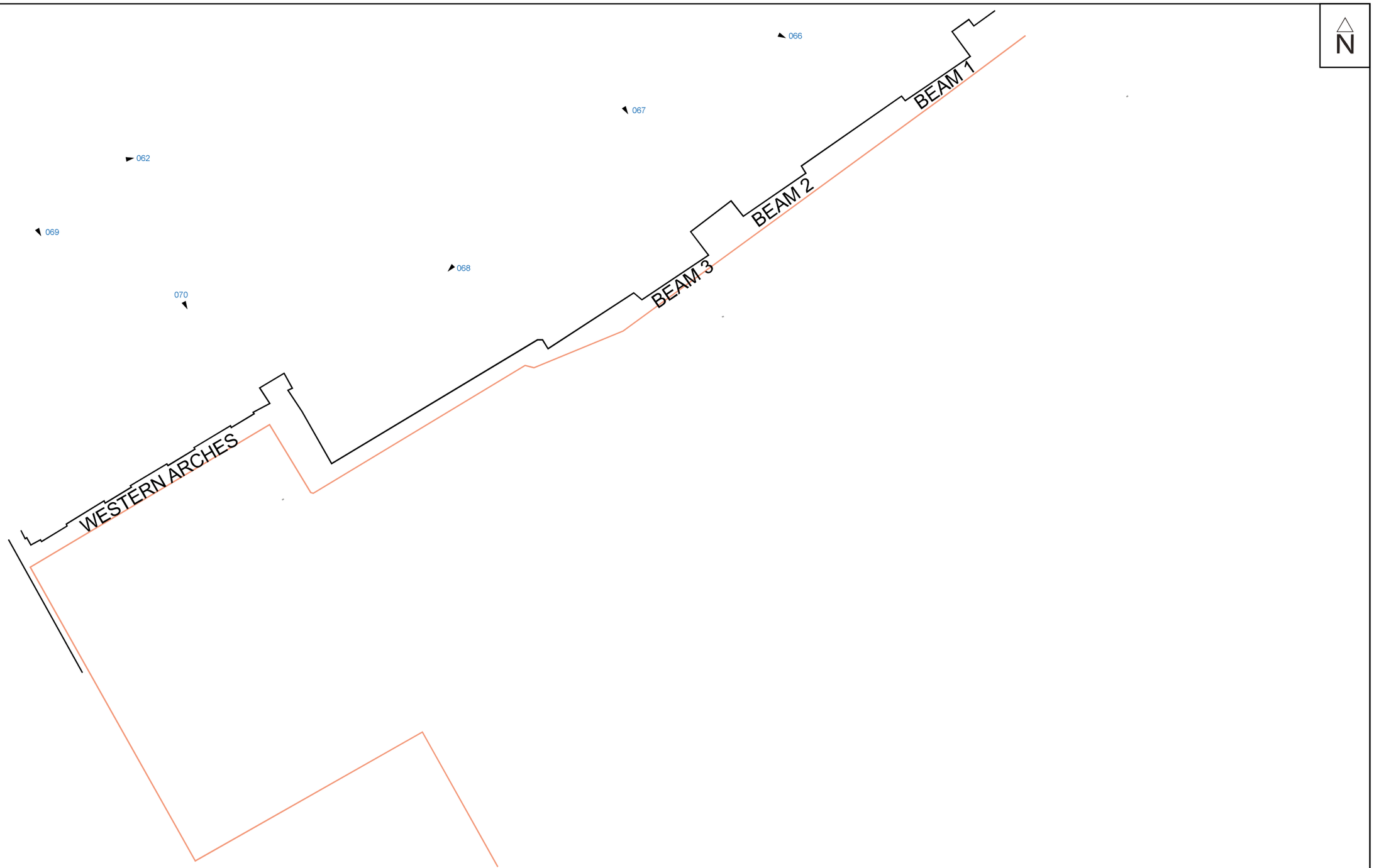
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Fig. 3

Plan of structures on the Upper Terrace

0 10m



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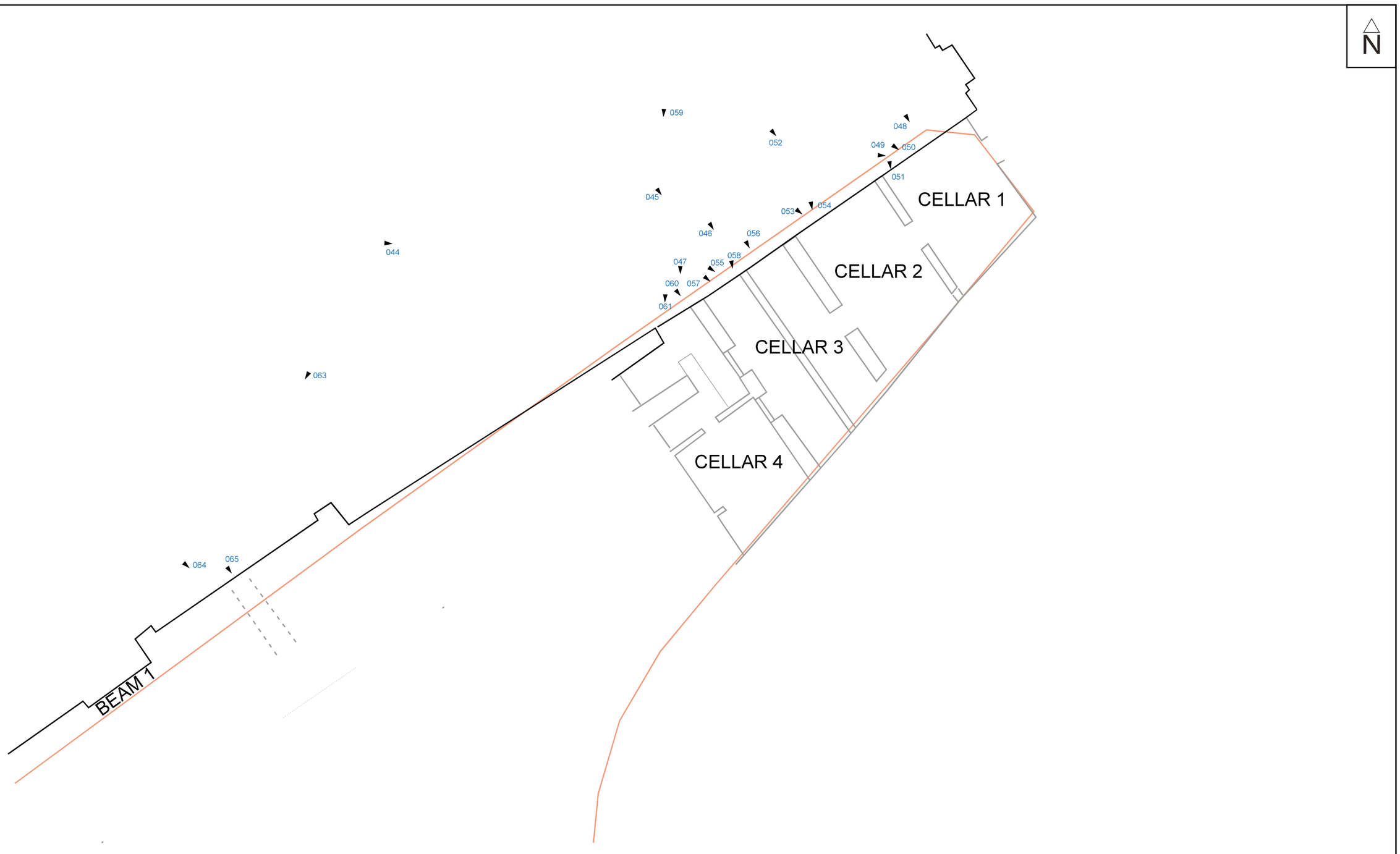
Fig. 4

Plan of western end of the Northern Wall

Key

- SITE BOUNDARY
- EXTERNAL WALLS
- CELLAR WALLS
- 001 PLATE LOCATION AND DIRECTION

0 10m



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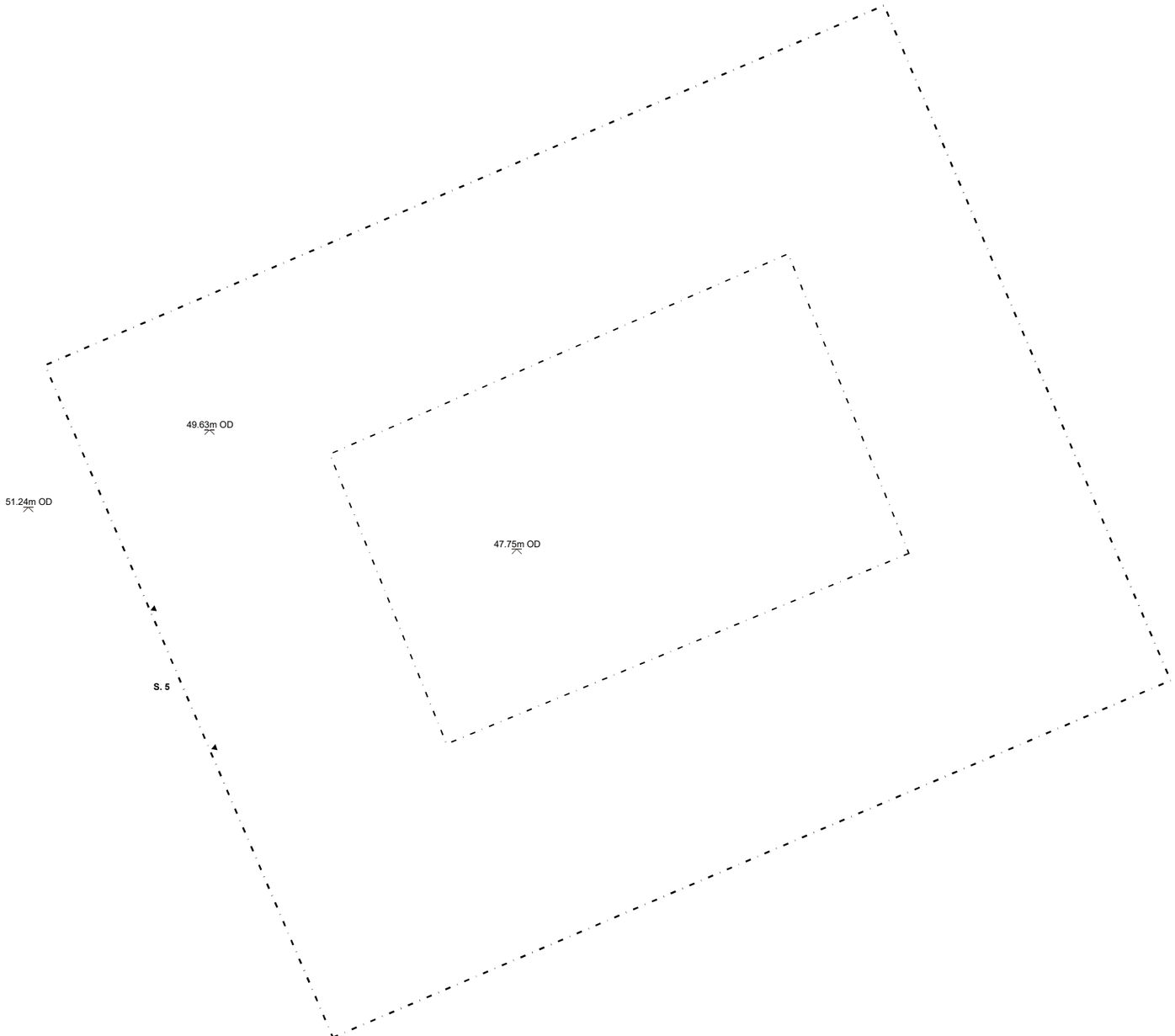
Fig. 5

Plan of eastern end of the Northern Wall

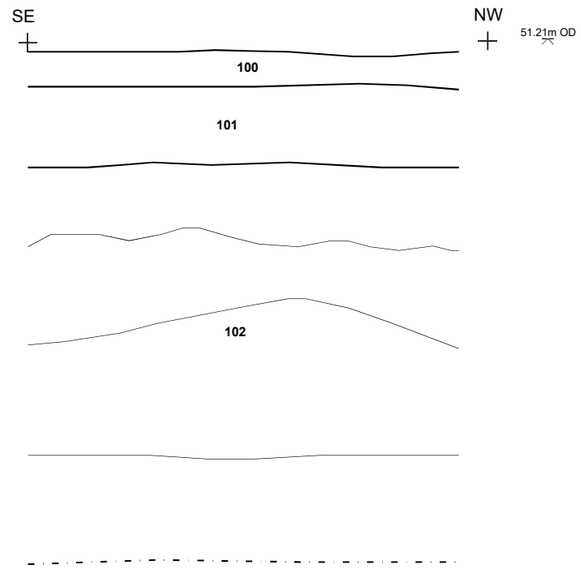
Key

- SITE BOUNDARY
- EXTERNAL WALLS
- CELLAR WALLS
- PROBABLE REAR CELLAR WALL
- 001 PLATE LOCATION AND DIRECTION

0 10m



S. 5



N

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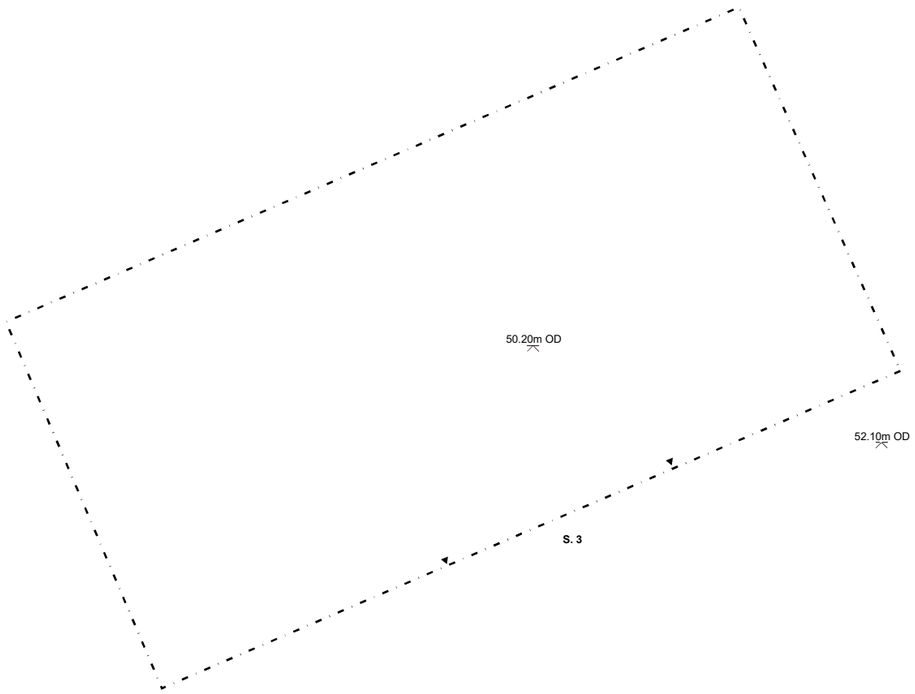
Fig. 6

Trench 1 - plan and section

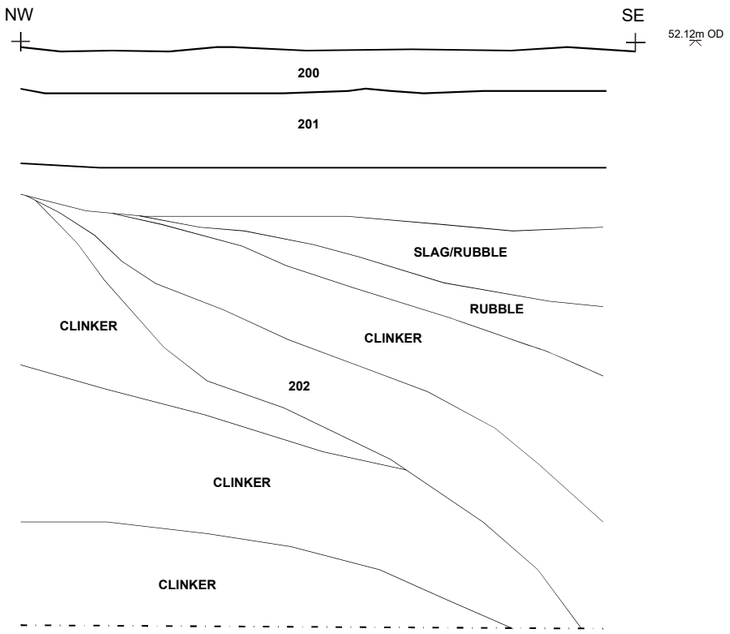
Key

Plans 0 — 2m (1:50)

Sections 0 — 1m (1:20)



S. 3



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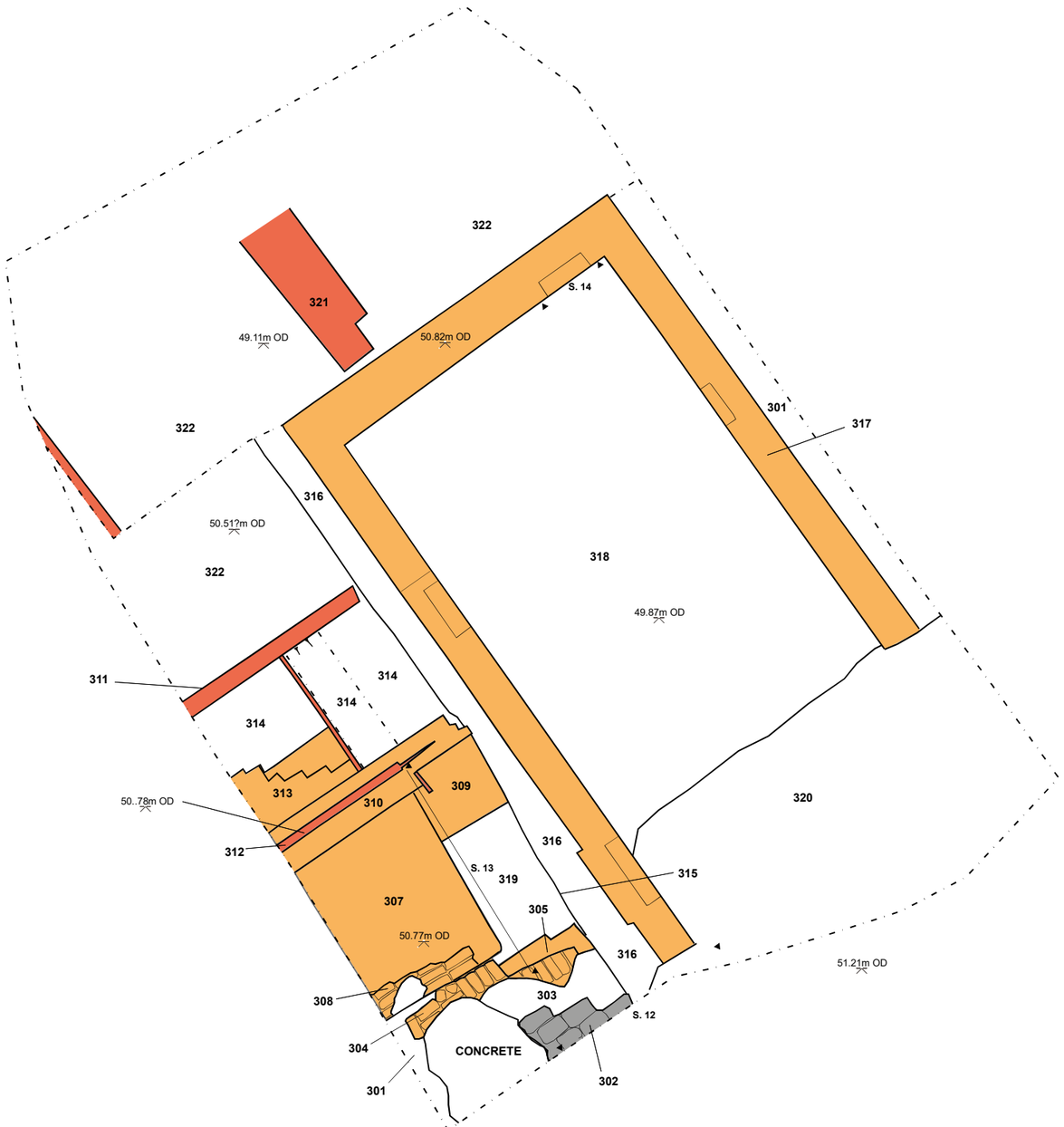
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Fig. 7	
Trench 2 - plan and section	

Key

Plans 0 2m (1:50)

Sections 0 1m (1:20)

N



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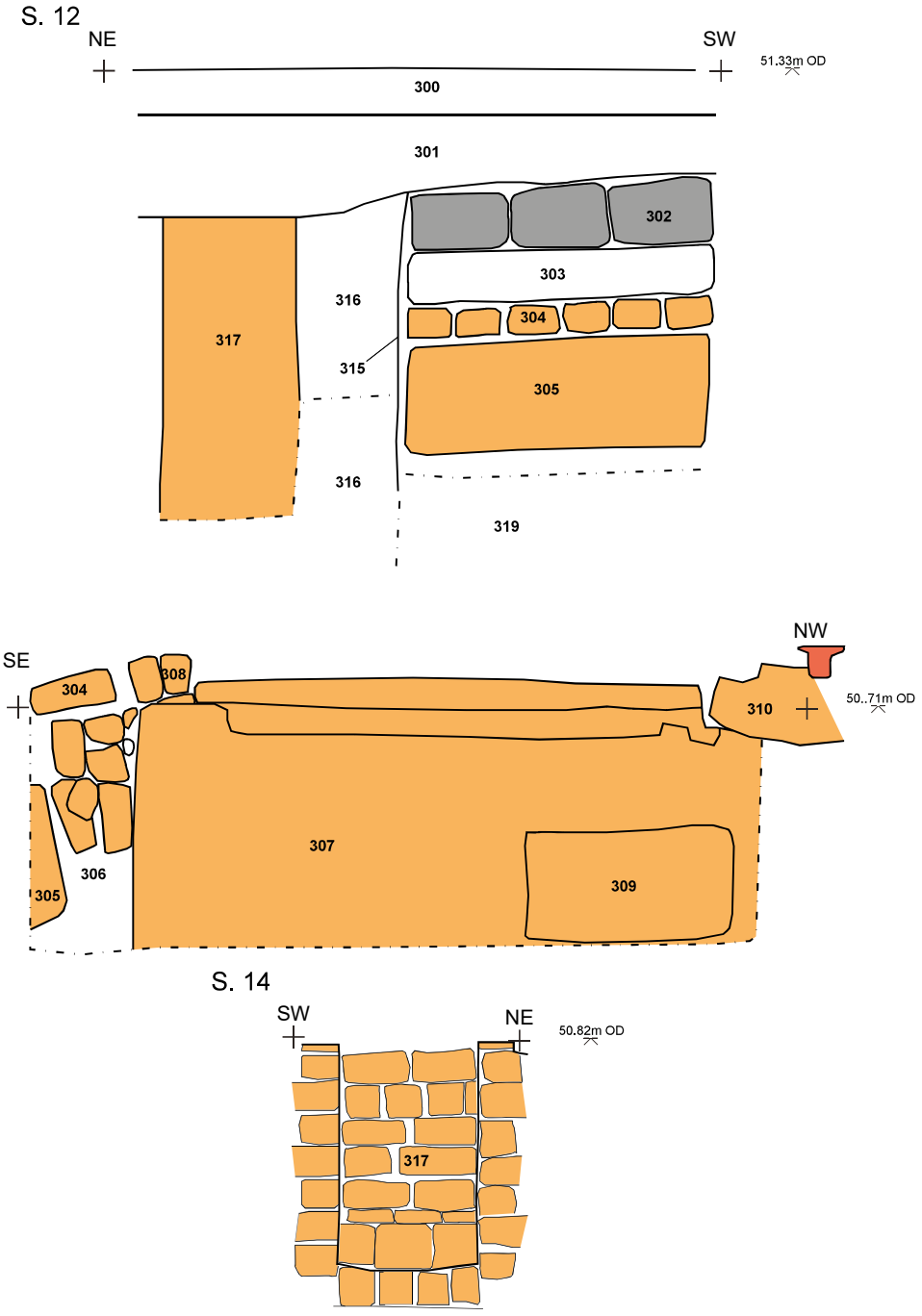
Fig. 8

Trench 3 - plan

Key

STONE
BRICK
IRON

0 2m (1:50)



Key

STONE

BRICK

IRON

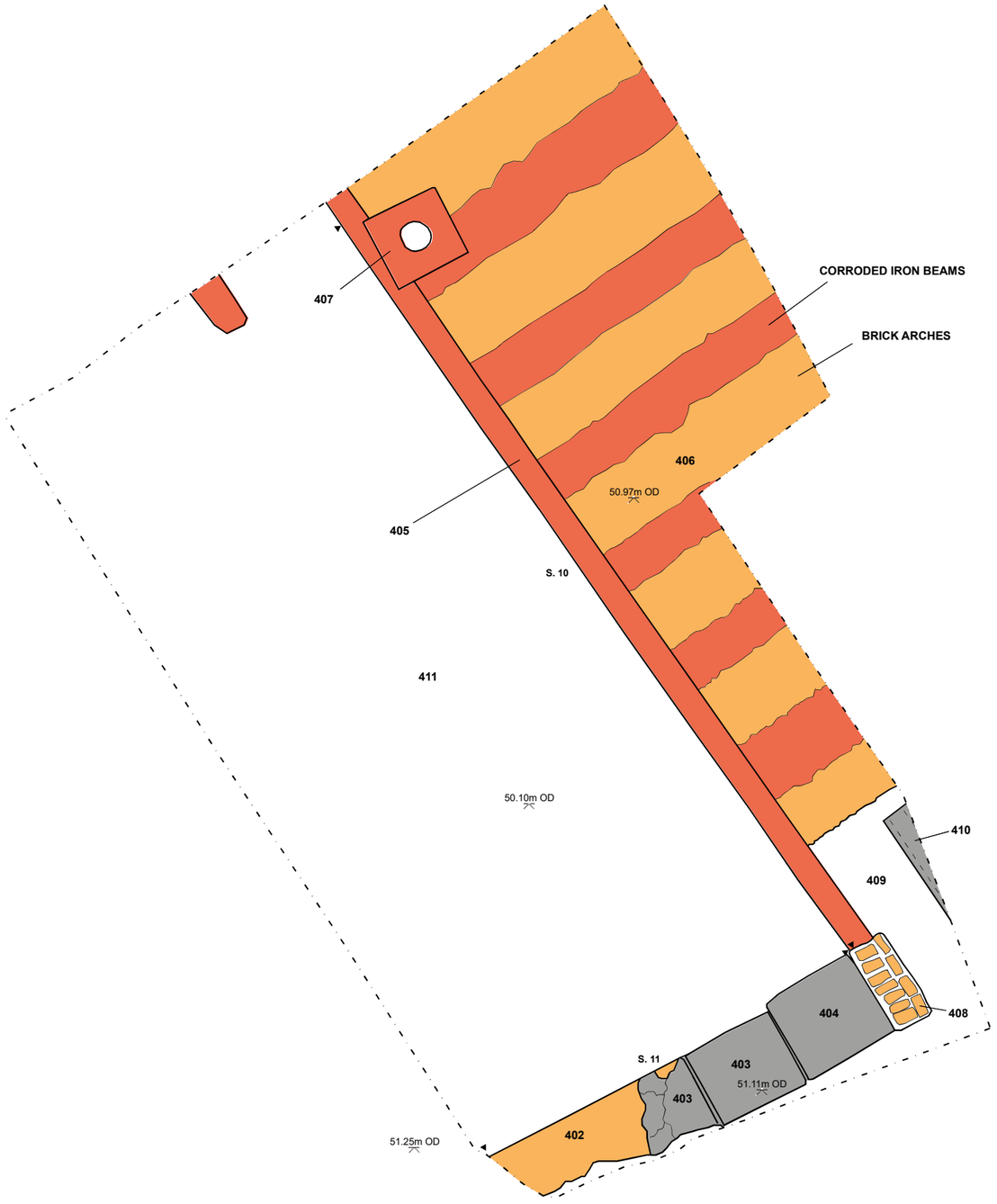
0 1m (1:20)

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Fig. 9

Trench 3 - section and elevations



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Fig. 10

Trench 4 - plan

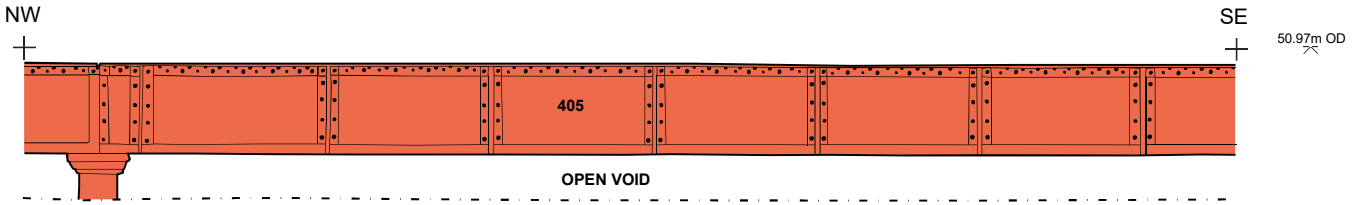
Key

STONE
BRICK
IRON

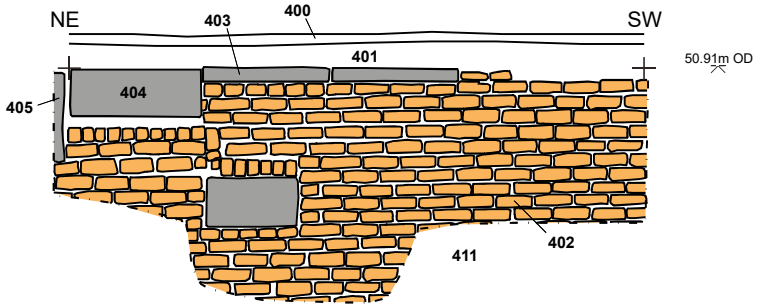
0 2m (1:50)

N

S. 10



S. 11



Key

STONE

BRICK

IRON

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Fig. 11

Trench 4 - elevations

0 2m (1:50)



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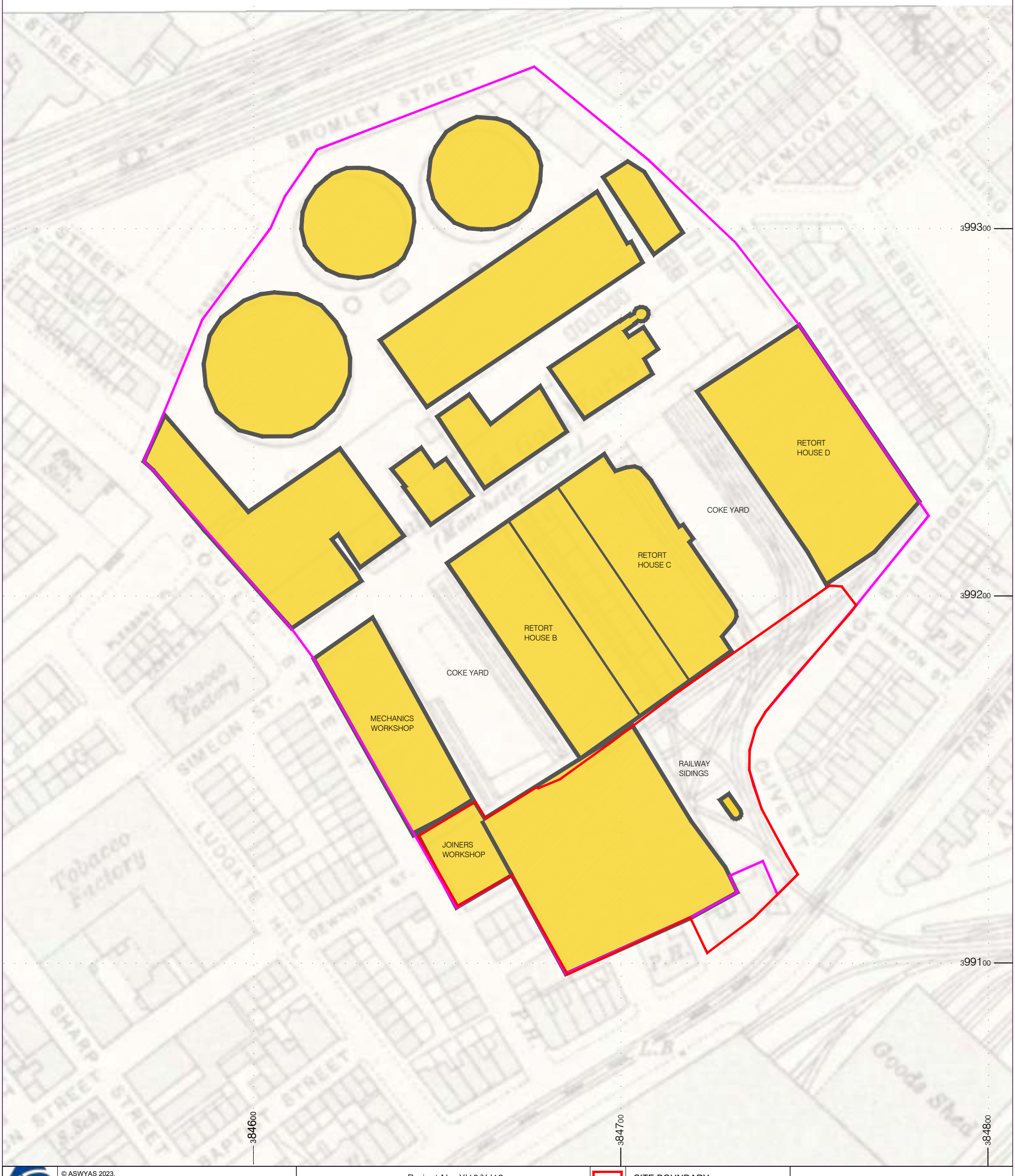
Fig. 12

Plan of watching brief area

Key

TIMBER
BRICK
IRON

0 — 10m (1:200)



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Fig. 13.

Site plan showing the main gasworks structures mentioned in the text overlying the 1922 25" Ordnance Survey map

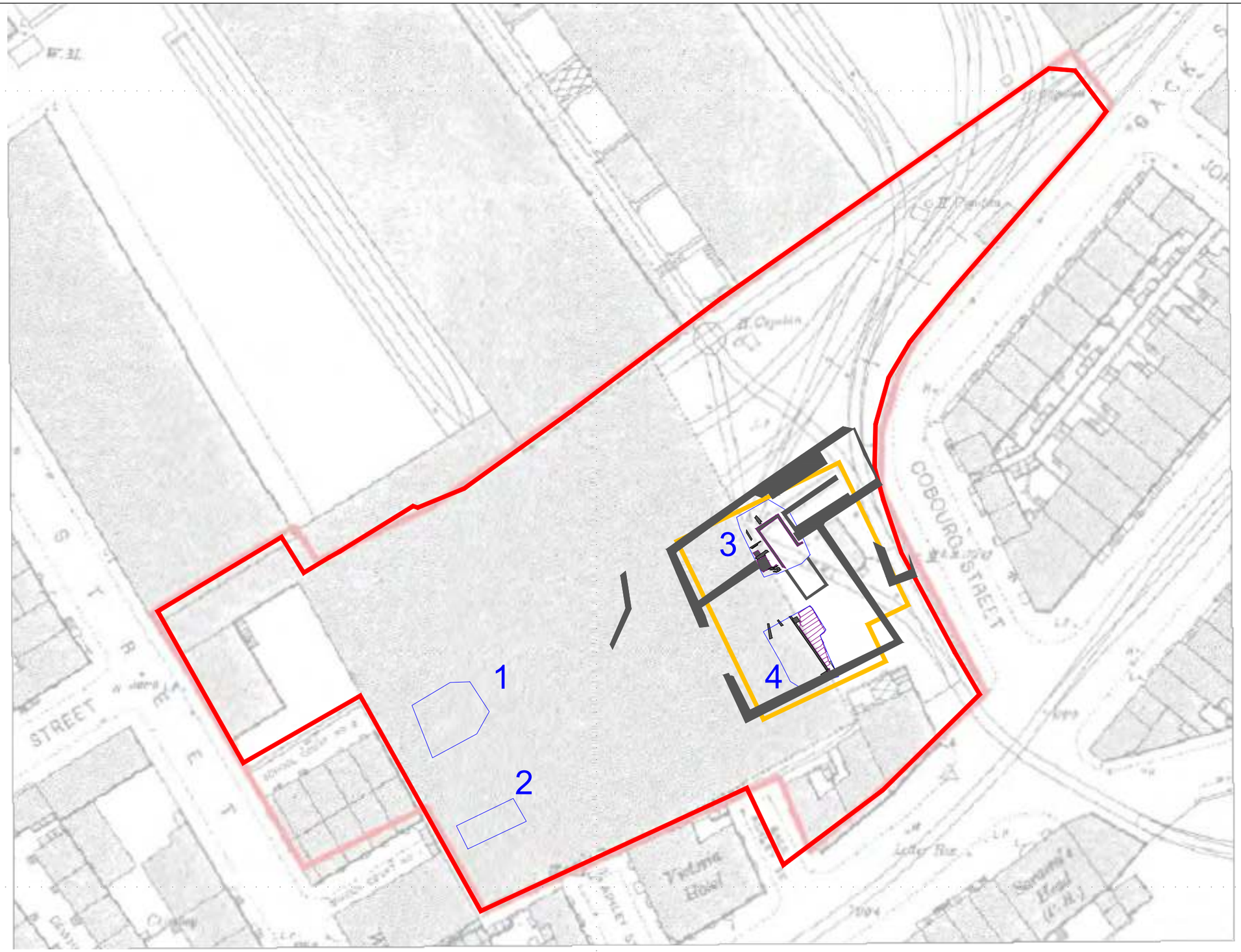
SITE BOUNDARY

BOUNDARY OF FORMER GASWORKS

FORMER GASWORKS STRUCTURES

0 50m

1:1000 @ A3



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Fig. 14

Plan of site with excavated structures overlaid on 1891 OS Map

SITE BOUNDARY	ARCHAEOLOGICAL FEATURE		
TRIAL TRENCH			
WATCHING BRIEF AREA			

0 25m

1:500 @ A3



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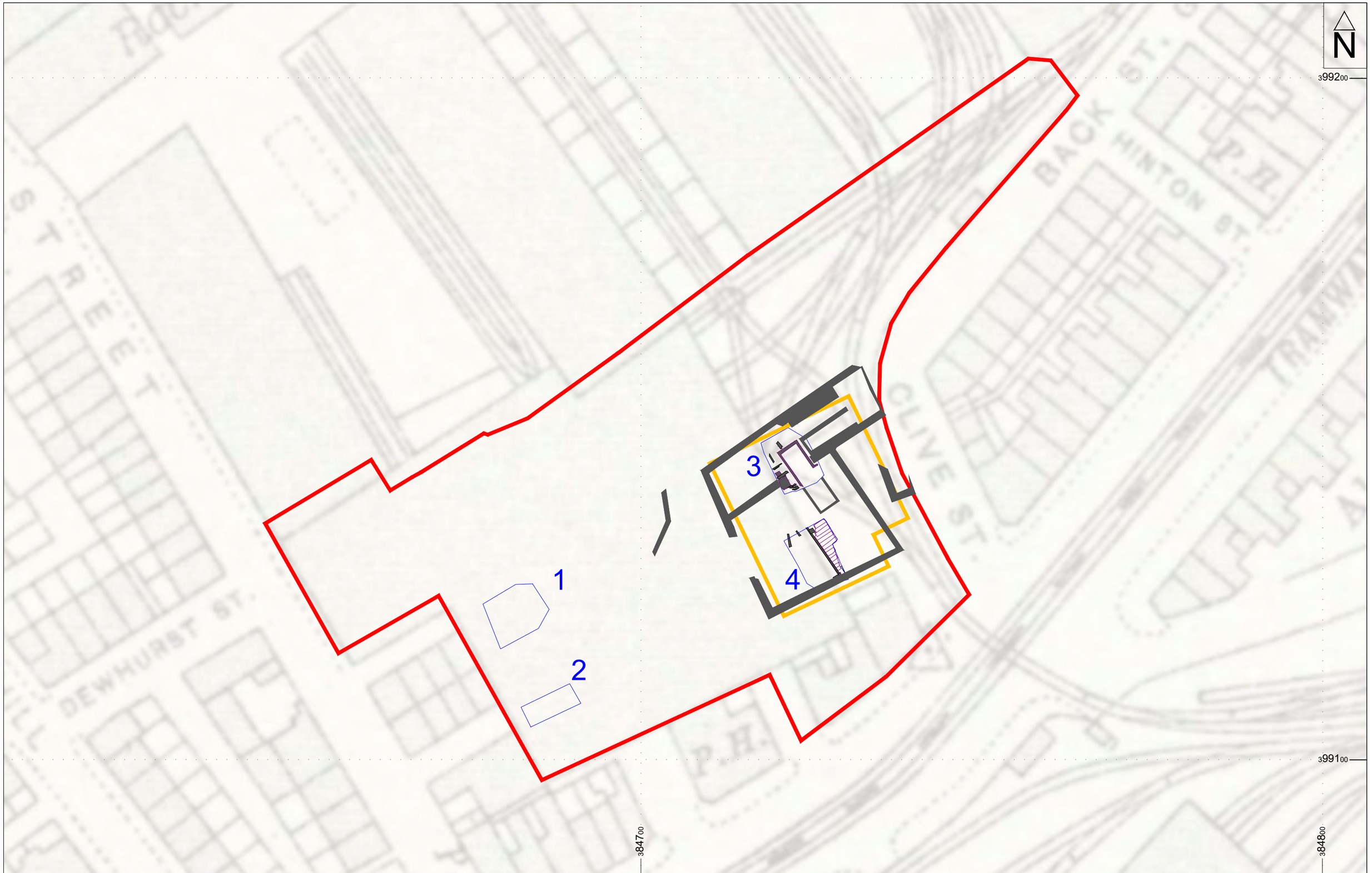
Fig. 15

Plan of site with excavated structures overlaid on the National Gas Archive plan

	SITE BOUNDARY		ARCHAEOLOGICAL FEATURE		
	TRIAL TRENCH				
	WATCHING BRIEF AREA				

0 25m

1:500 @ A3



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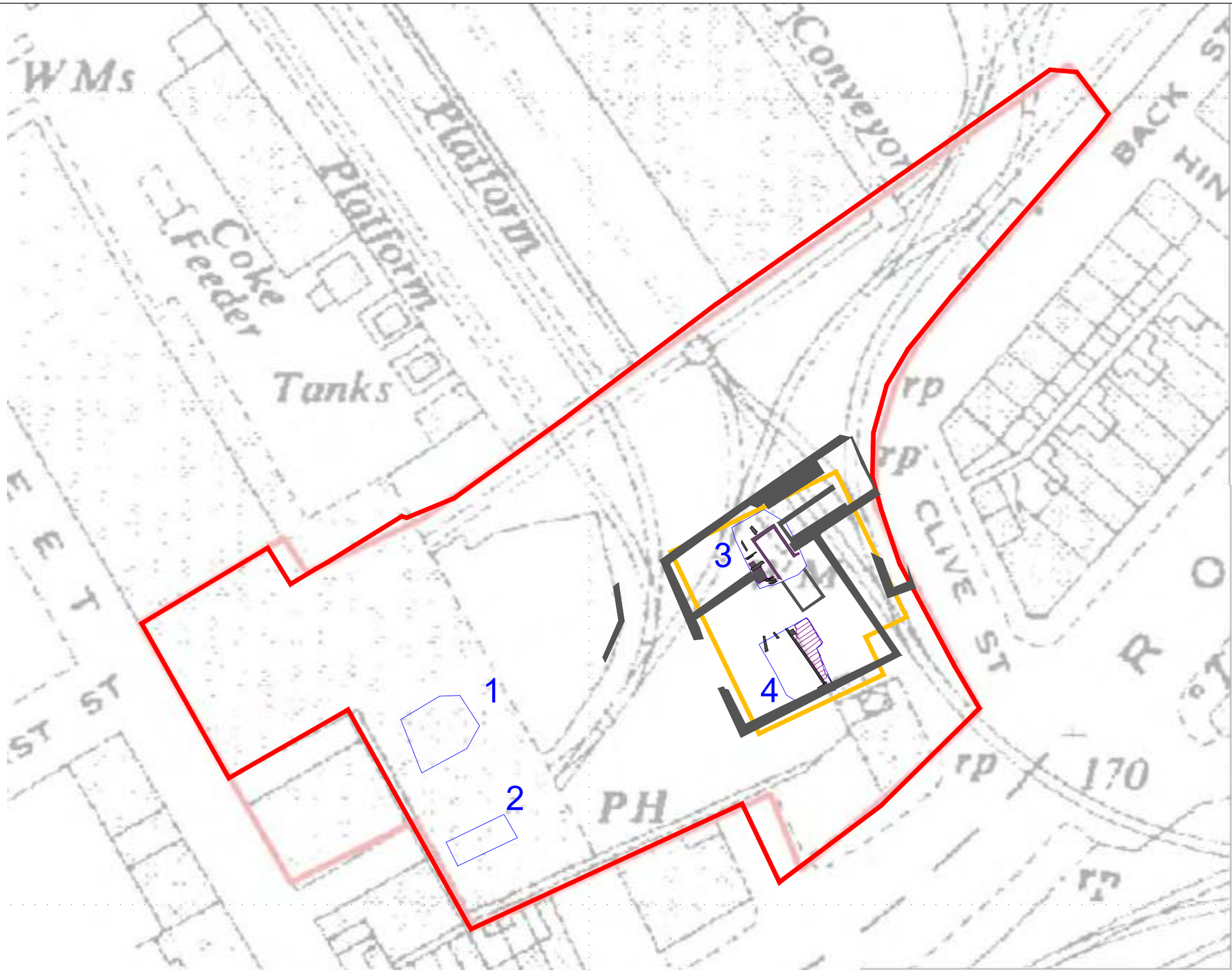
Fig. 16

Plan of site with excavated structures overlaid on 1922 OS Map

	SITE BOUNDARY		ARCHAEOLOGICAL FEATURE		
	TRIAL TRENCH				
	WATCHING BRIEF AREA				

0 25m

1:500 @ A3



N

3992 00

3991 00

3847 00

3848 00

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Fig. 17

Plan of site with excavated structures overlaid on 1951 OS Map

SITE BOUNDARY

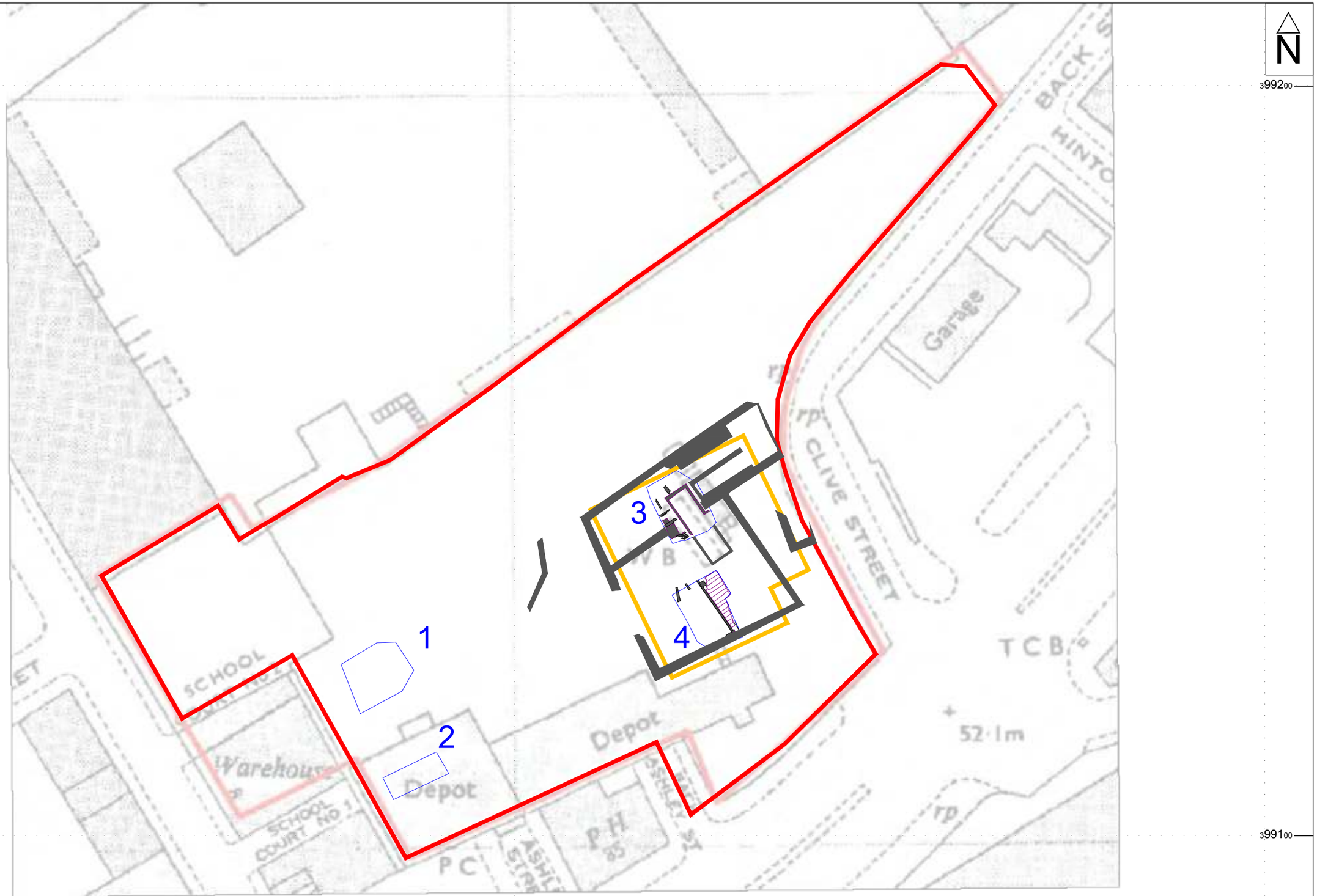
TRIAL TRENCH

WATCHING BRIEF AREA

ARCHAEOLOGICAL FEATURE

0 25m

1:500 @ A3



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Fig. 18

Plan of site with excavated structures overlaid on 1970 OS Map

SITE BOUNDARY		ARCHAEOLOGICAL FEATURE			
TRIAL TRENCH					
WATCHING BRIEF AREA					

0 25m

1:500 @ A3



Plate 1. Later 20th-century depot, looking south-west



Plate 2. Later 20th-century office, looking south-west



Plate 3. Later 20th-century depot, looking north-east



Plate 4. Southern internal elevation of The Warehouse, looking south



Plate 5. Southern external elevation of the Warehouse, looking north



Plate 6. Iron column and beam in The Warehouse, looking south



Plate 7. Wall scars of inserted floor or loft in The Warehouse, looking south



Plate 8. Inserted wall and roof, looking north



Plate 9. Internal western elevation of The Warehouse, looking west



Plate 10. External arched wall of The Warehouse, looking west



Plate 11. External arched wall of The Warehouse, looking east



Plate 12. Detailed view of an arch of The Warehouse with other phases of walling, looking north-west



Plate 13. Detailed view of an arch of The Warehouse with other phases of walling, looking west



Plate 14. Detailed view of an arch of The Warehouse with other phases of walling, looking west



Plate 15. Detailed view of an external arch of The Warehouse, looking west



Plate 16. Detailed view of an arch of The Warehouse with other phases of walling, looking west



Plate 17. South-eastern corner of The Warehouse showing the iron beam and roof extension, looking south-east



Plate 18. General view of The Warehouse roof, looking south-west



Plate 19. Later 20th-century wall inserted into The Warehouse, looking south



Plate 20. Later 20th-century wall inserted into The Warehouse, looking north-west



Plate 21. Eastern external elevation of The Warehouse, looking west



Plate 22. Eastern external elevation of The Warehouse, looking south-west



Plate 23. Eastern internal elevation of The Warehouse, looking east



Plate 24. Southern external elevation of The Joiners Workshop, looking north



Plate 25. South-eastern corner of The Joiners Workshop, looking north



Plate 26. Southern internal elevation of The Joiners Workshop, looking south



Plate 27. South-eastern corner of The Joiners Workshop, looking south



Plate 28. South-western corner of The Joiners Workshop, looking south-west



Plate 29. Overlapping walls of The Joiners Workshop and Warehouse, looking north-west



Plate 30. Western external elevation of The Joiners Workshop, looking north-east



Plate 31. Western external elevation of The Joiners Workshop, looking south-east



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Appendix 1: Written Scheme of Investigation

WRITTEN SCHEME OF INVESTIGATION FOR HISTORIC BUILDING RECORDING AND ARCHAEOLOGICAL EVALUATION TRENCHING

87 ROCHDALE ROAD, MANCHESTER, GREATER MANCHESTER

PREPARED BY LANPRO SERVICES
ON BEHALF OF MCGOFF CONSTRUCTION LTD

September 2022

Lanpro

Planning • Development | Design Studio | Archaeology • Heritage

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Document Prepared by: Karl Taylor BSc (Hons) MCIfA

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1 INTRODUCTION

1.1 This Written Scheme of Investigation (WSI) has been prepared by Lanpro Services Ltd on behalf of McGoff Construction Ltd (the client) and details the methodology for undertaking a programme of archaeological evaluation trenching and historic building recording (HBR) of historic existing standing buildings and structures to be removed, on land at 87 Rochdale Road, Manchester, Greater Manchester. This work will be undertaken in compliance of a planning condition (Condition 6) attached to planning permission issued by Manchester City Council for a high rise and duplex residential development.

1.2 This WSI has been informed by a Heritage Statement (HS) and Archaeological Desk-Based Assessment (DBA) both produced by Salford Archaeology within the Centre of Applied Archaeology, University of Salford. The WSI has also been informed by a geophysical survey (SEP Geophysical 2022) comprising mid-low frequency ground penetrating radar (GPR) surveys of the ground surface of the development site as well as high frequency GPR surveys of bricked-up arches visible from the car park to the north and bricked up windows facing Gould Street. The survey also included a trial of electrical resistivity tomography (ERT) and surface ground wave stiffness (SWGS).

1.3 This WSI has also been informed by consultation with the Heritage Management Director at the Greater Manchester Archaeological Advisory Service (GMAAS).

1.4 The HBR of the historic structures will be undertaken generally in line with an Historic England Level 2 historic building survey (Historic England 2016).

1.5 The archaeological evaluation will comprise the excavation by machine of 4 no trenches, 1 no measuring 9m long by 7.5m across, 1 no measuring 10m by 5m across, 1 no measuring 9m by 6.5m across and 1 measuring 10m by 8m across. These are positioned to target possible archaeological remains associated with the former Rochdale Road Gas Works and former workers' houses. The programme of trenching will be followed by a post-excavation assessment of the results of the evaluation.

1.6 The results of the evaluation will inform decisions on the need for any further archaeological mitigation investigation. Should this be required, the scope of any additional archaeological excavation or monitoring will be detailed in a separate WSI.

2 SITE LOCATION AND DESCRIPTION

2.1 The development site lies adjacent to the A664, Rochdale Road to the north of Manchester City Centre approximately 1.3km to the north-east of Manchester City Centre (centred at NGR SJ 84699 99133).

2.2 The site extends to an area of 0.5ha and includes a concrete hardstanding car park along with several upstanding buildings of various dates. The site itself is level but the surrounding

area slopes to the north, and the north boundary of the site is approximately 4.5m above the level of the adjacent CCP car park. There are several open and bricked up arches visible from the car park, extending below and into the site. Some of the open arches contain open and blocked doors possibly extending further below the site. It is probable that the area of car park to the north of the site was levelled at the time of the expansion of the gas works and construction of the railway arches, thereby truncating any earlier below ground remains.

2.3 The site is bound by the car park to the north, Gould Street to the west, Clive Street and Back St George's Road to the east and Rochdale Road to the south, including the upstanding buildings and associated car parks of the Marble Arch public house and a convenience store.

2.4 Several lengths of brick walls and fragments of former building elevations of varying dates form part of the upstanding boundaries of the site and there are also several upstanding structures of varying dates within the site, the earliest dating to the late 19th century.

2.5 The recorded bedrock geology within the proposed development site consists of the Chester Formation – Sandstone overlaid by superficial deposits of Till, Devensian - Diamicton (BGS 2022).

3 PLANNING BACKGROUND

3.1 The proposed scheme of archaeological evaluation and historic building recording is designed to fulfil Condition 6 of planning permission (ref. 131708/FO/2021) issued by Manchester City Council on 18th February 2022.

> *'No development shall take place until the applicant or their agents or their successors in title has secured the implementation of a programme of archaeological works in accordance with a Written Scheme of Investigation (WSI) which has been submitted to and approved in writing by the local planning authority. The WSI shall cover the following:*
>
> *1. A phased programme and methodology of investigation and recording to include:*
>
> *- a historic building investigation (Level 2) of any historic buildings or structures that are to be removed;*
>
> *- archaeological evaluation trenching;*
>
> *- pending the results of the above, a targeted open-area excavation.*
>
> *2. A programme for post-investigation assessment to include:*
>
> *- production of a final report on the results of the investigations and their significance.*
>
> *3. Deposition of the final report with the Greater Manchester Historic Environment Record.*
>
> *4. Dissemination of the results of the archaeological investigations commensurate with their significance, including the installation of a heritage interpretation panel.*

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

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

3.2 An archaeological desk-based assessment DBA (Salford Archaeology 2020) and subsequent Heritage Statement HS (Salford Archaeology 2021) were carried out to establish the nature and significance of the archaeological resource within the site and whether and to what extend the proposals would affect the significance of non-designated assets within the site and as well as the significance of the character of the historic built environment within the context of the development.

3.3 A geophysical survey comprising ground penetrating radar (GPR), electrical resistivity tomography (ERT) and surface ground wave stiffness (SWGS) was carried out in September 2022 (SEP Geophysical 2022) (Appendix 1). The survey was undertaken to attempt to map the locations of housing identified on historic maps and further information about the nature of the any other below ground structures. The survey concluded that as much of the site is around 4.5m above the surrounding ground level and the depth of mid-low frequency GPR penetration was limited to between 2m and 3m, it was considered unlikely that any responses relating to earlier terraced housing identified on historic mapping would be revealed. However, the GPR survey did reveal several features that may relate to previous usages at higher levels including walls and rails and later structures as identified on later historic maps, specifically anomalies A, C and F (Appendix 1).

3.4 A number of possible voids were revealed in the mid-low frequency data within the site and high frequency GPR data from blocked arches and windows facing Gould Street. This suggest the arches extend some way into the site, probably extending the whole length of the northern half of the site.

3.5 The ERT and SWGS trial survey data proved to be noisy and inconclusive, probably due to the highly variable nature of the below ground makeup. The trial was not extended to full survey.

3.6 This WSI provides a detailed methodology for undertaking the programme of archaeological evaluation trenching aimed at identifying, recording and sampling any archaeological features that may be present, and assessing the need for further mitigation investigations, if required, as well as a programme of historic building recording, to meet the requirements of the archaeological condition. If significant or complex archaeological remains are identified during the evaluation trenching, agreement of a further WSI with GMAAS will be required to establish the methodology for any further stages of work, if necessary.

4 ARCHAEOLOGICAL BACKGROUND AND SITE DESCRIPTION

4.1 The archaeological background below is a precis of information derived from both the DBA and HS produced by Salford Archaeology (Salford Archaeology 2020, 2021).

Prehistoric, Roman and Medieval Periods (c. 9500 BC – c. AD 1540)

4.2 There is no known evidence for prehistoric, Roman or medieval activity within the boundaries of the site, the potential for any such remains from these periods is considered to be very low, particularly due to the intensive development of the site since the late 18th century.

Post-medieval and Modern Periods (c.1540 – Present)

4.3 The onset of rapid industrialisation in Manchester from the 18th century onwards resulted in rapid and extensive expansion of the town's population. From the late 18th to early 19th century workers housing formed the most common site-type within the site boundaries (Salford Archaeology 2020). Laurent's map from 1793 clearly shows the start of development within the site with streets laid out and houses constructed along Ashley Street and Back Ashley Street (Salford Archaeology 2020, Plate 9).

4.4 By 1824, Rochdale Road Gas Works had begun and Swire's map of 1824 shows two 'gasometers' and a long range of the Works. The map also shows houses along Back St George's Street and at the junctions between Dewhurst Street and Ashley Street (Salford Archaeology 2020, Plate 10). Banck's map of 1831 shows a similar arrangement in greater detail (Salford Archaeology 2020, Plate 11).

4.5 In 1837, Gould Street School was constructed and is shown on the 1851 Ordnance Survey town plan (Salford Archaeology 2020, Plate 12). The map also shows, in great detail, back-to back housing along Ashley Street, almost the whole site being occupied by streets and housing. By the time of the 1891 Ordnance Survey, town plan the gas works had expanded into the site, with only a few houses remaining (Salford Archaeology 2020, Plate 13). A single large building occupies the site and there are several railway lines and additional structures.

4.6 By the 20th century, a joiners shop was added along Gould Street and several photographs dating to the early part of the 20th century (Salford Archaeology 2020, Plates 14, 16, 17 and 19) show the arrangement of the buildings. An aerial photograph from 1939 (Salford Archaeology 2020, Pate 17) shows the arrangement of buildings at the zenith of the gas works development, including the triple-pile warehouse building.

4.7 By the time of the 1951 Ordnance Survey map, the large warehouse building had been partially demolished revealing once internal railway lines (Salford Archaeology 2020, Plate 18). The 1970 Ordnance Survey map shows the site to have mostly cleared apart from the very southern end of the west range of the triple-pile ware house and (now labelled 'Depot') and a further 'Warehouse' structure. A further 'Depot' has been constructed along the south

boundary of the site. The 1989 Ordnance Survey map (Salford Archaeology 2020, Plate 21), a further 'Depot' has been constructed in the far north-east corner of the site and the 'Warehouse' has gone.

5 AIMS AND OBJECTIVES

Building Recording

5.1 The primary aim of the historic building recording is to record surviving evidence for the original use and subsequent historical form, function and development of upstanding historic building remains bounding and within the site through the production of a record consisting of measured plans and a detailed photographic record, in line with Historic England Level 2 historic building survey standards (Historic England 2016). The Level 2 historic building recording will be enhanced with additional archival research including accessing the National Gas Archives for plans of the site.

5.2 The results will be provided in a report which will collate available documentary, cartographic and photographic evidence for the original use, and subsequent historical development, form and function of the buildings, as well as the results of a measured survey. The results of the survey will be analysed and interpreted to gain a clear understanding of the buildings' uses, and phases of alteration and addition to the structures, with focus on evidence allowing the reconstruction of historical structural and functional arrangements.

Archaeological Evaluation Trenching

5.3 The overall aim of the archaeological evaluation trenching will be to obtain sufficient information to establish the presence/absence, character, extent, state of preservation and date of any archaeological remains relating to the former gas works and potentially, back-to-back terraced housing within the proposed development site. This will allow reasoned and informed recommendations to be made on the application for development of the site, and any requirements for further archaeological mitigation, the scope of which would be detailed in a subsequent WSI in agreement with GMAAS.

5.4 This will be achieved through meeting the following objectives:

- To determine the location, extent, date, character, condition and significance of any archaeological remains within the proposed development site
- To excavate and record identified archaeological features and deposits to a level appropriate to their extent and significance
- To assess vulnerability/sensitivity of any exposed remains
- To assess the impact of previous land use on the site
- To assess the potential for survival of environmental evidence

- To inform a strategy to avoid or mitigate impacts of the proposed development on surviving archaeological remains
- To undertake sufficient post-excavation assessment to confidently interpret identified archaeological features
- To report the results of the investigation and place them in their local, regional or national context and to make this record available by disseminating the results in an appropriate form.

Research Framework

5.5 The programme of archaeological investigation and recording will be conducted within the general research parameters and objectives defined by in the regional research agenda, the *North West Regional Research Framework* for archaeology (NWRF 2021). The previous research agenda *The Archaeology of North West England: An Archaeological Research Framework for North West England, Vol 2 Research Agenda and Strategy* (Brennand 2007) will also be considered.

5.6 The following research questions may be considered and should be revised following the results of the investigation:

- Ind7.24: Excavate areas of now undeveloped and cleared former working class areas regarded as slums;
- Ind22: How can we take forward our understanding of the impact of industrialisation on the working class and their living conditions?
- Ind7.35: Undertake industry specific studies of those industries that have received little archaeological attention;
- Ind52: What industrial and modern period type sites need further study?

6 STANDARDS AND GUIDANCE

6.1 All work will be undertaken to fully meet the requirements of all nationally recognised guidance for such work, including standards laid down by the former English Heritage (now Historic England) and the Chartered Institute for Archaeologists (CIfA).

6.2 All historic building recording and subsequent reporting will be undertaken to fully meet the requirements of a Level 2 historic building record as defined by Historic England in *Understanding Historic Buildings* (2016).

6.3 The programme of archaeological evaluation will be managed in line with the standards laid down in the Historic England guideline publication *Management of Research Projects in the Historic Environment (MoRPHE): Project Managers Guide* (2015a) and the MoRPHE *Project Planning Note 3: Archaeological Excavation (PPN3)* (2008a), as well as to meet the

requirements of the National Planning Policy Framework (NPPF; Chapter 16: 'Conserving and enhancing the historic environment'; revised 2021). All excavation will be undertaken using recording standards detailed in the *Archaeological Field Manual* (MOLAS 1994).

6.4 Guidance of particular relevance to the programme of works are:

- *Understanding Historic Buildings. A Guide to Good Recording Practice* (Historic England 2016);
- *Standard and guidance for archaeological field evaluation* (CIfA 2020a);
- *Standard and guidance for archaeological excavation* (CIfA 2020b);
- *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (CIfA 2020c); and
- *Management of Research Projects in the Historic Environment: PPN3: Archaeological Excavation* (English Heritage 2008a).

7 METHODOLOGY

Project initialisation

7.1 Lanpro will inform GMAAS at least one week in advance of the commencement of fieldwork.

7.2 The Museum of Science and Industry will be contacted by the archaeological fieldwork contractor to arrange for the project archive to be created and deposited in accordance with their deposition and archiving standards.

7.3 Before fieldwork commences an OASIS online record will be initiated and key fields completed on Details, Location and Creator forms.

8 HISTORIC BUILDING RECORDING METHODOLOGY

Background Historical Research

8.1 Historical research will be undertaken at the National Gas Archive, the Greater Manchester Archives and other repositories where relevant. It will draw on any accessible sources of documentary, cartographic or photographic evidence for and the immediate vicinity.

Plans and Drawings

8.2 Historic building recording will be undertaken of the defined buildings (Figure 2) to the standard of an Historic England Level 2 survey (2016). No buildings constructed in the late 20th century will be recorded.

8.3 Floor plans will be produced of all upstanding buildings and spaces, showing the form and location of any structural features of historic significance, such as blocked doorways, windows and fireplaces, masonry joints, ceiling beams and other changes in floor and ceiling levels, and any evidence for fixtures of significance.

Photographic Record

8.4 An external photographic record will be made of all elevations of all the historic buildings, from as nearly parallel to the elevation as possible within the constraints of the site. A general external photographic record will be made including a number of oblique general views of the buildings from all sides, showing their setting.

8.5 An interior photographic record will be made of the surviving warehouse, open arches, rooms or internal space, to record the form, general appearance and manner of construction of each area. This may be limited by access restrictions and health and safety requirements due to the condition of the buildings.

8.6 Any external or internal detail, structural or decorative, which is relevant to the building's design, development and use, will be photographed, with a scale where appropriate.

8.7 Photographs will be taken of any dates or other inscriptions, signage, makers' plates or graffiti which contribute to an understanding of the building. A transcription will be made wherever characters are difficult to interpret. Any building contents which have a significant bearing on the building's history which are still present will also be photographed.

8.8 Photographs will be taken in RAW format with a high resolution digital SLR camera and all photographs will include an appropriate scale where possible. All photography will conform to industry best practice (Historic England 2015b). Images will be converted to uncompressed baseline v.6 TIFF for archiving. All images will have accompanying metadata specifying; photo ID, capture device, converting software, colour space, bit depth, resolution, date of capture, photographer, caption, and any alterations made to the image.

8.9 A register of the location, direction and subject of each shot will accompany the photographic record, and the position and direction will be recorded on copies of the building and site plans.

Historic Building Report

8.10 The results of the historic building recording will be presented in a fully illustrated descriptive report, containing at a minimum the following elements:

- A concise non-technical summary of the results of the work, and its aims and objectives;
- A frontispiece including the site code/project number, planning reference number, dates when the fieldwork took place and a full National Grid Reference;
- An introduction, including a site description, background on the development and reasons for the building survey and recording;
- An account of the methodology and equipment used;
- An architectural description of the buildings and structures;

- A discussion placing the buildings and the results of the survey, into their historical, technological, regional and national context;
- A description of the function(s) of the building, with attention to their historical plans and changes in layout and process flow ;
- A site location map identifying the site at national, regional and street level;
- Relevant historical plans, photographs or other material;
- Reproductions of selective photographs of the buildings;
- A complete set of building plans of all buildings marked with the position and location of each photograph cross referenced with the photographic register;
- Detailed photographic register cross-referenced with all plans; and
- A description of the site archive and name of the institution where it will be deposited.

9 EVALUATION EXCAVATION METHODOLODGY

9.1 The archaeological evaluation will comprise the excavation 4 no trenches (Figures 2, 3 and 4), 1 no measuring 9m long by 7.5m across (Trench 1), 1 no measuring 10m by 5m across (Trench 2), 1 no measuring 9m by 6.5m across (Trench 3) and 1 measuring 10m by 8m across (Trench 4). This equates to 256m^2 and they have, in consultation with GMAAS, been positioned to target possible archaeological remains associated with the former Rochdale Road Gas Works and former workers' houses. The trenches have been located to avoid the northern half of the site as a site inspection of topographic relationships shows that the northern part of the site has been built up with arches and the car park beyond has been reduced in level. Geophysical anomalies reveal that the voids of the railway arches are present below this part of the site (Figure 3, Appendix 1).

9.2 One of the trenches (Trench 2) is situated within the footprint of an upstanding building, the 'Warehouse'. This structure is sufficiently high and ventilated to allow for machine excavation. Trenches 1 and 2 may require repositioning to avoid undermining adjacent walls that are to be retained and Trench 3 may require repositioning to avoid voids associated with the arches observed from the car par to the north and identified by the geophysical survey. In all three cases, the plotted locations are provisional pending further site investigation and GMAAS will be informed of the final locations.

9.3 Should archaeological investigation be required in the area of the arches, the locations of this will be subject to an addendum to this WSI in the form of a further additional location plan to be agreed in consultation with GMAAS.

9.4 Trench positions will be laid out using cm accurate survey-grade GPS equipment tied into the Ordnance Survey National Grid.

9.5 Concrete will be removed by mechanical excavation using a hydraulic breaker. Overburden will be stripped across the trenches using a mechanical excavator fitted with a toothless, flat bladed, grading bucket down to the first archaeological horizon or natural deposits, whichever occurs first. A toothed bucket may be used to remove broken up concrete but this should be kept to an absolute minimum and be supervised by an archaeologist at all times. All excavation by mechanical excavator will be undertaken under direct archaeological supervision, by a suitably experienced and qualified archaeologist, with one archaeologist responsible for monitoring each excavator.

9.6 Where appropriate, any cellars or rooms encountered may be mechanically excavated using a toothless bucket down to base in order to avoid extensive manual excavation. Similarly, areas of brick, flagged or paved flooring may be cleaned using a toothless bucket, In both instances, this much be carried out under strict archaeological supervision at all times. Final cleaning will be carried out by hand.

9.7 All archaeological features and deposits revealed will be cleaned and excavated in an archaeologically controlled manner in order to establish their extent, form, date, function and relationship to other features.

9.8 Should the excavation of the trenches be deemed necessary beyond 1.2m in depth (or limit of safe working depth), suitable stepping out will be employed. Features such as cellars containing demolition debris may be present, requiring excavation below 1.2m. Stability of the trenches will be continually assessed and excavation will abandoned if safe excavation beyond 1.2m is not achievable. Any areas below 1.2m will require demarcation with heras or netlon-type fencing as appropriate.

9.9 All identified finds and artefacts will be collected and retained, and bagged and labelled according to their context. Finds of significant interest will be given a ‘small finds’ number, and information on their location in three dimensions will be entered on a separate pro-forma sheet. No finds will be discarded without assessment by an appropriate finds specialist, and/or the approval of GMAAS.

9.10 A full written, drawn and photographic record will be made of all features revealed during the course of the archaeological evaluation. Plans will be completed at a scale of 1:20 (as appropriate), with section drawings at a scale of 1:10. All plans will be tied in with the Ordnance Survey National Grid with levels given to above OD.

9.11 The photographic record will utilise high resolution digital photography of a minimum of 12 megapixels and in RAW format. Images will be converted to uncompressed baseline v.6 TIFF for archiving. The photographic record will be maintained throughout the course of the fieldwork and will include as a minimum:

- The site prior to commencement of fieldwork;
- The site during work, showing specific stages of fieldwork;

- The layout of archaeological features within each trench;
- Individual features and, where appropriate, their sections;
- Groups of features where their relationship is assessed to be important;

9.12 All photography will follow the Historic England guidance for digital image capture (Historic England 2015b). All images will have accompanying metadata specifying; photo ID, capture device, converting software, colour space, bit depth, resolution, date of capture, photographer, caption, and any alterations made to the image.

9.13 Following excavation and recording of any archaeological remains, and with the agreement of GMAAS, the trenches will be backfilled with the previously excavated spoil. Reinstatement will be the client's responsibility.

Environmental Sampling Strategy

9.14 Soil samples will be taken from all suitable features or deposits for palaeoenvironmental and industrial residue sampling during the evaluation trenching. This will comprise the removal of a bulk sample from every securely sealed and hand-excavated context, excepting those with excessive levels of residuality or those with minimal 'soil' content (such as building rubble).

9.15 Bulk samples will comprise representative 40 litre samples. Where a context does not yield 40 litres of material, smaller samples will be taken (generally the maximum amount of material that it is practicable to collect). Bulk samples will be used to recover a sub-sample of charred macroplant material, faunal remains and artefacts where necessary, as well as any significant industrial residues.

9.16 Environmental material will be stored in a controlled environment and specialists consulted during the course of the work if necessary.

Human Remains

9.17 There is no evidence to suggest that any human remains will be present on the site.

9.18 The client, the Ministry of Justice and GMAAS will be informed if human remains are found. Disturbance of human skeletal remains will be kept to a minimum, and remains will be left in situ, covered and protected as necessary.

9.19 Human remains will only be removed if necessary to protect and secure them. Removal of human remains will only take place under appropriate government and environmental health regulations, in compliance with the Burial Act 1857 and after obtaining a Section 25 exhumation licence obtained from the Ministry of Justice.

9.20 If required a qualified and experienced osteoarchaeologist will undertake site visits to discuss the recording and assist in the removal of any human skeletal remains. Human remains will be processed as part of the post-excavation assessment following national

standards and guidance, including English Heritage (2004), Mitchell and Brickley (2017) and the Church of England/Historic England (2017).

Finds

9.21 All finds and samples will be treated in a proper manner during the excavation and post-excavation stage and to standards agreed in advance. Finds will be exposed, lifted, cleaned, conserved, marked, bagged and stored in accordance with the guidelines set out in United Kingdom Institute for *Conservation's Conservation Guidelines No. 2* (1990) and the CIfA guidelines *Standard and Guidance for the collection, documentation, conservation and research of archaeological materials* (2014c).

9.22 If required, conservation will be undertaken by approved conservators in line with the *First Aid for Finds* guidelines (Watkinson and Neal 1998). In accordance with the procedures outlined in English Heritage's MoRPHE PPN3 (2008), significant iron objects, a selection of non-ferrous artefacts (including all coins), and a sample of any industrial debris relating to metallurgy should be X-radiographed before assessment.

9.23 All finds of gold and silver will be moved to a safe place. Where removal cannot be effected immediately, suitable security measures will be taken to protect the artefacts from theft or damage. All finds of gold and silver, and associated objects, will be reported to the regional Finds Liaison Officer, who will inform the coroner, according to the procedures relating to the Treasure Act 1996 and the act's amendment in The Treasure (Designation) Order 2002, including prehistoric objects such as Bronze Age metalworking hoards and other non-precious metal items.

9.24 Ownership of any finds recovered during archaeological works rests with the landowner except where other law overrides this (e.g. Treasure Act 1996, Burial Act 1857). However, Lanpro will seek to obtain 'in principle' agreement from the landowner to donate the recovered artefacts to the museum.

Unexpectedly significant or complex discoveries

9.25 Should unexpectedly extensive, complex or significant remains be uncovered that warrant, in the professional judgment of the archaeologist on site and in consultation with GMAAS, more detailed recording than is appropriate within the terms of the WSI, the scope of the WSI will be reviewed.

Plant and equipment

9.26 The archaeological contractor on site will be responsible for provision of all required welfare, plant, and health and safety equipment during the building survey and evaluation trenching.

Strategy Review

9.27 The strategy for the archaeological evaluation will be held under continuous review. Should the strategy be considered unsuitable at any time by Lanpro, an alternative strategy will be proposed for agreement with GMAAS.

9.28 Pending the results of the archaeological evaluation, targeted open-area excavation may be required. The scope of this will be agreed with GMAAS and will be subject to a further WSI.

10 POST-EXCAVATION ASSESSMENT AND REPORTING

10.1 The post-excavation assessment work will comprise the following:

- Checking of drawn and written records during and on completion of fieldwork;
- Production of a stratigraphic matrix of the archaeological deposits and features present on the site, if appropriate;
- Cataloguing of photographic material;
- Cleaning, marking, bagging and labelling of finds according to the individual deposits from which they were recovered;
- Processing and assessment of environmental samples; and
- Finds requiring specialist conservation will be sent to appropriate specialists for assessment, including identification and initial dating;

10.2 The report will consist of:

- A title page detailing site address, site code and accession number, NGR, author / originating body, client's name and address;
- Full contents listing;
- A non-technical summary of the findings of the evaluation;;
- A description of the topography and geology of the evaluation area
- A description of the archaeological background to the site drawing on results of previous DBA and HS;
- A description of the methodologies used during the evaluation;
- A description of the findings of the evaluation;
- Assessment of the archaeological features exposed and their context within the surrounding landscape, and at a local, regional and national level as appropriate;
- Site and trench location plans and plans of each of the trenches;
- Section drawings of the excavated archaeological features;
- Specialist reports on the artefactual / ecofactual remains from the site;
- Appropriate photographs of specific archaeological features;

- A full context list;
- The OASIS reference and summary form; and
- A copy of this WSI as an appendix.

10.3 The results of the work will be related to the relevant known archaeological information held in the Greater Manchester HER. It will include, where relevant, examination of all readily available cartographic sources to record evidence for historic or archaeological sites and history of previous land uses. Where relevant and permitted, photographs, photocopies or traced copies will be presented in the report.

10.4 A copy of the report will be presented to GMAAS for approval within four weeks of the completion of fieldwork unless other arrangements are negotiated due to the complexity of the archaeology, or the quantity of finds or environmental samples required to be processed.

10.5 Following acceptance, a hard copy of the report will be presented to GMAAS for inclusion in the Greater Manchester HER as well as a digital copy of the approved report. Digital vector trench plan can be included with the report, compatible with industry standard GIS software for integration in the Greater Manchester HER.

10.6 Where positive results are drawn from the evaluation, a summary report will be prepared, in an established format, suitable for inclusion in a suitable journal, if required.

10.7 GMAAS will require a short (c. 300) word summary of the project results to be sent through to the editor of *Post Medieval Archaeology* for inclusion in their annual round-up of fieldwork, with a copy forwarded to GMAAS. This would not need to include the evaluation results should the trenches prove to be sterile, but a summary of the historic building survey will need to be included. Please note that the deadline for submission is usually the end of March in the year following the completion of the fieldwork.

10.8 It is required that the results be disseminated which will be dictated by the significance of the findings which will be discussed with GMAAS following the completion of the fieldwork or subsequent reporting, it is possible that the results of the work will be worthy of dissemination via an interpretation panel. The form of dissemination will result from consultation with GMAAS and the client.

11 ARCHIVING AND DATA MANAGEMENT

Archive Content

11.1 The archive will be prepared in accordance with the CIfA guidelines detailed in the *Standard and guidance for the creation, compilation, transfer and deposition of archaeological archives* (CIfA 2020c). The preparation of the archive will also be informed by the *Guidelines for the preparation of Excavation Archives for long–term storage* (United Kingdom Institute

for Conservation, 1990), *Standards in the museum care of archaeological collections* (Museums and Galleries Commission 1994), and in accordance with any museum deposition guidelines. Provision will be made for the stable storage of paper records and their long–term storage.

11.2 The appointed archaeological contractor will contact the Museum of Science and Industry in advance of commencing any fieldwork to determine the preparation, and deposition of the archive and finds, and obtain an accession number for all archaeological works. The landowner will be encouraged to transfer ownership of the finds to the museum. The archive will be presented to the curator within 6 months of completion of the fieldwork, unless alternative arrangements have been agreed in writing with GMAAS.

11.3 Adequate resources will be provided during fieldwork to ensure that all records are checked and internally consistent. Archive consolidation will be undertaken immediately following the conclusion of fieldwork and will include the following work:

- the site record will be checked, cross–referenced and indexed as necessary;
- all retained finds will be cleaned, conserved, marked and packaged in accordance with the requirements of the Museum of Science and Industry;
- all retained finds will be assessed and recorded using pro forma recording sheets, by suitably qualified and experienced staff. Initial artefact dating will be integrated within the site matrix; and
- all retained environmental samples will be processed by suitably experienced and qualified staff.

11.4 The archive will consist of paper records and digital data, as well as finds and samples as selected. Not all material collected or created during the course of the works will require preservation in perpetuity, and the final contents of the archive will be subject to selection prior to the accession of the archive to the museum, in line with a selection strategy agreed with the client and GMAAS.

11.5 The selected contents of the archive will be appropriate to establish the significance of the results of the project and support future research, outreach, engagement, display and learning activities. Selection will be focused on selecting what is to be retained to support these future needs. Methods for disposing of de-selected material will be agreed with the landowner and other relevant stakeholders.

11.6 A copy of the digital archive will be submitted for integration into the Greater Manchester HER.

11.7 An OASIS form will be completed for the project and an electronic copy of the final report and the digital archive deposited with the ADS.

Data Management

11.8 A Data Management Plan will be created and managed by the appointed archaeological contractor on commencement of the project, which will outline the strategy for the sharing and preservation of the project's digital data.

11.9 The Data Management Plan will be produced in line with CIfA standards (2020c) and guidance produced by the ADS (2014), and will include:

- Details of data that will be generated during the work;
- Type of file formats to be used (e.g. .doc, .pdf., .dwg., .shp, etc;
- Methods of data collection or capture (e.g. GPS/Total Station/digitising from hard copies);
- File naming conventions (e.g. ADS naming conventions);
- Metadata, standards and quality assurance measures;
- Plans for sharing data;
- Ethical and legal issues or restrictions on data sharing (e.g. client confidentiality etc);
- Copyright and intellectual property rights of data;
- Data storage and back-up measures;
- Data management roles and responsibilities; and
- Costing or resources needed (ADS archiving costs etc.);

11.10 The digital archive will be produced using industry standard file formats, with a clear file structure that allows these to be easily shared with all stakeholders, and allows the data to continue to be preserved and shared with the public through, for example, the HER.

11.11 The data comprising the digital archive will comply with the English Heritage (now Historic England) guidance on historic environment data standards, *MIDAS Heritage; the UK Historic Environment Data Standar*d (English Heritage 2012).

11.12 It is anticipated that the repositories to which the digital archive are submitted (i.e. HER/local museum/archive) will have in-house Data Management Plans to allow for the long term preservation of the digital archive data, including plans for data back-up and migration to new digital formats as these emerge.

12 TIMETABLE

12.1 GMAAS will be given at least one week's notice of the commencement of the fieldwork and will monitor implementation of the programme of works on behalf of the Local Planning Authority and evaluate the work being undertaken on site against the methodology detailed in this WSI. They will be free to visit the site at any time by prior arrangement with Lanpro.

12.2 Fieldwork is anticipated to be carried out over a period of between one and two weeks, depending on the nature of any archaeological remains encountered. A report will be produced within six weeks of completion subject to the complexity of any archaeological features or finds encountered.

13 STAFFING

13.1 Karl Taylor MCIfA (Principal Archaeologist, Lanpro) will oversee management of the project and will monitor the work on behalf of the client.

13.2 The archaeological evaluation trenching and post-excavation works will be undertaken by a suitably qualified and experienced professional archaeological contractor, that will adhere to the CIfA Code of Conduct and all appropriate standards and guidance. Details of the CVs of key personnel and specialists can be provided to GMAAS in advance of the commencement of fieldwork, following appointment of the archaeological contractor.

13.3 The appointed archaeological contractor's Project Manager for the project will be able to demonstrate competence and experience of managing archaeological projects of a similar size, nature and complexity. Assessment and analysis of finds, environmental samples and human remains will be undertaken by suitably qualified and experienced specialists, if required. The archaeological contractor will be responsible for the organisation and management of all plant, welfare and health and safety on site in line with national professional guidance.

14 MONITORING

14.1 GMAAS will monitor the implementation of the archaeological evaluation on behalf of the Local Planning Authority and evaluate the scope and progress of the work against the methodology detailed in the WSI.

14.2 GMAAS will be responsible for considering any changes to the agreed scope of works including repositioning of trenches. Any such changes will be agreed in writing with relevant stakeholders prior to commencement of on-site works, or at the earliest opportunity.

14.3 The appointed archaeological contractor will provide at least weekly updates to Lanpro.

Any issues that arise on site or during the post-excavation stages should first be addressed by the archaeological contractor directly to Lanpro, who will then liaise with the client, GMAAS and other stakeholders in order to resolve the matter. In the event of issues arising regarding the implementation of this WSI, or the scope or methodology of the excavation, these will be resolved in the first instance by contacting Lanpro who will liaise with the client and the GMAAS to determine a solution. Should the issue not be resolved remotely a meeting will be held between key stakeholders to facilitate discussion of the issues and

identification of a suitable strategy for progress to be agreed by all parties.

15 COPYRIGHT AND PUBLICITY

15.1 Copyright of the documentation prepared by the archaeological contractor and specialist sub-contractors should be the subject of additional licences in favour of the client, Lanpro, and the Greater Manchester HER to use such documentation for their commercial, statutory or educational functions, and to provide copies to third parties.

15.2 Under the *Environmental Information Regulations* (EIR 2005), information submitted to the HER becomes publicly accessible, except where disclosure might lead to environmental damage, and reports cannot be embargoed as 'confidential' or 'commercially sensitive'.

15.3 It is recognised that the project may identify remains which are of interest to the public and these may be publicised through appropriate media. Any publicity for the project proposed by the archaeological contractor should be approved by Lanpro and the client. The appointed contractor will not issue any information on the work through media, internet or social media without prior agreement with Lanpro and the client.

15.4 Care will be taken to ensure that any publicity does not compromise the security of archaeological remains that may have been identified or recovered. Any approaches by the press to the archaeological contractor should be referred to Lanpro in the first instance.

16 INSURANCE

16.1 The appointed archaeological contractor will hold Employers Liability Insurance, Public Liability Insurance and Professional Indemnity Insurance to at least the following amounts;

- Public Liability £5,000,000
- Employer's Liability £5,000,000
- Professional indemnity (for any single claim) £5,000,000

17 HEALTH AND SAFETY

17.1 The management of all health and safety on site during the fieldwork phase will be the responsibility of the appointed archaeological contractor. All works will be undertaken by the contractor in compliance with the Health and Safety at Work Act (1974) and all applicable regulations and Codes of Practice. All archaeological staff will undertake their operations in accordance with safe working practices and will be CSCS certified. At least one First Aider will be present on site at all times.

17.2 A site-specific risk assessment and method statement (RAMS) will be produced by the appointed archaeological contractor, prior to the commencement of work on site, which will be subject to regular review.

17.3 Documented procedures for safe working will be supplied by the appointed archaeological fieldwork contractor, in addition to the usual site specific RAMS.

17.4 Suitable Personal Protective Equipment (PPE) and welfare facilities will be provided by the archaeological contractor, including hi-visibility coats/vests, hard hats, safety boots and gloves, as well as safety glasses if required.

17.5 All staff will receive a health and safety induction prior to starting work on site to be provided by the archaeological contractor. Toolbox talks on health and safety issues will be conducted at minimum weekly intervals and/or after changes in working practices or identification of new threats/risks. The risk assessment will be reviewed and updated as necessary. Control measures will be implemented as required in response to specific hazards.

17.6 Regular audits of health and safety practices will be carried out during the course of the project by Lanpro and the archaeological contractor in consultation with the site workforce.

17.7 Safe working will take priority over the desire to record archaeological features or remains, and where it is considered that recording is dangerous, any such features will be recorded by photography at a safe distance.

17.8 All trench locations will be scanned with a Cable Avoidance Tool (CAT) and Genny prior to ground works commencing. Necessary measures will be taken to avoid disturbing any services.

17.9 Provision will be made, through grading of trench ends or provision of planks, to allow wildlife egress from trenches left open overnight.

17.10 Plant operators will be required to produce evidence of qualification within an industry accepted registration scheme. Sub-Contractors health and safety performance will be kept under review and action taken if necessary. All spoil will be stored and managed safely in line with the standards of the *Construction Code of Practice for Sustainable Use of Soils on Construction Sites* (DEFRA 2009).

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Figures

Lanpro



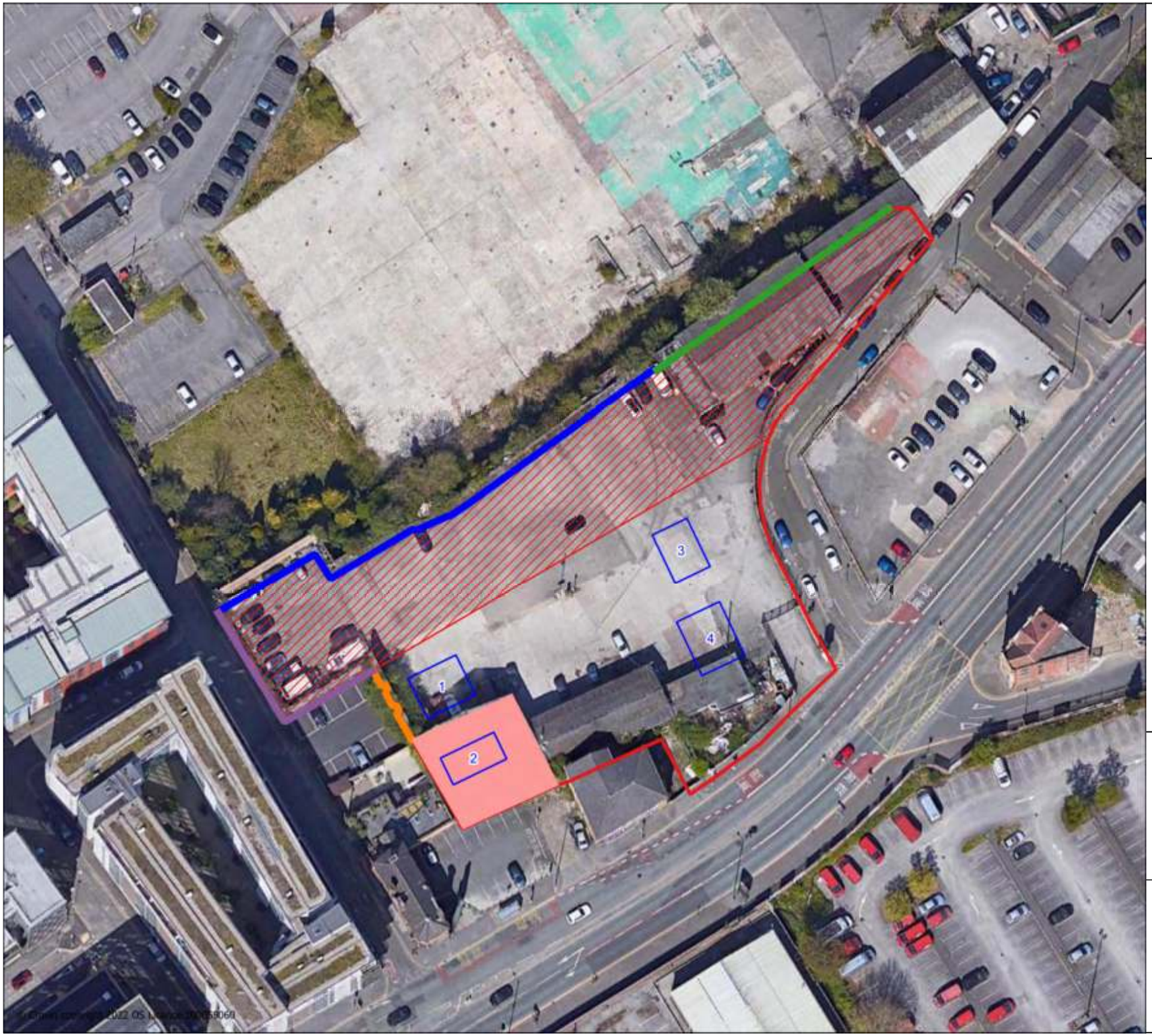
Site

N

0 100 200 300 400 500 m

Figure 1. Location of the proposed development site

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Site

Former Warehouse

Arches beneath former railway

Wall of Joiners Workshop

Wall of former Warehouse

Wall along northern boundary

Area of possible arch voids

Trenches

N

0 15 30 45 m

Figure 2. Locations of HBR and evaluation trenches overlaid on aerial imagery



Lanpro

Site

Area of possible arch/basement voids

Trenches

N

0 5 10 15 m

Figure 3. Proposed trench locations overlaid on geophysical survey results



Site

Area of possible arch/basement voids

Trenches

N

0 5 10 15 m

Figure 4. Proposed trench locations overlaid on 1851 Ordnance Survey 1:500 town plan

Appendix 1

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T. (0145) 729833 W. www.sepgeophysical.com E. info@sepgeophysical.com

N

PLAN GRID NORTH

NOTES:

The geophysical results have been overlaid onto Survey and Engineering Projects topographic survey, Drawing reference "S23787-2DT".

The Ground Penetrating Radar (GPR) technique was collected using the Proceq GS8000 & GSSI SIR4000 console coupled with a 200MHZ hyperstacking antenna. Anomalous areas have been picked by interrogating the data in profile and plan view (amplitude slice) format. All depths are to the top of interpreted features and displayed in metres (m).

Features annotated as GPR indicate a series of consistent subsurface anomalies located using the Ground Penetrating Radar technique. They have been identified as localised changes in dielectric properties within the dataset which, although all reasonable care has been undertaken during the data processing and interpretation, SEP Geophysical cannot guarantee that every feature have been identified.

File Name: G-22_162 ROCHDALE ROAD GPR RESULTS - FIGURE 2

1 2

SHEET LAYOUT

LEGEND

ERT & SWGS SURVEY PROFILE

GPR SURVEY BOUNDARY

GPR DETECTION LINE INDICATIVE OF A POSSIBLE BURIED UTILITY, BURIED RAIL OR REMANENT LINEAR STRUCTURE

A. GPR DETECTED ANOMALY POSSIBLE AREA OF POORLY CONSOLIDATED/REWORKED MATERIAL. (THE POSSIBILITY OF SMALL-SCALE VOIDING CANNOT BE DISCOUNTED)

B. GPR DETECTED ANOMALY INDICATIVE OF REINFORCEMENT PRESENT.

C. GPR DETECTED ANOMALY INDICATIVE OF A POSSIBLE BURIED OBSTRUCTION SUCH AS REMNANT STRUCTURES OR LARGE BODIES OF FILL.

D. GPR DETECTED ANOMALY INTERPRETED AS STRUCTURAL FEATURE SUCH AS A BUTTRESS OR WALL.

E. GPR DETECTED ANOMALY INTERPRETED AS POSSIBLE BASE OF STRUCTURAL ARCH. (LOW CONFIDENCE DETECTION).

F. GPR DETECTED ANOMALY INTERPRETED AS A CHANGE IN GROUND CONDITIONS SUCH AS INCREASED SATURATION OR DISTURBED/REWORKED GROUND - POSSIBLY RELATED TO REMOVAL OF A HISTORIC SLABS OR BUILDINGS.

G. GPR DETECTED ANOMALY INTERPRETED AS POSSIBLE SECONDARY CONCRETE SLAB

0 1 2 4 6 8
SCALE BAR

REV	DATE	DESCRIPTION

SEP Geophysical

Client: McGOFF CONSTRUCTION

Project Title: 87 ROCHDALE ROAD, MANCHESTER

Drawing Title: GEOPHYSICAL RESULTS: GPR INTEPRETATION

Surveyed	Drawn	Checked
JC	JC	TS

Scale	Date	Drawing Ref.	No	Size	Rev
1:100	14/09/22	FIGURE.2	01	A0	--

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N

PLAN GRID NORTH

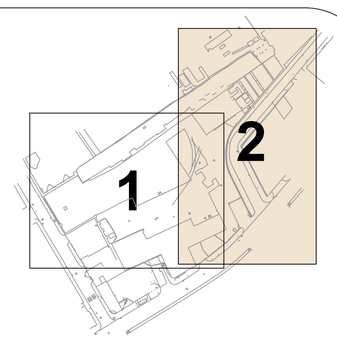
NOTES:

The geophysical results have been overlaid onto Survey and Engineering Projects topographic survey, Drawing reference 'S23787-2DT'.

The Ground Penetrating Radar (GPR) technique was collected using the Proceq GS8000 & GSSI SIR4000 console coupled with a 200MHZ hyperstacking antenna. Anomalous areas have been picked by interrogating the data in profile and plan view (amplitude slice) format. All depths are to the top of interpreted features and displayed in metres (m).

Features annotated as GPR indicate a series of consistent subsurface anomalies located using the Ground Penetrating Radar technique. They have been identified as localised changes in dielectric properties within the dataset which, although all reasonable care has been undertaken during the data processing and interpretation, SEP Geophysical cannot guarantee that every feature have been identified.

File Name: G-22_162 ROCHDALE ROAD GPR RESULTS - FIGURE 2



SHEET LAYOUT

LEGEND

ERT & SWGS SURVEY PROFILE

GPR SURVEY BOUNDARY

GPR DETECTION LINE – INDICATIVE OF A POSSIBLE BURIED UTILITY, BURIED RAIL OR REMANENT LINEAR STRUCTURE

A. GPR DETECTED ANOMALY POSSIBLE AREA OF POORLY CONSOLIDATED/REWORKED MATERIAL. (THE POSSIBILITY OF SMALL–SCALE VOIDING CANNOT BE DISCOUNTED)

B. GPR DETECTED ANOMALY INDICATIVE OF REINFORCEMENT PRESENT.

C. GPR DETECTED ANOMALY INDICATIVE OF A POSSIBLE BURIED OBSTRUCTION SUCH AS REMNANT STRUCTURES OR LARGE BODIES OF FILL.

D. GPR DETECTED ANOMALY INTERPRETED AS STRUCTURAL FEATURE SUCH AS A BUTTRESS OR WALL.

E. GPR DETECTED ANOMALY INTERPRETED AS POSSIBLE BASE OF STRUCTURAL ARCH. (LOW CONFIDENCE DETECTION).

F. GPR DETECTED ANOMALY INTERPRETED AS A CHANGE IN GROUND CONDITIONS SUCH AS INCREASED SATURATION OR DISTURBED/REWORKED GROUND – POSSIBLY RELATED TO REMOVAL OF A HISTORIC SLABS OR BUILDINGS.

G. GPR DETECTED ANOMALY INTERPRETED AS POSSIBLE SECONDARY CONCRETE SLAB

0 1 2 4 6 8
SCALE BAR

REV	DATE	DESCRIPTION

SEP Geophysical

Client
McGOFF CONSTRUCTION

Project Title
87 ROCHDALE ROAD,
MANCHESTER

Drawing Title
GEOPHYSICAL RESULTS:
GPR INTEPRETATION

Surveyed	Drawn	Checked
JC	JC	TS

Scale	Date	Drawing Ref.	No	Size	Rev
1:100	14/09/22	FIGURE.2	02	A0	--

Norwich:

Brettingham House
98 Pottergate
Norwich
Norfolk
NR2 1EQ

01603 631 319

Chelmsford:

The Aquarium
101 Lower Anchor Street
Chelmsford
Essex
CM2 0AU

01245 929074

London:

70 Cowcross Street
London
EC1M 6EL

020 3011 0820

York:

Stanley Harrison House
The Chocolate Works
Bishopthorpe Road
York

Y023 1DE
01904 803 800

Manchester:

One St Peter's Square
Manchester
M2 3DE

0161 711 1740

Cambridge:

50 – 60 Station Road
Cambridge
Cambridgeshire
CB1 2JH

01223 776740

info@lanproservices.co.uk

Registered Number: 6593948 VAT number: 932 990 302

Appendix 2: Inventory of primary archive

Phase	File/Box No	Description	Quantity
Evaluation	File no.1	Context record card	43
		Drawing register sheets	2
		Sample register sheets	1
		Photo register sheets	2
		Context register sheets	2
		Trench record sheets	4
		Permatrace	7
Watching Brief	File no.2	Context record card	14
		Photo register sheets	1
		Watching brief daily monitoring form	2
		Permatrace	1
		Photo register sheets	1

Appendix 3: Concordance of contexts

Context	Trench	Description	Artefacts
100	1	Concrete	
101	1	Clinker-rich bedding layer	
102	1	Made ground	
100	1	Concrete	
200	2	Concrete ground level	
201	2	Clinker-rich bedding layer	
203	2	Made ground	
301	3	Clinker-rich bedding layer	
302	3	Stone sett surface	
303	3	Bedding layer for surface 302	
304	3	Possible brick surface	Brick (1)
305	3	Cellar vaulting	Brick (1)
306	3	Brick rubble	
307	3	Brick structure	Brick (1)
308	3	Brick vaulting	Brick (1)
309	3	Wall east of structure 307	Brick (1)
310	3	Southern support for iron beam	Brick (1)
311	3	Northern support for iron beam	
312	3	A pair of E-W ferrous beams	
313	3	Brick structure	
314	3	Black, clinker-type deposit	
315	3	Construction cut for modern structure 317	
316	3	Clinker deposit	
317	3	Modern brick-built structure.	
318	3	Concrete foundation and floor surface	
319	3	Mixed rubble, clinker and dark brown sandy soil	Pottery (2), ceramic filter (1)
320	3	Mixture of brick rubble and concrete	
321	3	Large ferrous support beam	

Context	Trench	Description	Artefacts
322	3	Black clinker type deposit	
400	4	Concrete	
401	4	Clinker-rich bedding layer	
402	4	Brick wall	Brick (1)
403	4	Two sandstone flagstones	
404	4	Large sandstone block	
405	4	Large ferrous support beam	
406	4	Brick arches	
407	4	Square iron support	
408	4	Single course of bricks	
409	4	Black clinker deposit	Brick, pottery (2)
410	4	Sandstone gutter	
411	4	Mixed brick rubble and stone deposit	Brick (1)
1000	WB	Brick wall	
1001	WB	Brick wall	
1003	WB	Brick wall	
1004	WB	Brick wall	
1005	WB	Brick wall	
1006	WB	Brick and concrete cellar structure	
1007	WB	Modern weighbridge	
1008	WB	Concrete slab	
1009	WB	Brick demolition material – made ground	
1010	WB	Ashy clinker deposit – made ground	
1011	WB	Construction backfill	
1012	WB	Weighbridge foundations	
1013	WB	Brick vault between 1001 and 1004	

Appendix 4: Trench tables

Trench 1					
General Description				**Orientation**	NE-SW
Trench was devoid of any archaeological features.				**Average Depth (m)**	1.80
				Width (m)	7.00
				Length (m)	8.40
Contexts					
Context	**Type**	**Length (m)**	**Width (m)**	**Depth (m)**	**Description**
100	Deposit	-	-	0.20	Concrete ground level
101	Deposit	-	-	0.30	Black, clinker-rich bedding layer for 100
102	Deposit	-		1.50	Mixed brick and stone rubble made ground, was checked to a depth of 3.0m by machine but the base of the deposit was not reached.

Trench 2					
General Description				**Orientation**	NE-SW
Trench was located within a standing building in the southwest corner of the site and was devoid of any archaeological features.				**Average Depth (m)**	2.00
				Width (m)	3.20
				Length (m)	8.50
Contexts					
Context	**Type**	**Length (m)**	**Width (m)**	**Depth (m)**	**Description**
200	Layer	-	-	0.20	Concrete ground level
201	Layer	-	-	0.30	Black, clinker-rich bedding layer for 200
203	Layer	-	-	1.50	Mixed, tipped layers of sand, clinker and rubble forming a deep made ground deposit below the current ground level within the standing building.

Trench 3					
General Description				**Orientation**	NE-SW
Trench contained a variety of archaeological remains including 19th and 20th-century structures and deposits.				**Average Depth (m)**	1.00
				Width (m)	5.00
				Length (m)	7.00
Contexts					
Context	**Type**	**Length (m)**	**Width (m)**	**Depth (m)**	**Description**
300	Deposit	-	-	0.20	Concrete
301	Deposit	-	-	0.30	Black, clinker-rich bedding layer for 300
302	Structure	0.92	0.40	0.15	Remnant of stone sett surface. Laid over a tarry bedding layer 303 and truncated to the east by 315.
303	Deposit	0.92	0.60	0.15	Black tarry bedding layer for surface 302
304	Structure	1.80	0.56	0.11	Possible surface built from handmade red bricks laid on-bed and bonded with a sandy light brown mortar. Identified below deposit 303.
305	Structure	0.73	0.22	0.32 exc	Possible demolished cellar vaulting built mainly from fire brick bonded with hard dark grey mortar. Identified below possible surface 304. Broadly E-W aligned.
306	Deposit	-	0.30	0.40	Brick rubble identified between structures 305 and 306, and below surface 304. Likely demolition infill following disuse of 307.
307	Structure	1.70	1.20	0.73 exc	Brick buttress identified towards the southwest corner of the trench. Built from handmade red brick bonded with white lime mortar. East face butted by 309, vaulting 308 built onto upper portion of structure at south end, overlain by structure 310.
308	Structure	0.98	0.23	0.11	Remnant of brick vaulting. Built from handmade red brick bonded with white lime mortar. Built on top of 307 and

					partially overlain by surface 304. Broadly E-W aligned.
309	Structure	0.69	0.65	0.20 exc	Wall east of structure 307. Built from handmade red brick bonded with dark grey mortar.
310	Structure	1.76	0.43	0.52	Southern of two supports for iron beams 312. Built from a mix of likely reused red brick and fire brick bonded with very hard dark grey mortar. Broadly E-W aligned.
311	Structure	1.50	0.30	0.35	Northern of two supports for beams 312. Built from a mix of likely reused red brick and fire brick bonded with very hard dark grey mortar. Broadly E-W aligned.
312	Structure	1.65	0.15	0.12	A pair of broadly E-W ferrous beams. Laid on top of supports 310 and 311.
313	Structure	0.92	0.60	0.23	Brick structure identified between beams 312, possibly a surface. Built from handmade red brick bonded with white lime mortar.
314	Deposit	1.52	1.17	0.30 exc	Black, clinker-type deposit identified between rails 312 and surrounding brick surface 313.
315	Cut	6.00	0.30	1.20 exc	Vertical sided construction cut for modern structure 317. Filled by backfill 316. Cut truncates all identified structures and deposits to the west.
316	Deposit	6.00	0.30	1.20 exc	Black gritty clinker deposit, loosely compacted with rare pieces of crushed brick. Backfill of construction cut 315.
317	Structure	5.90	3.16	0.46	Modern brick-built structure. Built from machine made, frogged red brick bonded with modern cement type mortar. 3 sides visible forming a chamber with a concrete floor 318 present between the walls. Likely part of a weighbridge seen on 1970 OS map.
318	Structure	5.90	3.16	-	Concrete. Forms foundation of and floor surface within structure 317.

319	Deposit	1.80	0.67	1.50 exc	Mixed rubble, clinker and dark brown sandy soil. Identified in space between structures 305, 307 & 308. Truncated to E by construction cut 315. Likely infill of a deep, possible cellar space following demolition of aforementioned structures.
320	Deposit	5.90	3.16	1.20	Mixture of brick rubble and concrete. Bricks were modern frogged brick as used in fabric of structure 317. Demolition infill of 317 following disuse prior to creation of current concrete ground level 300.
321	Structure	1.20 exc	0.40	1.00	Large ferrous support beam, located in unstable deeper portion of excavation at N end of trench. Seemingly resting on 318 as a foundation at S end. Function unknown
322	Deposit				Black clinker type deposit with occasional red brick present throughout. Possibly laid down following disuse of beam 321. Located in deep, unstable portion of trench at N end.

Trench 4					
General Description				**Orientation**	NE-SW
Trench contained remains of a probable late 19th-century wall, flagstone surfacing and a large ferrous support beam with vaulted brickwork present on east side of the beam. A large void was identified beneath the vaulted brickwork.				**Average Depth (m)**	1.00
				Width (m)	6.80
				Length (m)	9.50
Contexts					
Context	**Type**	**Length (m)**	**Width (m)**	**Depth (m)**	**Description**
400	Deposit	-	-	0.20	Concrete
401	Deposit	-	-	0.30	Black, clinker-rich bedding layer for 400
402	Structure	3.70	0.60	<3.00	Brick wall. Built from handmade red brick bonded with black ash mortar. Broadly E-W aligned. Flagstone surface 403 bonded to uppermost surviving course, stone block 404 built into fabric of wall at E end. Iron support beam 405 also keyed into N face of wall at E end. Foundation/base of wall not reached despite machine excavation to a depth of over 3.0 m.
403	Structure	1.60	0.73	0.09	Two sandstone flagstones bonded to uppermost course of wall 402. Probable late 19th century yard surface.
404	Structure	0.87	0.87	0.30	Large sandstone block, built into fabric of wall 402 and bonded to wall with black ash mortar. Function unknown but possibly a support or base for a since removed overlying structure or machine.
405	Structure	<8.00	0.23	0.68	Large ferrous support beam, seemingly made from a series of riveted plates and a main beam. Keyed into N face of wall 402. Brick arches 406 butt up to E side of beam.
406	Structure				Series of fairly small brick arches built between ferrous beams and butting up to E side of main beam 405. Built from red brick bonded with a hard dark grey mortar. Open space present below arches. Likely part of roof for a large

					cellar space. Date unclear but probably late 19th or early 20th century.
407	Structure	0.72	0.72	0.20 visible	Square iron support likely used as a base for a since removed pillar or column. Built on top of arches 406.
408	Structure	1.05	0.30	0.09	Single course of bricks laid on a bed of sand. Mostly fire brick, likely reused. Modern, capping a disused cable.
409	Deposit	1.80	0.70	-	Black clinker deposit identified in southeast corner of trench. Likely a bedding layer for a since removed floor surface. Underlies stone gutter 410.
410	Structure	1.30	0.22	0.11	Sandstone gutter, laid over bedding layer 409. Likely surface drain associated with the same yard surface as flagstones 403.
411	Deposit			<3.00	Mixed brick rubble and stone deposit, present on N side of wall 402 and W side of beam 405. Also partially fills space below arches 406. Excavated by machine to a depth of over 3.0m but base of deposit not reached. Likely demolition infill/made ground created following disuse of late 19th century buildings.

Appendix 5: Catalogue of consulted historic maps, plans and photographs

Ordnance Survey

Description	Date
Town Plan of 1850 (1:1056)	1851
Town Plan of 1891 (1:500)	1891
County Series Map of 1922 (25")	1922
County Series Map of 1951 (25")	1951
National Grid Map of 1970 (1:1250)	1970

National Gas Archive

Title	Description	Ref. No.	Date
Manchester - Rochdale Road - Elevation and Plan of Valve House to Mains	Rochdale Road Station Elevation and plan of Valve House to Inlet and Outlet Main of Gasholders. [set 6, no.9]; dated 21 March 1898	NW/MAC/RDR/E/A/1	1898
Manchester - Rochdale Road - Plan of Site, Buildings and Gas Mains	Rochdale Road Station, Charlotte Street Plan of site, buildings and gas mains. No.1 of 5, tar tank	NW/MAC/RDR/E/E/1	n.d.
Manchester - Rochdale Road - Plan of Tar and Liquor Tank, Gas Mains amd Holders	Rochdale Road Station, Charlotte Street Plan shows, tar and liquor tank and gas mains, holders No.2 of 1.	NW/MAC/RDR/E/E/2	n.d.
Manchester - Rochdale Road - Plan of Works	Rochdale Road Station Plan of works, buildings and gas mains, holder No.5, tar tank, tar wells, purifiers, benzole plant, pump house, exhauster house, mortar mill, retort house, purifiers.	NW/MAC/RDR/E/E/3	n.d.
Manchester - Rochdale Road - Plan of Works	Rochdale Road Works, Lower Tebbutt Street Plan shows, liquor tank, section purifiers, condensers, boiler house, exhauster house and gas mains.	NW/MAC/RDR/E/E/4	n.d.

Title	Description	Ref. No.	Date
Manchester - Rochdale Road - Plan of Works	Rochdale Road Works, Lower Tebbutt Street Plan shows, liquor tank, section purifiers, condensers, boiler house, exhauster house and gas mains.	NW/MAC/RDR/E/E/4B	n.d.
Manchester - Rochdale Road - Plan of Site	Rochdale Road Works, Gould Street Plan of site, shows detailed gas mains.	NW/MAC/RDR/E/E/5	n.d.
Manchester - Rochdale Road - Plan of Retort House and Mains	Rochdale Road Works, Lower Tebbutt Street, Coburc Street Plan shows C and D retort house, mains.	NW/MAC/RDR/E/E/6	n.d.
Manchester - Rochdale Road - Plan of Turntables	Rochdale Road Works, Could Street Plan shows turntables.	NW/MAC/RDR/E/E/7	n.d.
Manchester - Rochdale Road - Plan of Works	Rochdale Road Works, Portland Street, Coburc Street, Water Street Plan of holders no6 & 7, tank, governor house, boiler house, mains.	NW/MAC/RDR/E/E/8	n.d.
Manchester - Rochdale Road - Plan of Holder Station	Rochdale Road Station, Portland Street, Lower Tebbuttt Street, Could Street, plan shows holders, previous tar wells, purifiers, scrubbers, exhausters, retort houses, outbuildings, mains.	NW/MAC/RDR/E/E/10 A	n.d.
Manchester - Rochdale Road - Plan of Holder Station	Rochdale Road Station, Portland Street, Lower Tebbuttt Street, Could Street, plan shows holders, previous tar wells, purifiers, scrubbers, exhausters, retort houses, outbuildings, mains.	NW/MAC/RDR/E/E/10 B	n.d.
Manchester - Rochdale Road - Site Plan of Works and Drains	Rochdale Road Works, Could Street Detail of part of site plan showing works drains.	NW/MAC/RDR/E/E/11	n.d.
Manchester - Rochdale Road - Site Plan of Works Drains	Rochdale Road Works Detail of part of site plan of works drains	NW/MAC/RDR/E/E/12	n.d.
Manchester - Rochdale Road - Plan and Section of Gas Holder Tank Covering	Rochdale Road Station Copy of plan and section of covering over gas holder tank.	NW/MAC/RDR/E/T/1	n.d.

Manchester Libraries, Information and Archives

Plans

Title	Ref. No.	Date
Plan of: Gas Works, Rochdale Road	GB127.M900/1/1/2/5/7189	1906
Plan of: Rochdale Road, City	GB127.M900/1/1/2/4/6307	n.d.
Plan of: Gould Street, Rochdale Road	GB127.M900/1/1/2/6/8402	1909

Photographs

No.	Title	Ref. No.	Date	Link
1	Gas Works, Rochdale Road Gas Works, site for joiners new shop (view looking from Gould Street) near Rochdale Road, Manchester	GB127.m59082	1901	www.gmlives.org.uk/results.html#imu[rid=ecatalogue.23873]
2	Gas Works, Rochdale Road Gas Works, in Gould Street, wall, Manchester	GB127.m59085	1907	www.gmlives.org.uk/results.html#imu[rid=ecatalogue.57666]
3	Gas Works, Rochdale Road Gas Works, site for joiners new shop, (view looking from Gould Street), Manchester	GB127.m59083	1901	www.gmlives.org.uk/results.html#imu[rid=ecatalogue.57667]
4	Rochdale Road Gas Works	GB127.m74745	1901	www.gmlives.org.uk/results.html#imu[rid=ecatalogue.61061]
5	Gas Works, Rochdale Road Gas Works, site for joiners new shop, (view looking from Gould Street), Manchester	GB127.m59084	1901	www.gmlives.org.uk/results.html#imu[rid=ecatalogue.57668]
6	Rochdale Road, Gas Works	GB127.m75304	1901	www.gmlives.org.uk/results.html#imu[rid=ecatalogue.61064]

Appendix 6: Photograph registers

Plate No.	Building	Direction	Description
1	-	SW	Later 20th-century depot
2	-	SW	Later 20th-century office
3	-	SE	Later 20th-century depot
4	Warehouse	S	Southern internal elevation of The Warehouse
5	Warehouse	N	Southern external elevation of the Warehouse
6	Warehouse	S	Iron column and beam in The Warehouse
7	Warehouse	S	Wall scars of inserted floor or loft in The Warehouse
8	Warehouse	N	Inserted wall and roof
9	Warehouse	W	Internal western elevation of The Warehouse
10	Warehouse	W	External arched wall of The Warehouse
11	Warehouse	E	External arched wall of The Warehouse
12	Warehouse	NW	Detailed view of an arch of The Warehouse with other phases of walling
13	Warehouse	W	Detailed view of an arch of The Warehouse with other phases of walling
14	Warehouse	W	Detailed view of an arch of The Warehouse with other phases of walling
15	Warehouse	W	Detailed view of an external arch of The Warehouse
16	Warehouse	W	Detailed view of an arch of The Warehouse with other phases of walling
17	Warehouse	SE	South-eastern corner of The Warehouse showing the iron beam and roof extension
18	Warehouse	SW	General view of The Warehouse roof
19	Warehouse	S	Later 20th-century wall inserted into The Warehouse
20	Warehouse	NW	Later 20th-century wall inserted into The Warehouse
21	Warehouse	W	Eastern external elevation of The Warehouse
22	Warehouse	NW	Eastern external elevation of The Warehouse
23	Warehouse	E	Eastern internal elevation of The Warehouse
24	Joiners Workshop	N	Southern external elevation of The Joiners Workshop
25	Joiners Workshop	N	South-eastern corner of The Joiners Workshop
26	Joiners Workshop	S	Southern internal elevation of The Joiners Workshop
27	Joiners Workshop	S	South-eastern corner of The Joiners Workshop

28	Joiners Workshop	SW	South-western corner of The Joiners Workshop
29	Joiners Workshop	NW	Overlapping walls of The Joiners Workshop and Warehouse
30	Joiners Workshop	NE	Western external elevation of The Joiners Workshop
31	Joiners Workshop	SE	Western external elevation of The Joiners Workshop
32	Joiners Workshop	E	North-eastern corner of The Joiners Workshop
33	Joiners Workshop	W	Western internal elevation of The Joiners Workshop
34	Joiners Workshop	SW	South-western corner of The Joiners Workshop
35	Joiners Workshop	NW	North-western corner of The Joiners Workshop
36	Joiners Workshop	NE	Round blocked window of The Joiners Workshop
37	Joiners Workshop	W	Arched blocked window of The Joiners Workshop
38	Joiners Workshop	N	Northern internal elevation of The Joiners Workshop
39	Joiners Workshop	N	Location of line shaft bearing box
40	Joiners Workshop	N	Detail of line shaft bearing box
41	Joiners Workshop	N	Blocked window of The Joiners Workshop
42	Joiners Workshop	N	Blocked window of The Joiners Workshop
43	Joiners Workshop	N	Blocked window of The Joiners Workshop
44	Northern Wall	SE	General view of eastern arches
45	Northern Wall	S	Cellar 3 and 4
46	Northern Wall	S	Detail of Cellar 3 arch
47	Northern Wall	SW	Detail of Cellar 4 arch
48	Northern Wall	S	Cellar 1
49	Northern Wall	SE	Cellar 1
50	Northern Wall	S	Cellar 1
51	Northern Wall	SW	Cellar 1
52	Northern Wall	S	Cellar 2
53	Northern Wall	SE	Cellar 2
54	Northern Wall	SW	Cellar 1
55	Northern Wall	SE	Cellar 3 dividing wall
56	Northern Wall	S	Brick chutes in Cellar 3
57	Northern Wall	SE	Cellar 3

58	Northern Wall	SW	Cellar 3
59	Northern Wall	SW	Cellar 4
60	Northern Wall	S	Cellar 4
61	Northern Wall	SW	Cellar 4
62	Northern Wall	SE	General view of Northern Wall
63	Northern Wall	SW	General view of the western end of The Northern Wall
64	Northern Wall	S	Western arches
65	Northern Wall	S	Detail of one of the western arches
66	Northern Wall	SE	Beam 1
67	Northern Wall	S	Beam 2 and 3
68	Northern Wall	SW	Later 20th-century brick work buttressing the northern wall,
69	Northern Wall	S	Entrance into cellar tunnel
70	Northern Wall	S	View of cellar tunnel
71	Trench 1	SW	Trench 1, facing southwest
72	Trench 1	NE	Trench 1, northeast facing section
73	Trench 2	SW	Trench 2, facing southwest
74	Trench 2	NW	Trench 2, northwest facing section
75	Trench 3	NW	Trench 3, facing northwest
76	Trench 3	SW	Buttress 307, facing southwest
77	Trench 3	NW	Structure 308, facing northwest
78	Trench 3	SW	Possible surface 313, facing southwest
79	Trench 3	SE	Trench 3, northwest facing section showing vaulting 305
80	Trench 3	NW	Wall 309, facing northwest
81	Trench 3	SE	Brick surface 304, facing southeast
82	Trench 3	SW	Stone sett surface 302, facing southwest
83	Trench 3	SW	Brick supports 310 and 311 and rails 312, facing southwest
84	Trench 3	NE	Modern chamber 317, facing northeast
85	Trench 3	SW	Northeast facing elevation showing 304, 305, 306, 307, 308, facing southwest
86	Trench 3	NE	Example of alcove in southeast interior face of wall 317, facing northeast

87	Trench 3	SW	Example of alcove in northeast interior face of wall 317, facing southwest
88	Trench 4	SE	Trench 4, facing southeast
89	Trench 4	NW	Northwest face of wall 402, facing southeast
90	Trench 4	SW	Flagstones 403, facing southwest
91	Trench 4	N	Large beam 405, facing north
92	Trench 4	SE	Brick arches 406, facing southeast
93	Trench 4	NE	Stone block 404, facing northeast
94	Trench 4	NE	Open void beneath beam, looking northeast
95	Trench 4	SE	Metal base 407
96	Trench 4	SE	Stone gutter 410 and clinker 409, facing southeast
97	Watching Brief	SW	Wall 1001 and iron column to its west, looking southwest
98	Watching Brief	S	Wall 1001 showing two doorways and barrel vault on its northern side, looking south
99	Watching Brief	SE	Wall 1004, looking southeast
100	Watching Brief	N	Machine excavation of deposit 1011, looking north
101	Watching Brief	NW	Partially removed foundations for rail weighbridge 1012
102	Watching Brief	NE	Machine excavation of deposits above brick vault 1013
103	Watching Brief	NW	Iron columns, beams with timbers and brick arches, looking northwest
104	Watching Brief	-	Fragment of concrete flooring after removal
105	Watching Brief	-	Example of sandstone block foundation for iron column
106	Watching Brief	NE	Wall 1003, showing doorway and brick buttress, looking northeast
107	Watching Brief	NE	Wall 1000, looking northeast
108	Watching Brief	E	Structure 1006, looking east
109	Watching Brief	NE	Eastern section of wall 1004 showing staining from deposit 1010 and iron columns to its west, looking northeast
110	Watching Brief	SW	Wall 1001 showing staining from ash and clinker deposit 1010, looking southwest
111	Watching Brief	SE	The original boundary wall of the gasworks, looking southeast
112	Watching Brief	NW	Wall of the Former Warehouse, looking northwest
113	Watching Brief	SW	Barrel-vaulted cellar underlying the Joiners Workshop, looking southwest
114	Watching Brief	W	Remains of gasworks cellars north and west of the watching brief area, looking west

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