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ARCHAEOLOGICAL BUILDING RECORDING AT THE FORMER FIRTH RIXSON WORKS, SHEFFIELD ROAD, ROTHERHAM, SOUTH YORKSHIRE

BUILDING ANALYSIS REPORT

Report Number 2011/34 May 2011

ArcHeritage

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This report presents the results of a Level 1 building survey undertaken on former steelworks buildings occupied by Firth Rixson, Sheffield Road, Rotherham, South Yorkshire. The survey was undertaken as part of a planning condition prior to demolition of the buildings. ArcHeritage were commissioned by Brite Partnership to undertake the survey. The survey covered five standing buildings, the retaining walls adjacent to the River Don, and the remains of the works' internal railway system. Three of the standing buildings (A, B and D) dated to the mid-20th century, including a works' canteen, a former hammer forge building and an office and amenity block. A further building (E) was a late 1990s warehouse. One structure (Building C) contained elements associated with the late 19th-/early 20th-century Phoenix Bessemer Steelworks of Steel, Peech and Tozer, though it had been extended and modified during the 20th century. This formerly housed the cold rolling plant, a spring shop and the annealing plant. Fragmentary remains of the works internal railway survived adjacent to Buildings A and C. The retaining wall on the south bank of the river contains seven blocked windows, all below the current ground surface. These appear to relate to a building associated with the Phoenix Bessemer Steelworks, first depicted on a map of 1905.

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1 INTRODUCTION

This report presents the results of archaeological building recording at the former Firth Rixson steelworks site at Ickles, Rotherham. The recording was required by South Yorkshire Archaeology Service (SYAS) and Rotherham Metropolitan Borough Council as a condition of planning consent for redevelopment of the site (planning application no. RB2010/0668). Building recording was carried out to a RCHME Level 1 standard, following a Written Scheme of Investigation prepared by ArcHeritage and a brief supplied by SYAS. Work was undertaken in accordance with the standards and guidance of the IfA (2008). ArcHeritage were commissioned by Brite Partnership to undertake the work.

2 LOCATION, GEOLOGY AND TOPOGRAPHY

The site, centred on NGR SK 4170 9191, is located between Sheffield Road to the south and the Sheffield and Mexborough branch of the Great Central Railway to the north (Figure 1). The western side of the site is bounded by Bessemer Way, the eastern side by a railway viaduct, and the site is bisected by the River Don (Figure 1). The site is located on flat land adjacent to the river, and comprises an area of *c*.2 hectares, occupied at the time of the fieldwork by a group of disused steelworks buildings. The buildings had been disused following the Sheffield flood of 2007. Further works buildings are located to the immediate west of the site, remaining in the occupation of Firth Rixson. These buildings were not covered by the archaeological fieldwork.

3 AIMS AND METHODOLOGY

3.1 Aims

Five standing buildings (A-E) were located within the proposed development site, all associated with the Firth Rixson steelworks. Only one of these, Building C, appears to be related to the earlier development of the works, and was considered to be of local archaeological significance. As all the buildings formed a group, it was determined that the building recording would consist of a photographic survey of all the buildings, the retaining walls adjacent to the river and the remains of the internal railway infrastructure, to put the works into context and record the final form of the Ickles branch of the steelworks. The purpose of the recording was to determine and identify the multiphase nature and context of the standing buildings. A further objective was to provide a thorough record of the fabric and features of the buildings in advance of their demolition.

3.2 Methodology

The Level 1 record was guided by the requirements provided by SYAS and the English Heritage guidelines set down in 'Understanding Historic Buildings' (2006). This comprises a photographic record supplemented with summary notes. The primary archive comprises 35mm black and white negative film, supplemented by colour slide and digital photographs, particularly to illustrate decorative details, or where colour was required. Black and white medium format photographs were also taken of exterior views of the works, to supplement the primary archive.

The photographic record included the overall appearance of the principal rooms and circulation areas of the buildings and any external or internal detail, structural or decorative, which was relevant to the building's design. The locations and directions of the photographs have been depicted on plans of the site (Figures 7-9). Photography was undertaken by Mike Andrews.

A brief written description of the buildings has been compiled to enhance the information contained within the desk-based assessment. Attention was also given to features of interest such as: fixtures, fittings, decorative elements, evidence for power generation/transmission and manufacturing processes. A brief record was also made of any more recent use of the buildings, as evidenced through modifications and graffiti. Historic plans of the works held by Firth Rixson were consulted, to provide further information on the construction, use and context of the buildings.

4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

A medieval water-powered corn mill appears to have been located within the site, on the south bank of the Don, owned by the monks of Roche Abbey. By 1730 this was recorded in a lease as an oil mill, formerly 'an ancient water corn mill' (DDSE(2)/26/1). It was operated by Thomas Buck of Sheffield, and involved the production of oil through the crushing of seeds. Shortly after 1833 the site was converted into a steel rolling mill, occupied by George Barraclough, and later by William Evans. In 1871 it was recorded as Ickles Rolling Mill Ltd, operated by Joseph Morgan (Munford 2003, 91). The mill was depicted on the 1853 OS map, with the main rolling mill building being located adjacent to the south bank of the river (Figure 2).

The area of the site to the north of the river was first developed in 1871. In 1854 the land was fields with two canal cuts running through it; the Ickles Cut, aligned southwest-northeast, and the Holmes Cut, on a sinuous northwest-southeast alignment. These cuts had been largely filled in by 1892. The Midland Railway had constructed a north-south line running through the development area by 1853, carried on the viaduct that still stands within the site. The Manchester, Sheffield and Lincolnshire Railway line (later the Great Central Railway) was constructed along the northern edge of the works in 1868. The proximity of the two railway lines was the main spur to the development at Ickles.

In 1871 a steelworks was established by Hampton and Radcliffe on the northern bank of the Don. A company named the Phoenix Bessemer Steel Co Ltd was floated in 1872, and a new rail mill was installed. This company took over the Ickles Rolling Mills on the opposite bank in 1874, but was bankrupt in 1875. The premises were purchased later in that year by Henry Steel, and became the works of Steel, Tozer and Hampton, later Steel, Peech and Tozer. By 1879 the works included two melting shops with six Bessemer converters, six steam hammers, a cogging mill, a rail mill and a 14-inch bar mill (Lodge 1995, 256). In 1897 the Bessemer converters were replaced by open hearth furnaces. The 1892 OS map depicted buildings were shown within the development area and a road bridge linking the north and south banks. An internal railway was shown within the site, with a separate river crossing to the west of the road bridge.

An engraving of the works, undated but probably from the early 1900s, depicted the majority of the development area (Plate 1). This showed the offices and cart entrance along the Sheffield Road frontage, with a series of small single-storey workshops to the west and north, and a narrow single-storey range along the south bank of the river, east of the road bridge. An impressive gateway faced the bridge on the north bank of the river. The works buildings to the north and east of the bridge were aligned approximately north-south, with hot-working roofs, and the buildings to the west were aligned east-west, with a series of smaller structures along the north bank. The 1905 map showed approximately the same layout (Figure 3).

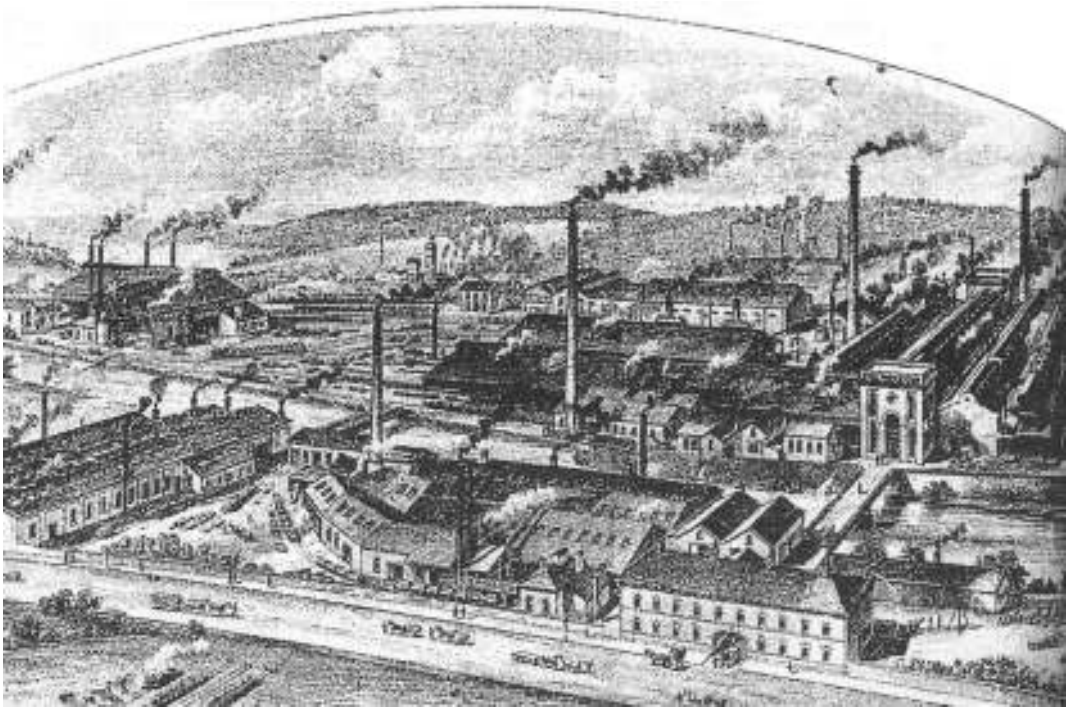

Plate 1: Engraving of the Bessemer Steel Works, c.1900

Image reproduced from Lodge 1995, 256.

There were no major changes to the external layout of the development site between 1905 and 1923 (Figure 4). During this period the firm of Steel, Peech and Tozer invested in expanding the works to the west along Sheffield Road, including the massive new Templeborough melting shop, cogging and billet mills on the site of the Roman fort. The extensive Rotherham melting shop was also constructed to the east of the railway viaduct. The works ran for a distance of approximately 1½ miles, mainly located between Sheffield Road and the River Don. The majority of the expansions were undertaken during the First World War, and in 1918 Steel, Peech and Tozer became part of the United Steel Companies Ltd, which included iron producers, coal mines, steel manufacturers and rollers (Tweedale 1995, 243).

During the Second World War the works produced large quantities of shell steel billets and bars. The Ickles plant was largely turned over to the production of gun forgings and tank components (Andrews and Brunner 1952, 245). New gun machine shops were constructed, which may have been the forerunners of Machine Shops 1 and 2, shown on the 1955 OS map. Plans and elevations of the canteen dated to 1941 depict air raid shelters to the east and north of the building. The plans suggest that the canteen (Building B) was constructed at this date.

There appears to have been relatively little damage from enemy bombardment during the war, although some destruction was reported to part of the Templeborough plant. Reportedly, an unexploded WWII bomb was found at the site within the last five years, during the construction of the flood defences.

Following the war, substantial improvements were necessary at the Ickles branch, which was becoming obsolete. The plant was mainly focused on the production of material for railway use, including rails, tyres, axles and wheels. The 10" and 14" section mills on the south bank, which supplemented the main Templeborough mills, were by that date very old, and driven by one steam engine (Andrews and Brunner 1952, 284-286).

Improvements to the Ickles branch included the upgrading of the electrical supply, the construction of new plant for the production of cold rolled strip, new wagon spring plant, electrification of the 10" and 14" mills, modernisation of the axle manufactory and replacement of the tyre mill with a complete new tyre mill plant acquired from Germany as part of the post-war reparations (Andrews and Brunner 1952, 337-339). Plans held by Firth Rixson indicate that Building A and an extension to Building C were constructed in the early 1950s. A plan dated to *c*.1950 is reproduced in an article by Trevor Lodge (1996, 239). The information from this plan was transcribed onto the 1955 OS map, which is identical in its layout (Figure 5).

Copies of several plans of the works from the second half of the 20th century were provided by Firth Rixson. A plan dated to 1966 (Figure 6) shows Building A as the hammer forge and Building B as the works canteen. The north range of Building C (C3) was shown as the new spring shop, the central range (C2) housed the cold rolling plant, and the attached southern range (C1) held the annealing plant. A fitters shop was shown to the south of Building C, at the east end, since demolished. The 1966 plan showed the western half of Building D as an amenity centre. This was not shown on the 1955 OS map.

Outside the development area, the 1966 plan showed general fitting shops to the west of Building A, with machine shops and electric heat treatment occupying the building to west of that. A building within the area of the fitting shops was shown as a foundry in the 1950s. The general boiler plant occupied a building at the west end of the buildings on the north bank site, in what was the 1950s location of the axle forge. On the south bank of the site, within the development area, were the 10" and 14" mills, general offices, test house and wages office. The research department was shown to the east of the railway viaduct, along with two garages and an electric shop. All of these buildings were demolished in the early 1980s. To the west of the development area were the spring shop, press shop, wheel mill, tyre mill, bandsaw shop, shops nos.4-6, the 'old heat treatment' plant and boiler plant.

The layout of the works suggests that the majority of the processing of the metal (forging, rolling, annealing) was undertaken in the buildings on the north bank, whilst manufacturing of the tyres, wheels and rails was carried out on the south bank. There were exceptions: the spring shop and two machine shops on the north bank, and the old heat treatment department on the south bank. The loss of the foundry and axle forge between *c*.1950 and 1966 suggests that the main processing of the metal was being undertaken elsewhere within the works, possibly at the Templeborough branch.

5 RESULTS

Locations of the photo viewpoints from the survey are shown on Figures 7-9. Viewpoints within Building D are not shown, as there are no detailed plans of the interior of the building. A brief description of each building is given below. Plates are reproduced in Section 10.

5.1 Building A

This structure (centred on NGR SK 41790 91984) was shown on the 1966 plan as a hammer forge building. Plans and elevations of the building dated to 1951 suggest that this was the date of its construction (Figure 10); it was shown on the 1955 OS map and is different to the structure shown in this location on the 1923 OS map. Its more recent use has been as a ring roller and press forge. A deep cellar was excavated within the building in the 1980s to provide a foundation for the press. The cellar was not accessed during the survey due to water ingress. All the machinery had been removed from the building prior to the survey.

The building is a large, single-storey works with two interconnecting ranges of different lengths, the longer range being to the south (A1). The works building has a steel frame with brick walls up to 2m in height surmounted by corrugated metal cladding (Plates 2-4). Steel lattice column girders support a travelling crane in the southern workshop A1 (Plates 5 and 7). The narrower northern workshop A2 does not have a travelling crane, but there is a large overhead pipe carried on the girders around the north and east walls. The pipe continues out of the building to the west, carried on a steel gantry and linking with the works building to the west, outside the development area (Plate 3).

A row of windows runs around all sides of the building, below the crane gantry. These consist of rectangular openings glazed with opaque corrugated plastic. Both workshops have pitched roofs with central hot-working vents. They are covered with corrugated metal or plastic, and have external gangways for cleaning and maintenance. The roof trusses are of composite steel construction, as shown on the section of the building from 1951 (Figure 10). There is a two-storey brick-built amenity block with a flat roof attached to the south side of A1, the interior of which was not accessed for the survey. This is likely to be of 1950s date, with a more recent extension to the south. An external staircase accessing a 2nd-storey doorway had been removed on the west side.

5.2 Building B

This structure (centred on SK 41819 91963) was built in 1941 as a works canteen, and was later adapted for use as testing laboratories. It consists of a small, four-bay structure with a double gable (Plates 8-9). It was initially built as a single-storey structure, though later additions included the insertion of suspended ceilings and a single bay attic space at the north end. The windows are wide and metal-framed, and are set into slightly recessed brick panels on the exterior. The west elevation has two small circular windows in the gables above the ground floor windows. A plan from 1941 depicted the original layout (Figure 11), with a dining room at the south end (B1) which had two entrances, at the southeast corner and on the west side. There was a kitchen/cooking area in the centre room (B2/3), with two smaller rooms to the north opening off it, possibly for food preparation, with a possible office room and wash room at the northwest corner (B4). A boiler was depicted in a small projecting room at the northeast corner.

Several modern alterations have been undertaken on the building, probably in association with its conversion into a test centre. A roller shutter door was inserted within one of the former window bays on the south elevation (Plate 8). A corridor (B10) was added on the western side of the building through the insertion of a breeze block partition wall, reducing the size of rooms B1 and B2. The corridor has doors into B1 and B2, and a staircase at the northern end leading to two inserted upper storey rooms. Apart from the insertion of the corridor, room B1 retains its original layout, though the height has been reduced through the insertion of a suspended ceiling at a level below the top of the windows (Plate 10). The former kitchen has been divided into two rooms, the larger B2, which is windowless, and a narrow room B3 on the east side. Both rooms have suspended ceilings and tiled floors (Plate 11).

At the north end of the building, the layout of the smaller rooms has been altered to form four small laboratories. A door leads into Room B5 from B2; the entrance from B2 to B6 has been blocked off and the laboratories are all accessed via B5. Room B4, with a sign reading 'Heat Treatment Testing' on the door, occupies the northeast corner, formerly two smaller rooms. Room B5, 'Mechanical Test Archive', has a fire exit door and a small, meshed glass window on the north wall, and is close to its original dimensions (Plate 12). Room B6 is accessed through a door in the west wall of B5, and is labelled 'Metallography Inspection'. It has no windows (Plate 13). A door in its west wall leads through to the smaller room B7, 'Metallography Laboratory', which has a window on its west wall, and incorporates the former boiler room and a fire escape door. All the rooms had suspended ceilings.

The two upper storey rooms are located over rooms B4-B7. Room B8, at the west end, was labelled 'Reception', and room B9 was accessed through a door in the west wall of B8. Both rooms were of similar dimensions, with a curving ceiling that is a segment of the original arched ceiling of the canteen depicted on the 1941 sections of the building (Figure 12). The height of the rooms accordingly varies, becoming very low at the northern end, where there are short rectangular windows (Plate 14). There is a fire exit door at the east end, with a metal staircase leading down the exterior over the former boiler room. An air raid shelter was shown to the east of the building in 1941; this may be associated with a small brick shed (not accessed for the survey) and low concrete structures visible on the ground (Plate 9).

5.3 Building C

Building C (centred on SK 41720 91902) was shown on the 1966 plan as a cold rolling mill (C2) and spring shop (C3), with an attached range to the south housing the annealing plant (C1). The building occupies the footprint of structures shown in 1905 and 1923, and represents the earliest surviving part of the works. The building was extended to the east between 1923 and 1955. There are plans of an extension to the cold rolling plant dating to 1955, which appear to relate to the western end of C2 (Figure 13). Part of the building was still in use by Firth Rixson at the time of the site visit, at the east end of C2, and this area was not accessed for the survey. All machinery had been stripped out of the accessible areas of the works prior to the survey. Externally, the building is clad in corrugated metal (Plates 16-17). There is a two-storey brick structure at the east end, with a flat roof (Plate 15). This was not accessed for the survey.

The former annealing plant, room C1, is a roughly rectangular range, connected to C2 by two wide corridors, the eastern one of which has been blocked with brickwork. The main room is a rectangular workshop, with a pitched roof and windows in the south wall (Plate 20). There is a

sliding door on the north side (Plate 21), leading into a narrow yard area between C1 and C2. The south wall is of brick construction with metal cladding to the exterior (Plate 18); the north wall appears to be a steel frame with metal cladding and some areas of breeze block construction. The roof is supported on the top of the walls, and has steel composite trusses. Within the west end of the building is a small two-storey engineers' office unit of breeze-block construction.

Room C2 has brick walls with rectangular 10-paned metal-framed windows in the south wall (Plate 22). The windows have central opening sections of six panes. The walls feature protruding steel columns which support the riveted steel overhead crane track (Plates 23-24). Integrated into these columns are narrower, taller girders set into the walls which support the roof. Steel lattice girders run along the top of the brickwork, below the roof. There are two blocked entrances on the south wall, to the east of the western corridor leading to C1, infilled with breeze blocks (Plate 25). The lintels for these entrances appear to be of wood rather than stone, and the base is three brick courses above the current floor level. There are steel rails set into the concrete floor along the northeast side of the workshop, set c.5m apart and presumably related to former machinery (Plate 22). The crane track supports two overhead cranes. The roof is pitched, with composite steel trusses. There are skylights all along the roof, which appears from plans to have originally had a hot-working vent. Only a small section of this survives in the current roof (Plate 19).

Room C3 is in a similar style to C2, though it has no windows in the walls and the north wall has no surviving brickwork (Plate 26). This wall is of steel frame construction with corrugated metal cladding. Both walls feature the same steel columns and lattice girders as room C2, supporting the overhead crane track and the steel composite roof trusses (Plates 27-29). There are a series of small square and rectangular holes in the wall between rooms C2 and C3, which may relate to former power transmission (Plate 30). The roof is pitched, with skylights and ventilation holes. It is unclear if this roof originally featured a hot-working vent. At the west end of the building is a brick-built single-storey structure, partially inserted into the main workshop, with a raised floor level. This houses a medical station (Plate 16). A stairwell is located adjacent to the medical station, leading down to a cellar room. This was not accessed for the survey due to health and safety considerations, but appeared from a cursory inspection to contain electrical switches. The stairs are set within a sloping concrete superstructure.

5.4 Building D

This structure (centred on SK 41873 92010) is a three-storey office block, with a single-storey extension to the east. It was not shown on the 1955 OS map, but the western three-storey block was depicted on the 1966 plan as an amenity centre. The single-storey extension is a late 20th-century addition and houses the reception and a meeting room. No detailed plan of the building was available for the survey, and the location of photo viewpoints have not been recorded on the plan due to the complex interior layout and number of small rooms. Room numbers have also not been allocated.

The three-storey block is of brick construction, with glazed and panelled sides and a flat roof (Plate 31). The ground floor is accessed via a lobby on the south side, with a freestanding concrete staircase to the east of the entrance leading to the two upper storeys. The stairs have terrazzo surfacing and metal handrails. A boiler room is located to the north of the stairs. To

the west of the lobby is a large office, possibly a former reception area prior to the construction of the extension. Store cupboards and a computer server room open off the office at the north side. A doorway at the northeast corner leads into an inserted corridor with decorative brick partition walls (Plate 34). A number of small offices, WCs and a kitchen open off this corridor, which leads east to the reception room in the extension.

The first floor houses a large open-plan office (Plate 35), with a meeting room at the southeast corner formed by glazed partition walls, and WCs at the north side of the office. The second floor has a small office to the west of the stairs, which opens onto two linked larger offices on the north side of the building. The smaller room may have been a secretary's office, with the larger rooms possibly being for senior managers.

The single-storey extension is at least partially of stone construction, with pebble-dashed rendering covering much of the walls apart from the corners and reveals. It has tall rectangular windows on the east and south sides (Plate 32). The larger room to the north was the reception area (Plate 33), whilst the smaller room to the south appears to have been the main meeting room. The 'public' nature of this structure is indicated by decorative details; both rooms have artex ceilings with a swirled pattern and decorative inset ceiling spolights, unlike the older part of the building which has generic suspended ceilings with inset lighting panels throughout. Though the extension is shown as separate to the main block on OS maps, it is actually linked to the older section by a corridor on the north side and a narrow connecting room housing a shredder on the south side.

5.5 Building E

This structure (centred on SK 41787 91825) is separated from the main works by the railway viaduct and is accessed via a roadway leading through one of the viaduct arches. It is a modern shed, likely used mainly for storage, and was probably constructed in the late 1990s. It is of steel frame construction with a low breeze-block foundation surmounted by metal cladding (Plate 36). The roof is supported by steel girders, and consists of metal cladding with integral skylight panels.

5.6 Retaining wall and works railway

The retaining walls on either side of the River Don were photographed as part of the survey. On the north bank, the wall is of stone construction at the base, with relatively modern brickwork towards the top (Plate 31). It has had a modern concrete flood-prevention wall constructed behind it, dated to *c*.2007. There are no obvious blockings or features within the wall on the north bank. The wall on the south bank has two distinct sections. To the west of the road bridge the wall is of stone construction. This wall contains a rectangular area that has been infilled with brick, with a circular steel cap below for a drain feeding into the Don. This is likely to be the feature shown as 'existing drain' on a plan of 1965. A taller, modern brick wall has been constructed behind this wall, again probably for flood-prevention purposes.

To the east of the road bridge, the wall is predominantly of brick construction (Plate 37). The brickwork appears to be of late 19th- or early 20th-century date. There are at least seven blocked openings within this wall, infilled with stone. The openings have arched heads, formed by three rows of header-set bricks, and are likely to have been windows. Alternate windows have a small circular feature set into the centre of the stone infilling, which may represent blocked drainage or venting features. A series of iron or steel I-beams have been inserted into

the wall within brickwork settings, slighting the former windows. The I-beams have been cut flush with the wall. This wall clearly relates to a former building, probably associated with the Phoenix Bessemer Steelworks. A rectangular building was shown in this location on the 1905 OS map, but not on the 1892 map. This may have been the single-storey structure shown on the undated engraving of the works (Plate 1). In 1966, it was shown adjacent to the test house, but it is not clear from the plan if it was part of the test house or disused.

There are several fragments of the former works' internal railway system surviving within the site. These are located adjacent to Buildings A and C (see Figure 9 for locations). Parts of a line running to the north of Building C survive at the east and west ends of the building (Plate 17), joined by a line that formerly ran into C3 (Plate 39). At the west side of Building A are the very fragmentary remains of a junction between two lines, with further to the northeast a longer section of line leading towards the Great Central Railway which runs along the north edge of the site (Plate 38). These two sections are separated by the raised surface of a car park, which could indicate that further remains survive beneath the concrete.

6 DISCUSSION

The works buildings form a group of structures associated with the manufacture of railway components for Steel, Peech and Tozer, and later of steel rings for Firth Rixson. The machinery has been removed from the buildings, though the historic plans of the works allow their basic functions to be determined. Building C, which housed the former cold rolling mill and spring shops represents the earliest surviving building associated with the Phoenix Bessemer steelworks of Steel, Peech and Tozer at Ickles, and elements of this building are likely to be of late 19th-century date. The Ickles works was later expanded to stretch for *c.*1 mile along Sheffield Road, incorporating the Templeborough steelworks (now Magna), built in 1918, the Phoenix Special Steel Works and the Rotherham Melting Shop. The main steel furnaces were moved off the Ickles branch in the 1920s, and the works was used to manufacture springs, axles, tyres, wheels and rails for railway use.

Other than Building C and the fragmentary remains of a wall on the south bank of the river, the standing buildings on the site date from the mid-20th century. Building B, the works canteen, was constructed in 1941 adjacent to an existing air raid shelter. This was later used by Firth Rixson as testing laboratories. Building A was constructed in the 1950s as a hammer forge, later with rolling and press plant added. Building D is of late 1950s- to early 1960s-construction. It was built as an amenity block, later used as offices, with a reception and meeting room added in the late 20th century. Building E is of late 20th century construction, and appears to have been used primarily as a warehouse.

As a group, the buildings are of local archaeological interest, with Building C being the most significant. This latter structure has some interesting architectural details, particularly the column girders supporting the roof and overhead crane track, and the design of the crane track itself. There are several blocked entrances indicating the adaptation of the building over time, and some of the smaller holes through the walls may relate to power transmission in the earlier phase of the works. The blocked windows in the retaining wall adjacent to the river also relate to an earlier phase of the works, and indicate a potential for surviving sub-surface features in this area below the current ground surface.

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Chain survey of Ickles Works, n.d.

Workmen's canteen at Ickles, 1941. Steel, Peech and Tozer drawing no. 434/1/A.

Cross-section through hammer forge building, Ickles, 1951. Steel, Peech and Tozer drawing no. 534/1/A.

General arrangement of hammer forge building, Ickles, 1952. Steel, Peech and Tozer drawing no. 534/1/B.

Arrangement of extension to cold rolling mill, 1955. Steel, Peech and Tozer drawing no. 324/1/H.

Part plan of Ickles Works effluent drainage scheme, sheets 1 and 3, 1965. Steel, Peech and Tozer drawing nos. 431/2/A and 431/2/E.

Plan of River Don at Ickles Works showing banks that are flooded in a minor and major flood, 1966. Steel, Peech and Tozer drawing no. 434/1/A.

Plan of the press/mill bay column situation, 1982. Distington Engineering Contracting drawing no. M357/13/801.

Historic mapping

1853 Ordnance Survey 1:1056 map sheet Rotherham 5.

1854 Ordnance Survey 6 inch: 1 mile map sheet 289.

1992 Ordnance Survey 25 inch: 1 mile map sheet 289.10.

1905 Ordnance Survey 25 inch: 1 mile map sheet 289.10.

1923 Ordnance Survey 25 inch: 1 mile map sheet 289.10.

1955 Ordnance Survey 1:2500 map sheet SK 4191.

1968 Ordnance Survey 1:10,560 map sheet SK 49 SW.

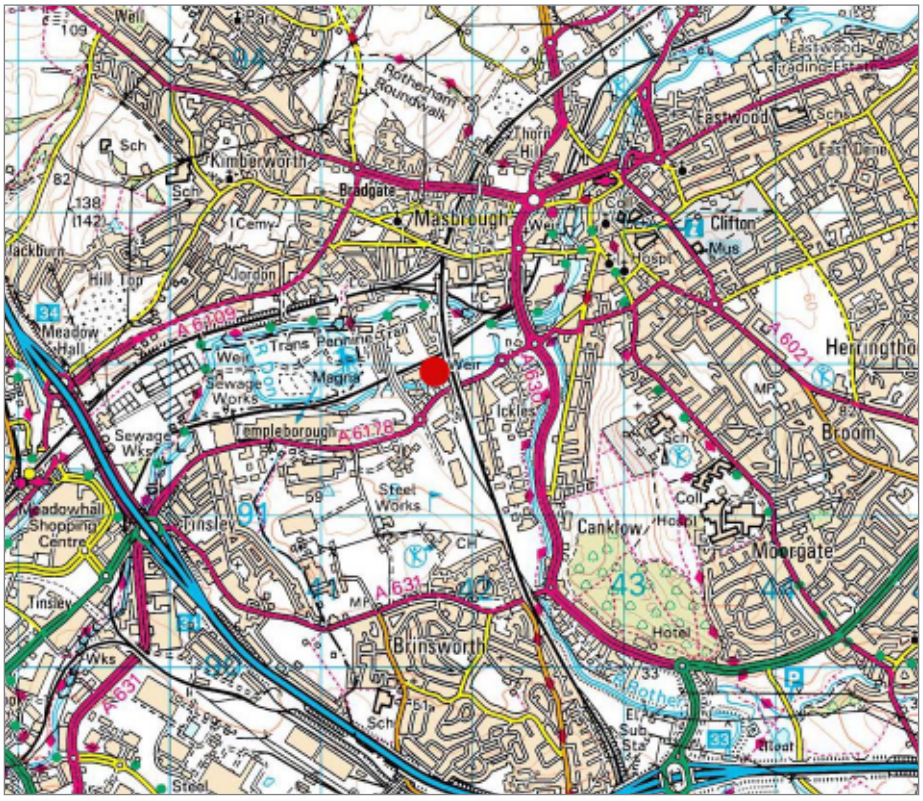
1980 Ordnance Survey 1:10,000 map sheet SK 49 SW.

1985 Ordnance Survey 1:10,000 map sheet SK 49 SW.

8 ACKNOWLEDGEMENTS

ArcHeritage would like to thank Steve Elsom and Darren Hewitt of Firth Rixson for site access and assistance during the fieldwork, as well as for providing copies of historic plans of the buildings. We would also like to thank Jim McNeil of South Yorkshire Archaeology Service for advice.

9 FIGURES



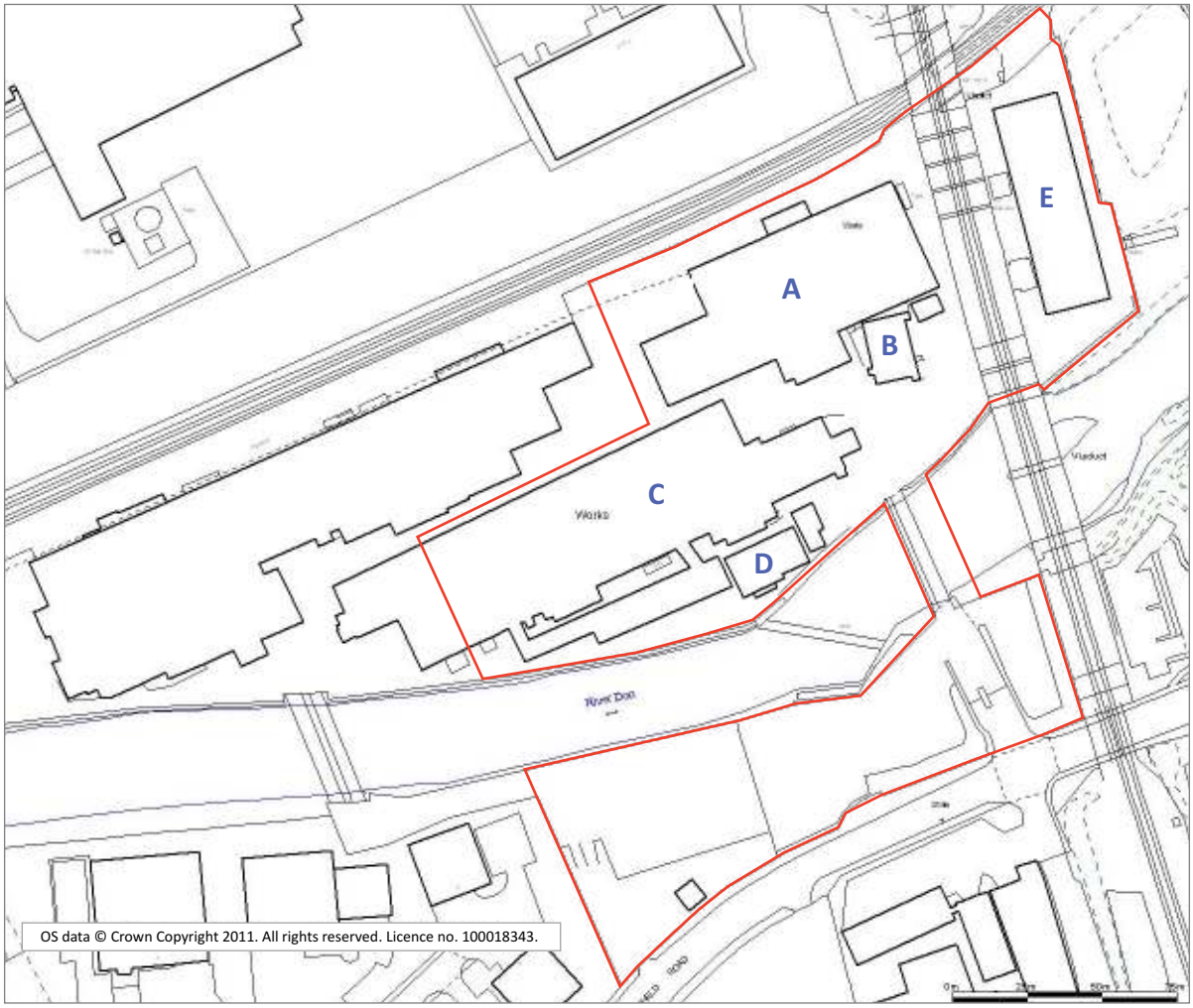


Figure 1: Site location plan showing building numbers

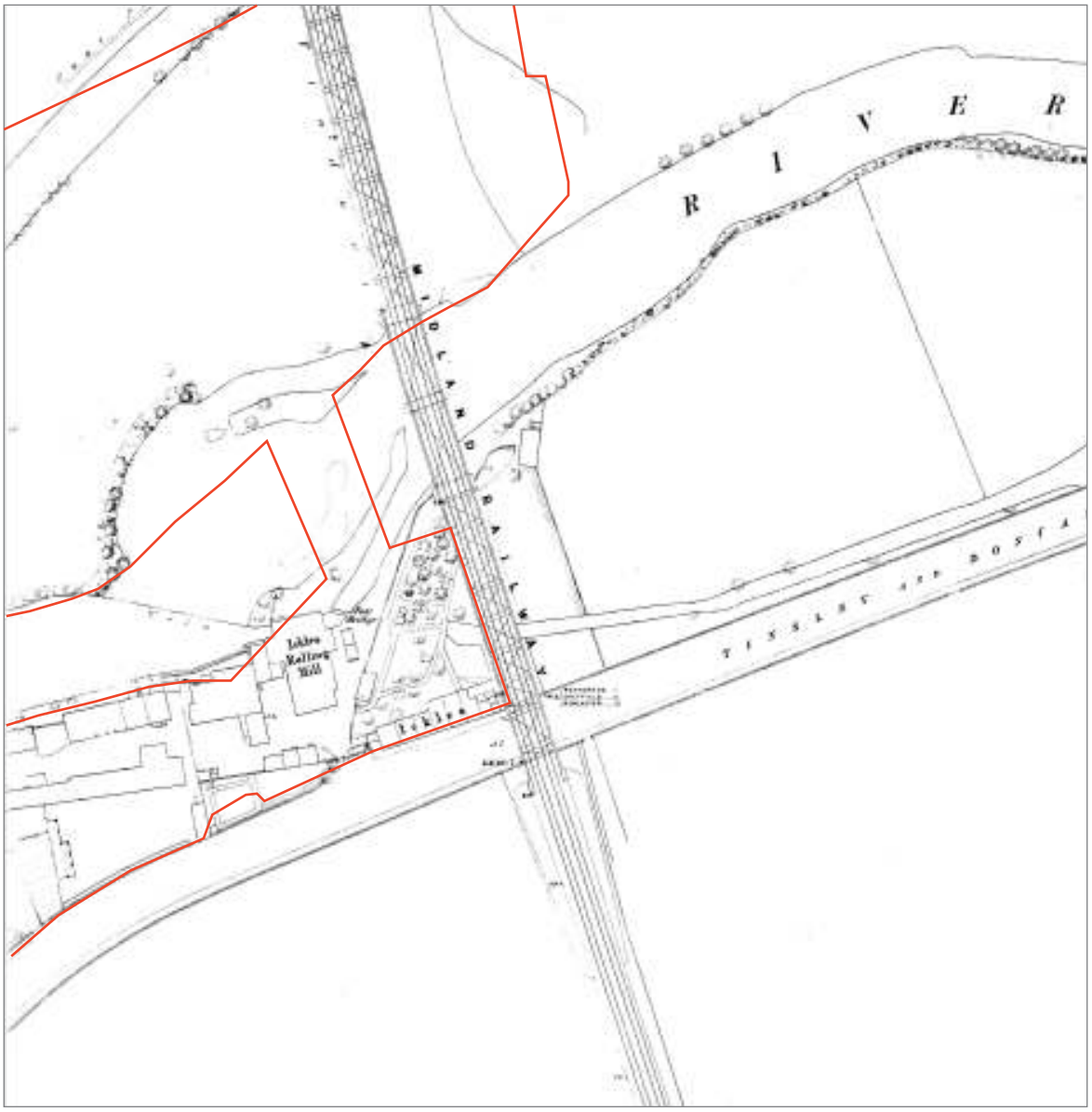


Figure 2: 1853 OS map

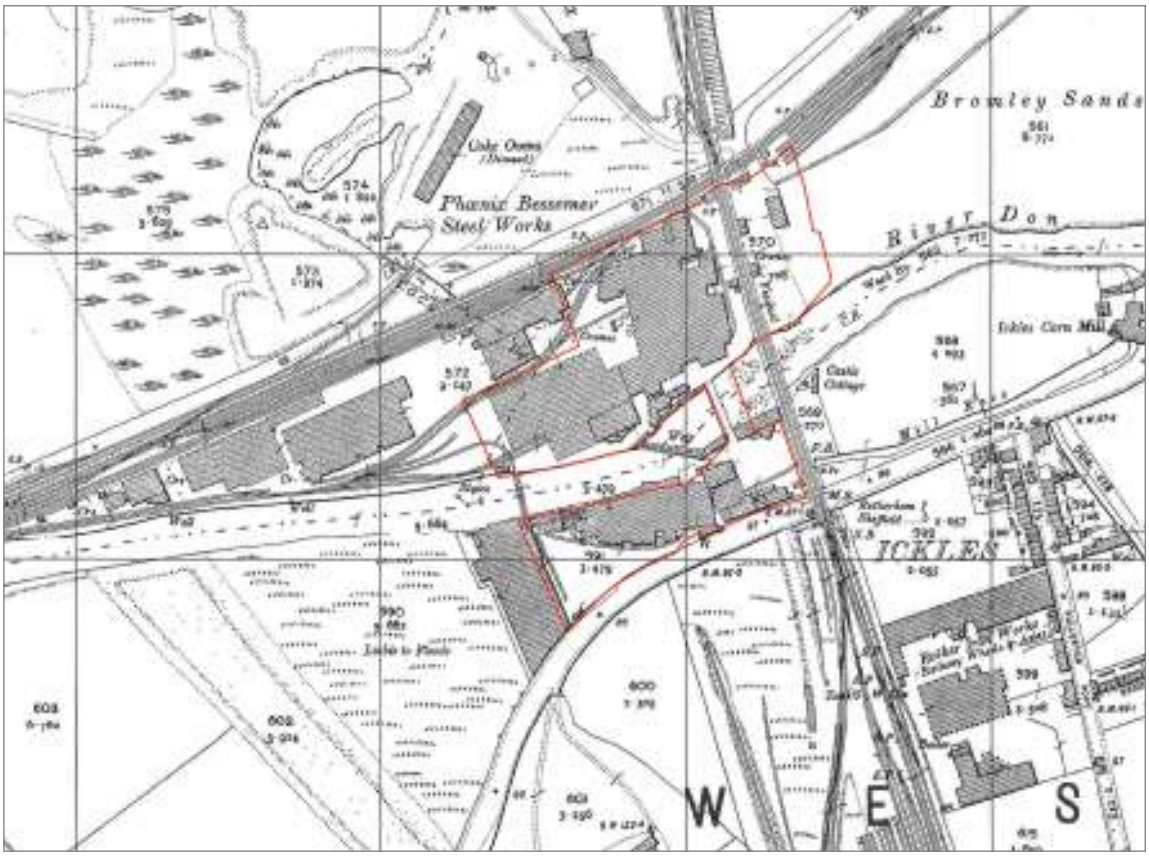


Figure 3: 1905 OS map

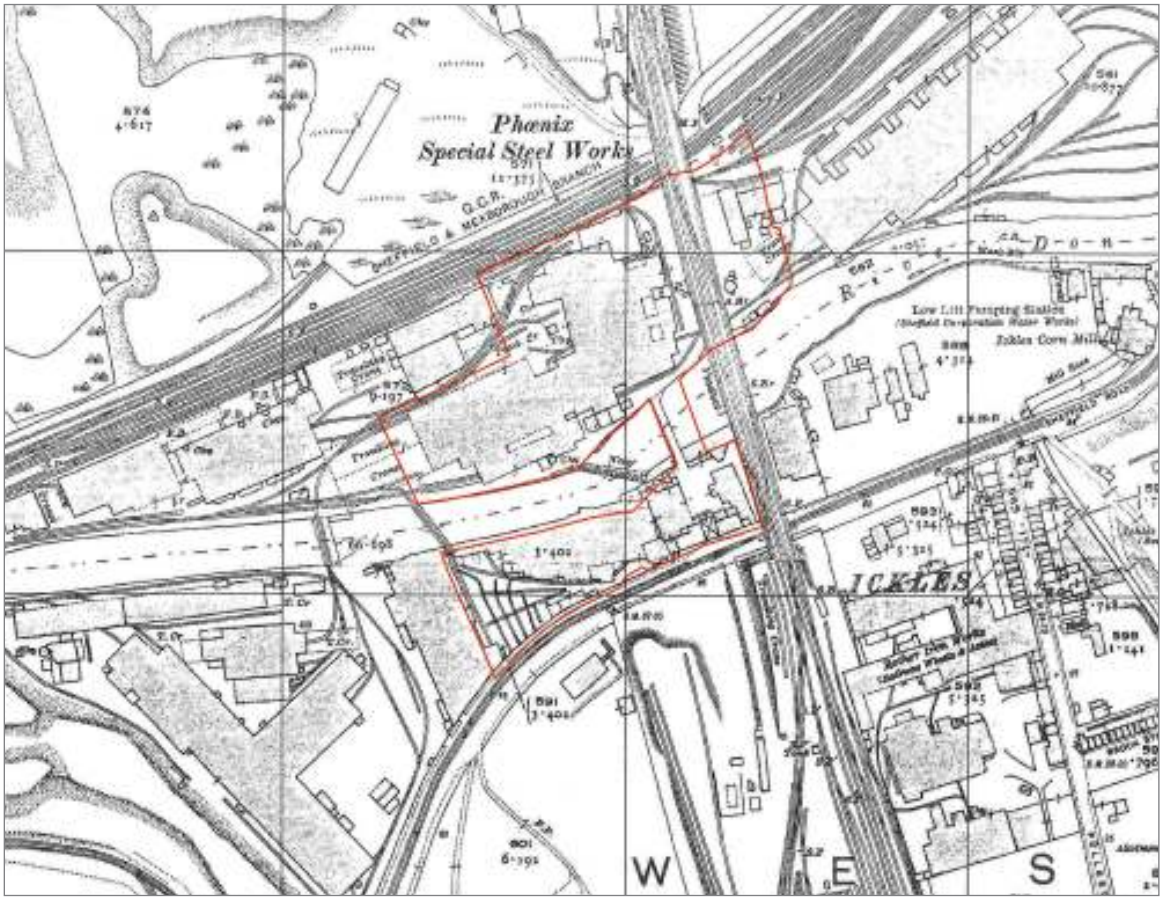


Figure 4: 1923 OS map

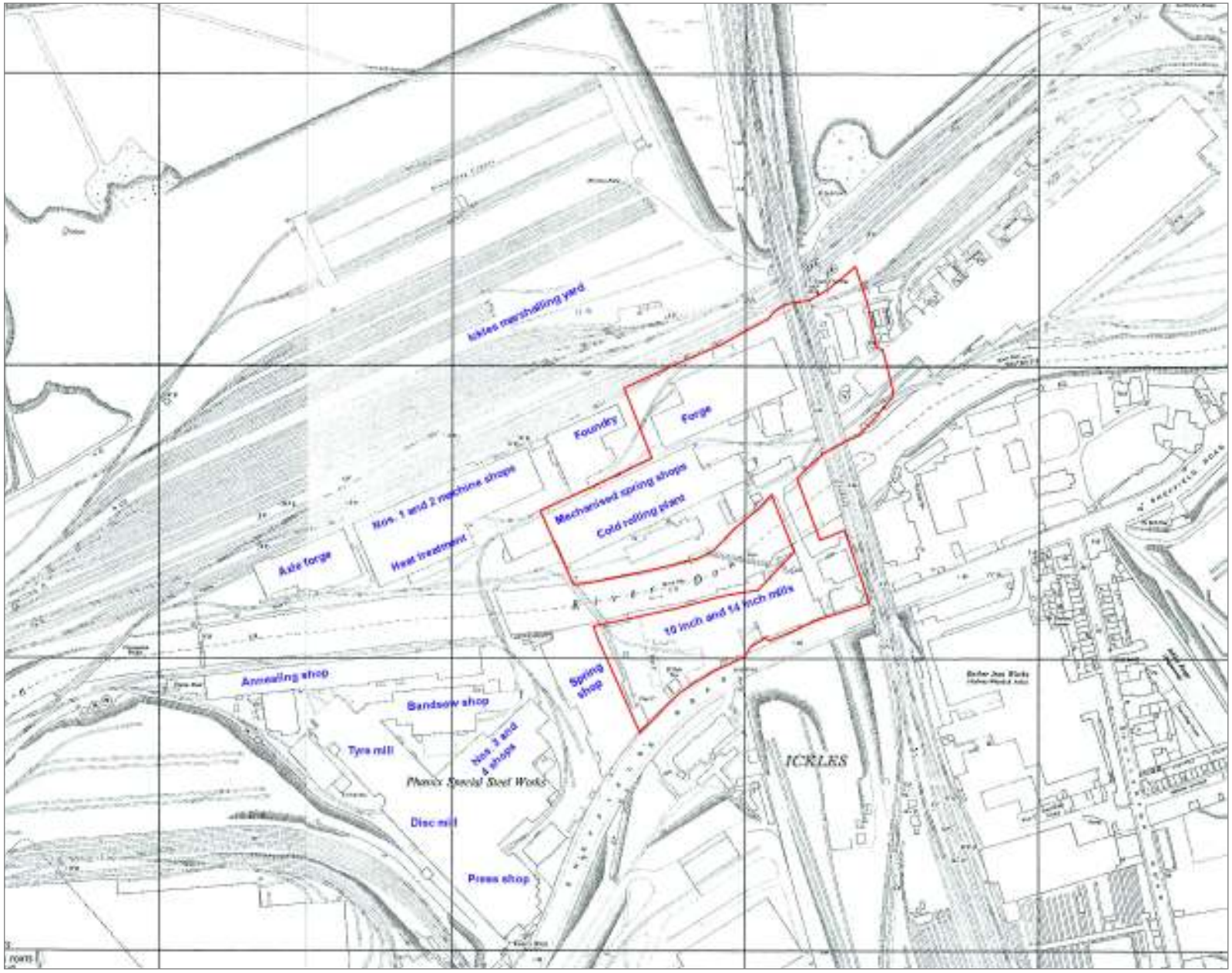


Figure 5: 1955 OS map, with labels added from a plan of the works c.1950

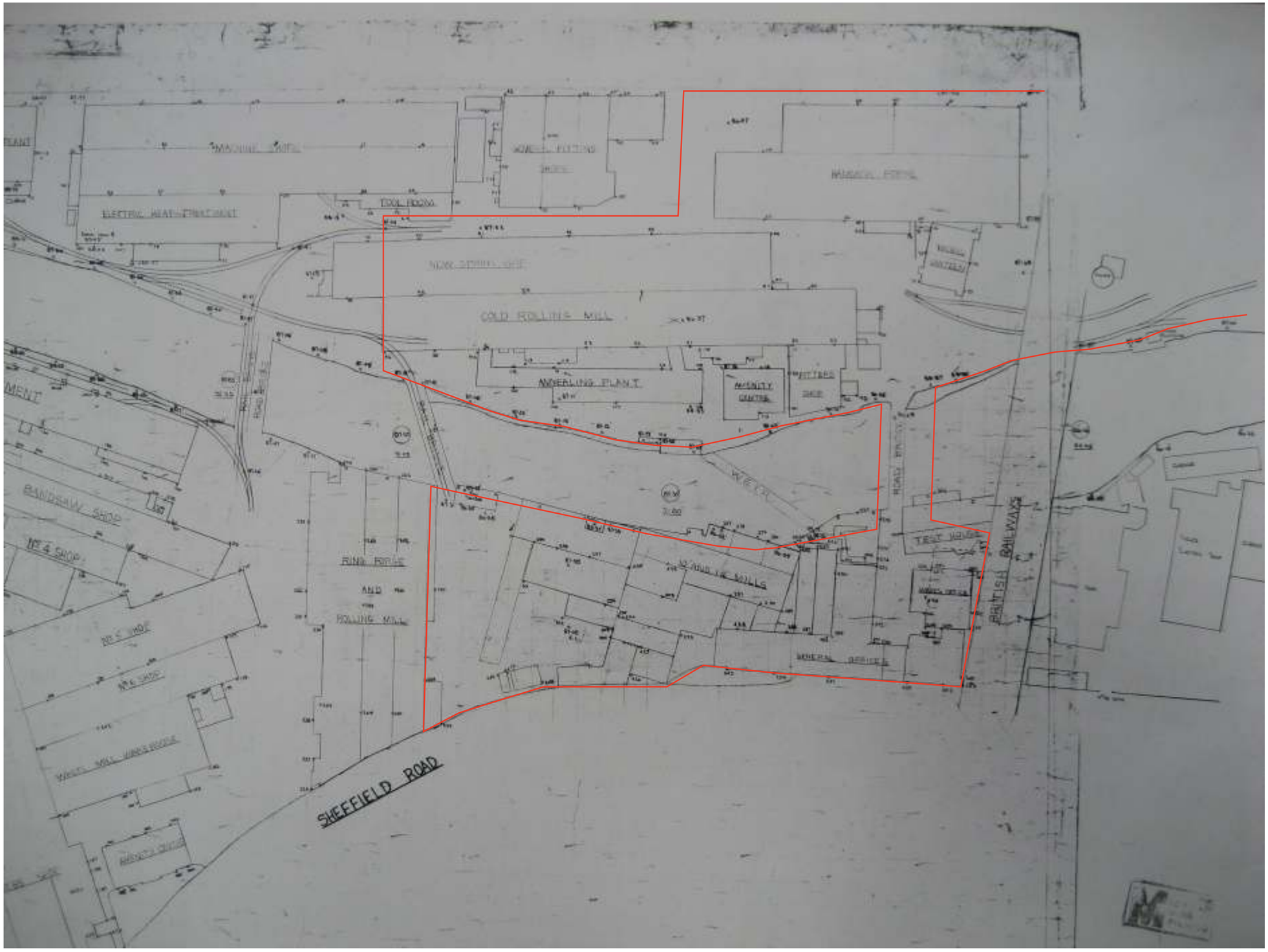


Figure 6: 1966 plan of the works

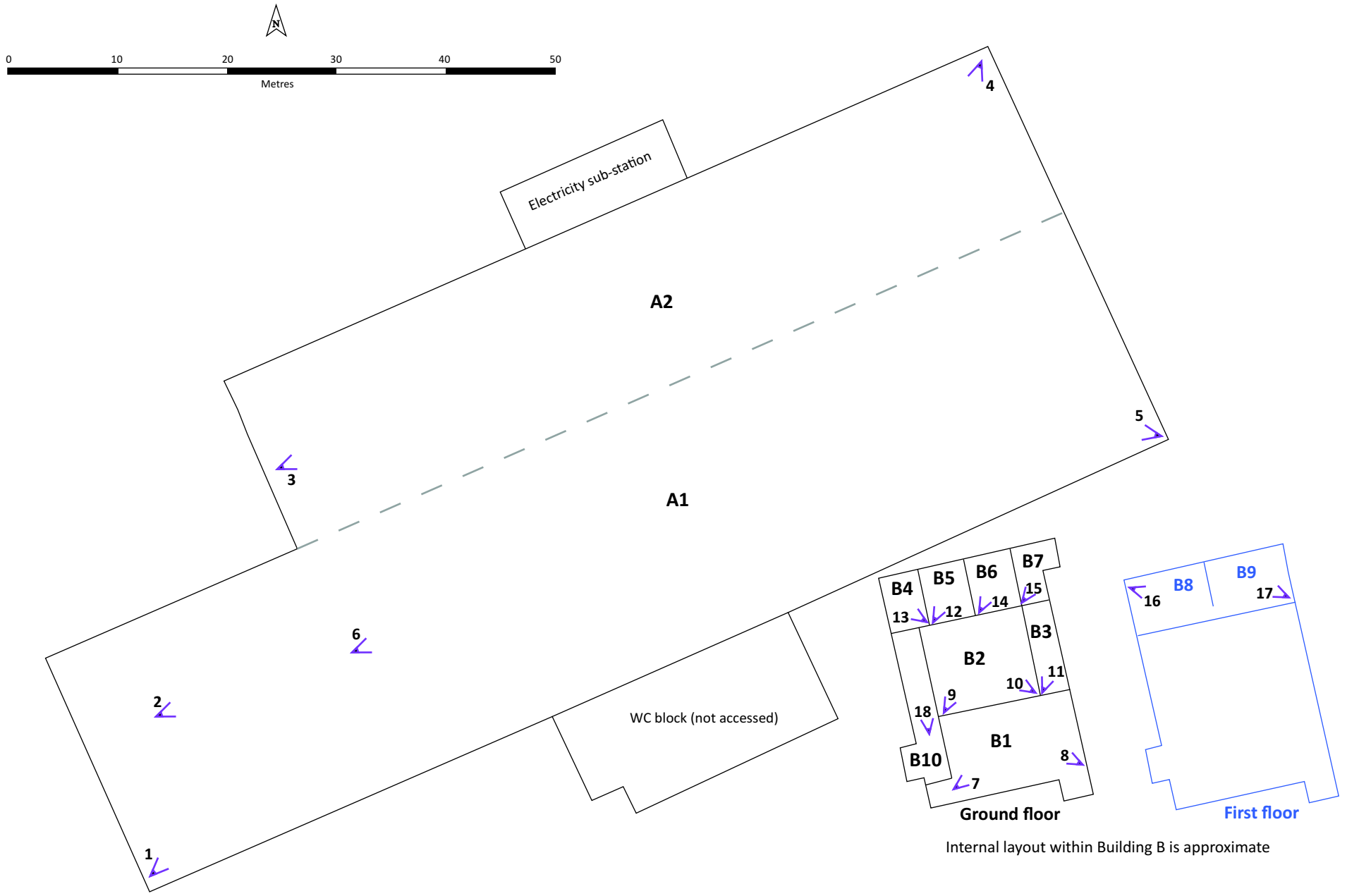


Figure 7: Location of internal photo viewpoints, Buildings A and B

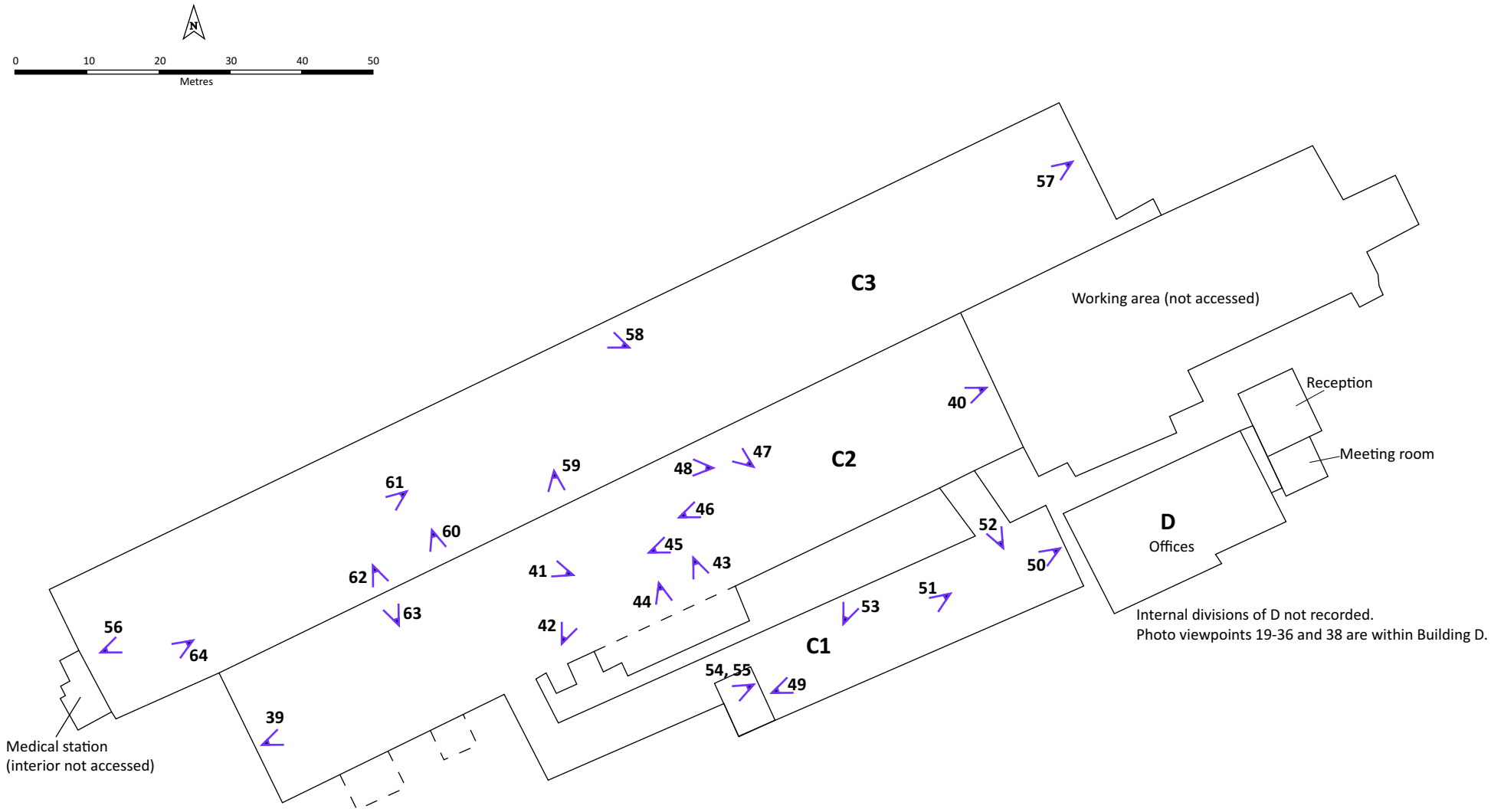


Figure 8: Location of internal photo viewpoints, Building C

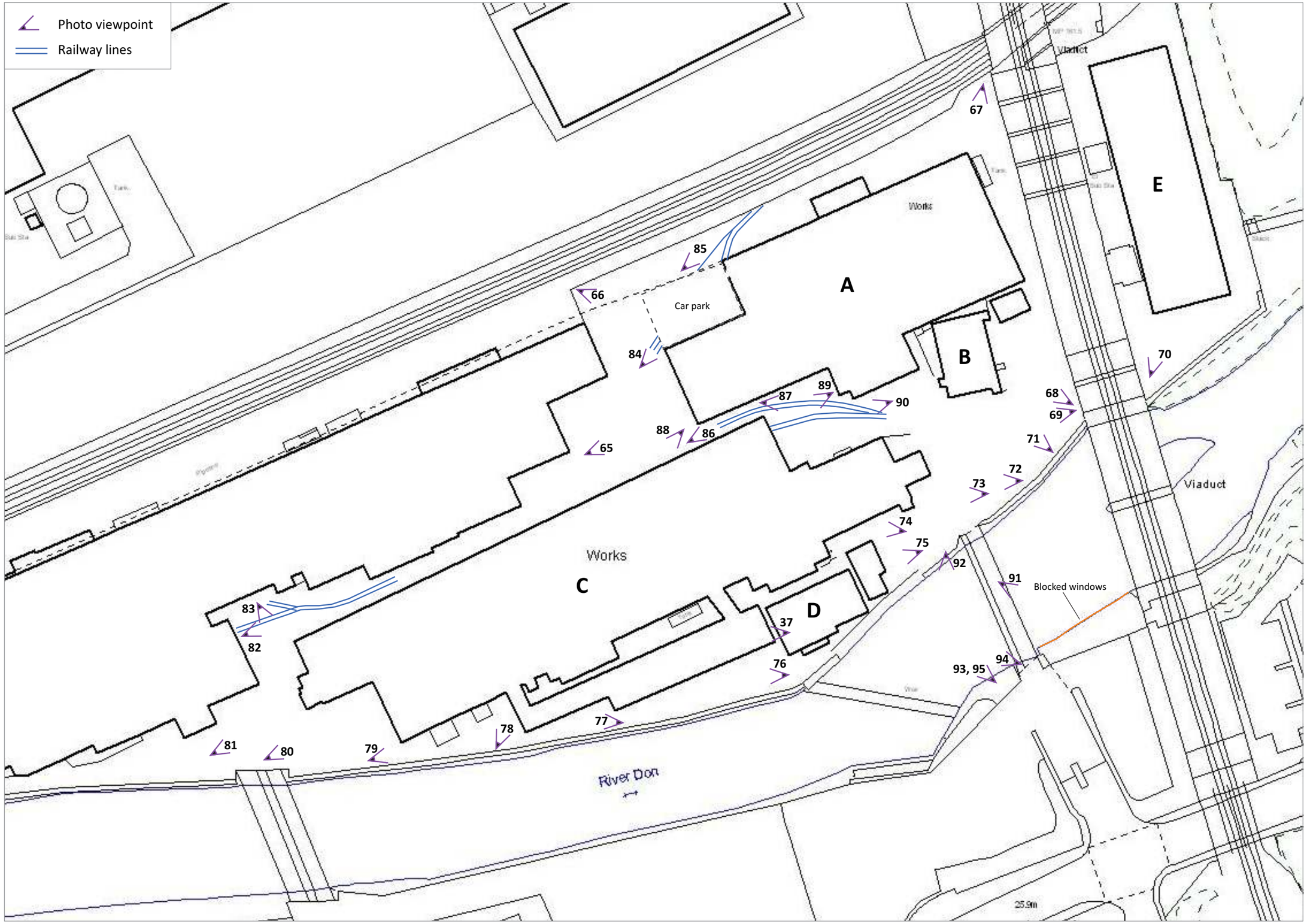


Figure 9: Site plan showing external photo locations

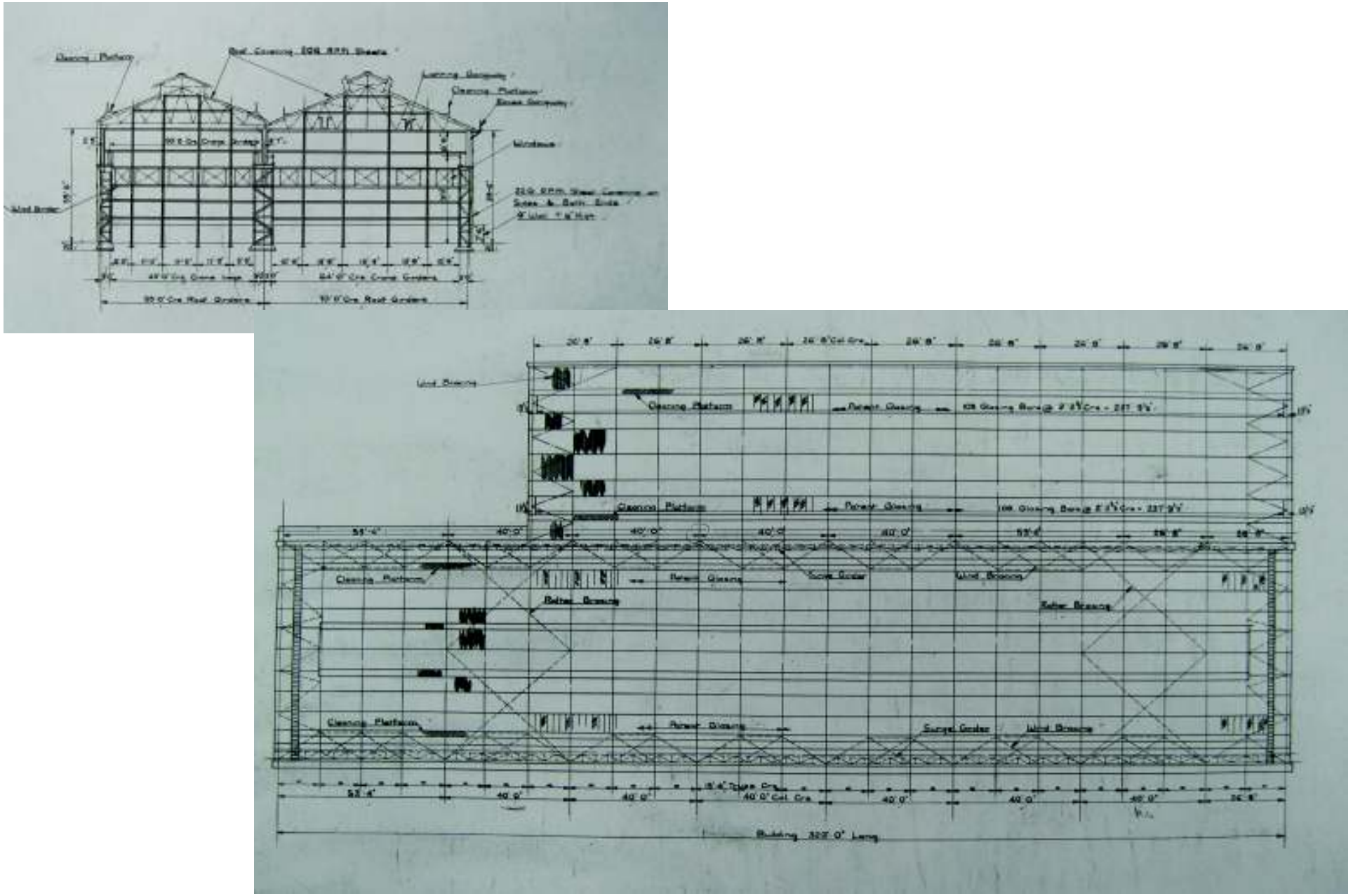


Figure 10: Plan and section of Building A, 1951

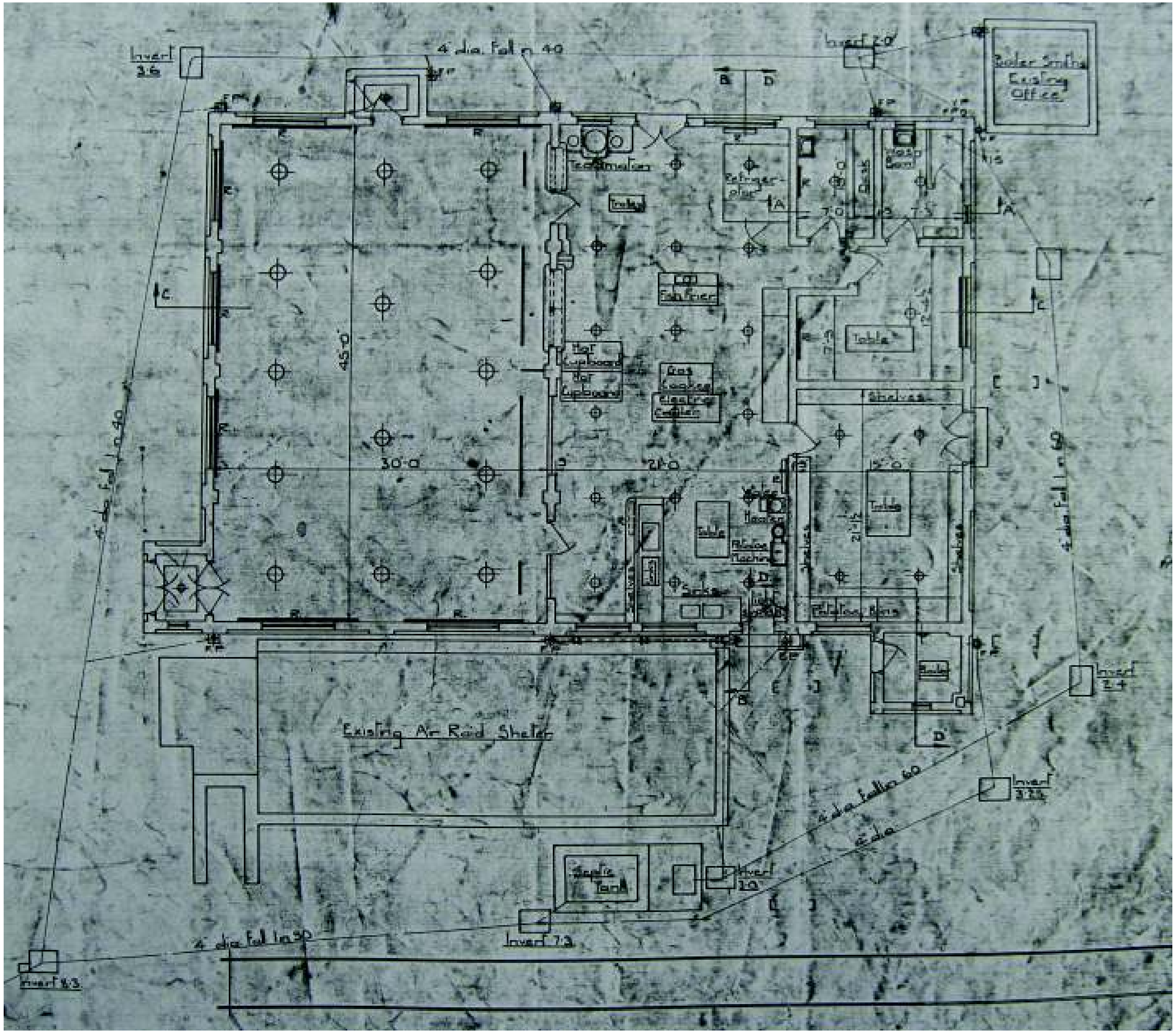


Figure 11: Plan of Building B, 1941

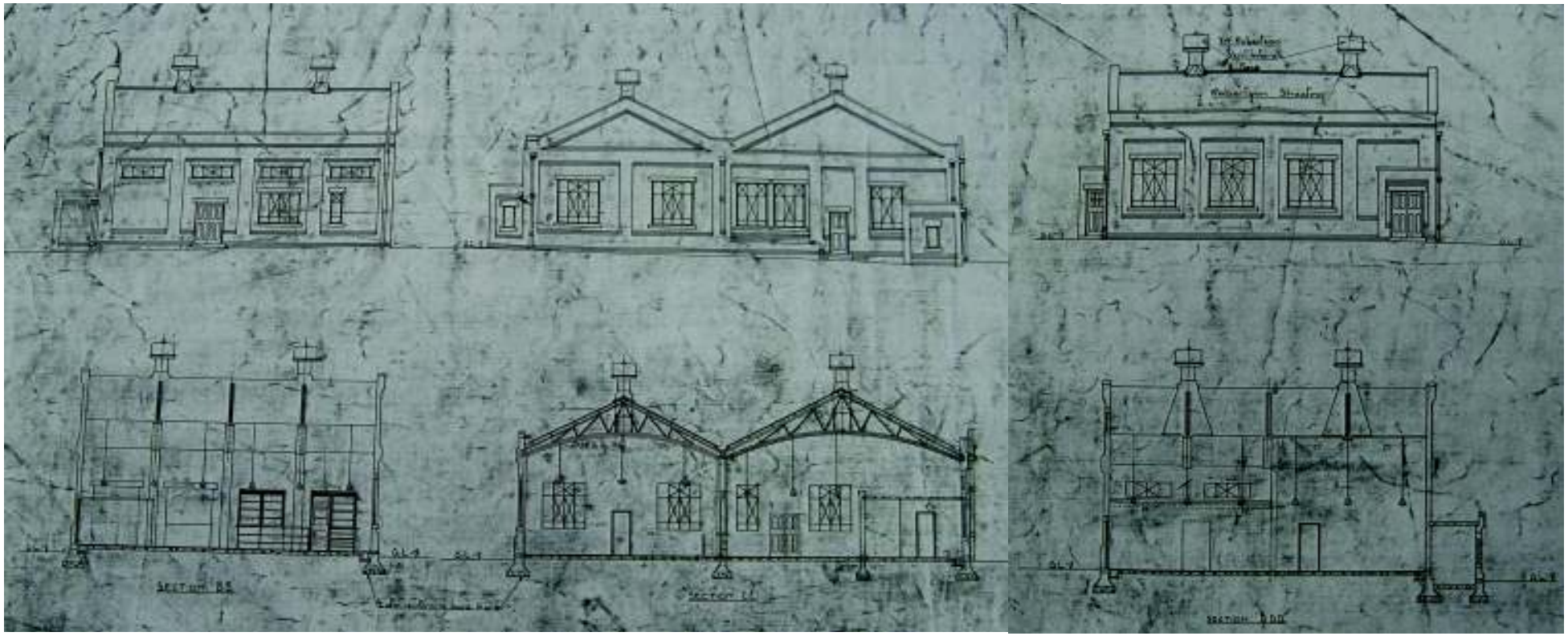


Figure 12: Sections and elevations of Building B, 1941

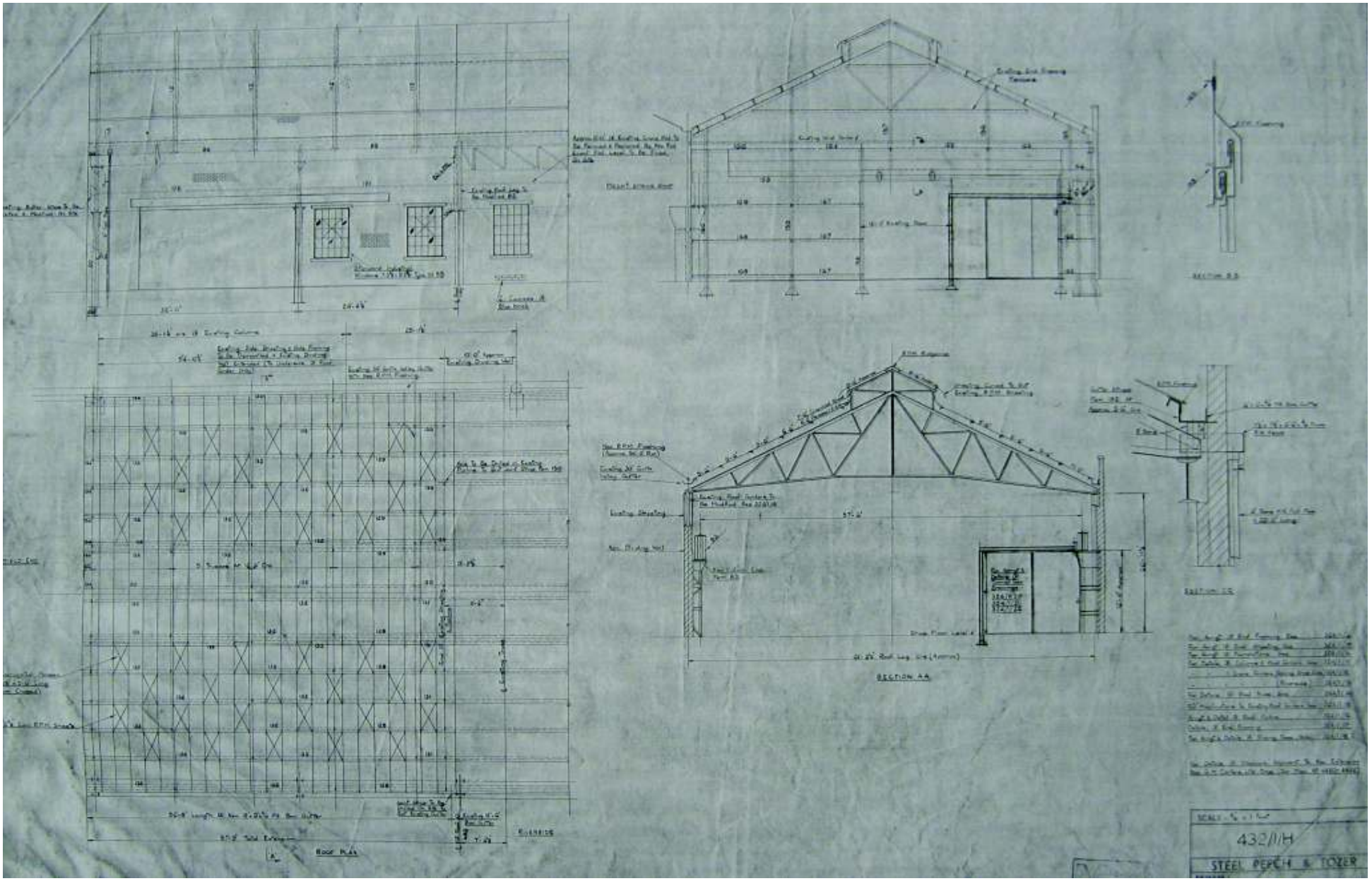


Figure 13: Plan, sections and elevation of extension to Building C, 1955

10 PLATES

Plate 2: West gable of Building A (A1), viewpoint 65

Plate 3: West gables of Building A with overhead pipe, viewpoint 66

Plate 4: East gables and north elevation of Building A, viewpoint 67

Plate 5: Interior of Building A, room A1, viewpoint 2

Plate 6: Interior of Building A, room A2, viewpoint 4

Plate 7: Room A1, detail of travelling crane, viewpoint 6

Plate 8: Exterior of Building B, south and east elevations with Building A to rear, viewpoint 71

Plate 9: East elevation of Building B, viewpoint 68

Plate 10: Room B1, viewpoint 8

Plate 11: Room B2, viewpoint 10

Plate 12: Room B5, viewpoint12

Plate 13: Room B6, viewpoint 14

Plate 14: First-floor room B9, viewpoint 17

Plate 15: Exterior of Building C, east gable, viewpoint 73

Plate 16: Exterior of Building C, west gables and medical station, viewpoint 81

Plate 17: Exterior of Building C, north elevation and adjacent railway, viewpoint 82

Plate 18: Exterior of Building C, south elevation of C1, viewpoint 76

Plate 19: View over roofs of C1 (left) and C2, and south elevation of C2, viewpoint 37

Plate 20: Interior of room C1, viewpoint 50

Plate 21: Detail of sliding doors, north side of C1, viewpoint 53

Plate 22: Interior of room C2 with two travelling cranes, viewpoint 40

Plate 23: Detail of crane track, lattice girders and wall columns, C2, viewpoint 43

Plate 24: Detail of travelling crane and crane track, C2, viewpoint 41

Plate 25: Detail of blocked doorways in south wall of C2, viewpoint 44

Plate 26: View of room C3, viewpoint 56

Plate 27: Detail of steel column supporting crane track, C3, viewpoint 58

Plate 28: Detail of column inserted into brickwork, C3, viewpoint 60

Plate 29: Detail of crane track, C3, viewpoint 59

Plate 30: Detail of holes in south wall of C3, viewpoint 46

Plate 31: Exterior of Building D, viewpoint 93

Plate 32: Exterior of Building D, extension in foreground, viewpoint 75

Plate 33: Interior of reception room, Building D, viewpoint 24

Plate 34: View of ground floor corridor between offices, Building D, viewpoint 30

Plate 35: View of first floor open-plan office, Building D, viewpoint 32

Plate 36: Exterior of Building E, south gable, viewpoint 70

Plate 37: Blocked arches in retaining wall on south bank of River Don, viewpoint 91

Plate 38: View of rails to north of Building A, viewpoint 85

Plate 39: View of rails to east of Building C, viewpoint 90

Appendix 1 – Index to Archive

Item	Number of items
Photographic register	1
B/W photographs (films/contact sheets)	5 films
Colour slides (films)	1 film
Digital photographs	1 CD
Written Scheme of Investigation	1
Report	1

Table 1 Index to archive

APPENDIX 2 – Photo viewpoint register

View-point	Film/frame no	Description	Building no	Direction	Plate no
1	1/001-002 7/001	General view of interior of room A1, from SW corner.	A	NE	5
2	1/003-004 7/002	General view of interior of room A1, from W end.	A	E	
3	1/005-006 7/003	General view of interior of room A2, from W end.	A	E	
4	1/007-008 7/004	General view of interior of rooms A1 and A2, from NE corner.	A	SW	6
5	1/009-010 7/005	General view of interior of room A1, from SE corner.	A	W	
6	1/011 7/006	Detail of travelling crane gantry, room A1.	A	NE	7
7	1/012-013 7/007	Interior of room B1 from SW corner.	B	NE	
8	1/014-016 7/008	Interior of room B1 from SE corner.	B	NW	10
9	1/017-018 7/009	Interior of room B2 from SW corner.	B	NE	
10	1/020-021 7/010	Interior of room B2 from SE corner.	B	NW	11
11	1/022-023 7/011	Interior of room B3 from SW corner.	B	N	
12	1/024-025 7/012	Interior of room B5 'Mechanical test archive', from S end.	B	NE	12
13	1/026 7/013	Interior of room B4 'Heat treatment testing', from SE corner.	B	NW	
14	1/027 7/014	Interior of room B6 'Metallography inspection' from SW corner.	B	NE	13
15	1/028 7/015	Interior of room B7 'Metallography laboratory' from SW corner.	B	NE	
16	1/029 7/016	Interior of first floor room B8 'Reception', from NW corner.	B	SE	
17	1/030-031 7/017	Interior of first floor room B9 from SE corner.	B	NW	14
18	1/032-033 7/018	Interior of ground floor corridor and staircase to first floor, B10.	B	N	
19	1/034 7/019	Interior of Building D, office at SW corner of building, ground floor.	D	NE	
20	1/035 7/020	Ground floor Building D, partitioned office '9'.	D	NE	
21	1/036 7/021	Ground floor Building D, partitioned office '7'.	D	N	
22	2/002 7/022	Ground floor Building D, partitioned office '6'.	D	NE	

View-point	Film/frame no	Description	Building no	Direction	Plate no
23	2/003 7/023	Ground floor Building D, partitioned office '5'.	D	NE	
24	2/004-005 7/024	Ground floor of modern extension to Building D, reception area, from SW corner.	D	NE	33
25	2/006 7/025	Ground floor of modern extension to Building D, reception area, from NE corner.	D	SW	
26	2/007-008 7/026	Ground floor of modern extension to Building D, meeting room adjacent to reception from SE corner.	D	NW	
27	2/009 7/027	Small connecting room between modern extension and older office block, containing large paper shredder. '3' on door.	D	W	
28	2/010 7/028	Ground floor office '2' in Building D.	D	SW	
29	2/011-012 7/029	Ground floor office '1' in Building D.	D	SE	
30	2/013-014 7/030	Ground floor corridor adjacent to offices 5-9.	D	W	34
31	2/015-016 7/031	First floor open-plan office, Building D, from SW corner.	D	NE	
32	2/017-018 7/032	First floor open plan office, Building D, from W side.	D	E	35
33	2/019-020 7/033	First floor open plan office, Building D, from NE corner.	D	SW	
34	2/021-022 7/034	Second floor office (secretary's office?) at S side of building, from SE corner.	D	NW	
35	2/023-024 7/035	Second floor larger double office, Building D, from SE corner.	D	NW	
36	2/025 7/036	Second floor larger double office, Building D, from NW corner.	D	SE	
37	7/037-038	Exterior views across roofs of Building C from 2nd floor of Building D.	C	W	19
38	7/039	Stairhead and staircase from 2nd floor landing, Building D.	D	E	
39	2/026-027 7/040	General view of interior of room C2 from W end.	C	E	
40	2/028-029 7/041	General view of interior of room C2 from E end.	C	W	22
41	2/030-031 7/042	Detail of overhead crane track support on N wall of room C2.	C	N	24
42	2/032-033 7/043	Detail of overhead crane, room C2.	C	NE	
43	2/034-035 7/044	Detail of steel lattice supporting roof on S wall of room C2.	C	SE	23
44	2/036 7/045	Detail of blocked entrances (or windows?) on S wall of room C2.	C	S	25
45	3/001 7/046	Detail of roof trusses in central area of room C2.	C	E	

View-point	Film/frame no	Description	Building no	Direction	Plate no
46	3/002 7/047	Detail of rails set into concrete floor of room C2.	C	E	
47	7/048-049	Detail of riveted ironwork on crane track, room C2.	C	N	
48	3/003 7/050	Detail of girder/column supporting crane track and roof, room C2.	C	NE	
49	3/004 7/051	General view of interior of room C1, adjoining main block, from W end.	C	E	20
50	3/005 7/052	General view of interior of room C1, from E end.	C	W	
51	3/006 7/053	Detail of roof trusses in room C1, central area.	C	W	
52	3/007 7/054	Detail of blocked entrance to eastern corridor C1 and C2.	C	N	
53	3/008 7/055	Detail of sliding doors on N wall of C1.	C	NE	21
54	3/009 7/056	View of upstairs engineers' office room at W end of C1.	C	W	
55	3/010 7/057	Ground floor engineers' office at W end of C1.	C	W	
56	3/011 7/058	General view of interior of room C3, from W end.	C	E	26
57	3/012 7/059	General view of interior of room C3 from E end.	C	W	
58	3/013 7/060	Detail of girder/column and electricity switch station, N wall of room C3.	C	NW	27
59	3/014 7/061	Detail of crane track on S wall, room C3.	C	SE	29
60	3/015 7/062	Detail of steel lattice and wall support column on south wall of room C3.	C	S	28
61	3/016 7/063	Detail of overhead crane, room C3.	C	SE	
62	3/017 7/064	Detail of south wall of room C3 with holes through to C2, possibly for power transmission.	C	S	30
63	3/018 7/065	Detail of partially blocked entrance and holes through to C3 from room C2.	C	N	
64	3/019 7/066	Detail of office block at W end of room C3.	C	W	
65	3/020 5/001 6/001-002 7/067	View of W end of Building A, exterior.	A	NE	2
66	3/021-022 5/002-003 6/003-005 7/068	Exterior view of N and W ends of Building A.	A	SE	3

View-point	Film/frame no	Description	Building no	Direction	Plate no
67	3/023-025 5/004-006 6/006-007 7/069	Exterior view of E and N ends of Building A.	A	SW	4
68	3/026-027 5/007-008 6/008-009 7/070-071	Exterior view of E end of Building B, S face of Building A to rear.	A, B	NW	9
69	3/028-029 5/009 7/072-073	Exterior view of E end of Building B and Building C.	B, C	W	
70	3/030 7/074	Exterior view of S and W sides of Building E.	E	N	36
71	3/031-032 5/010-011 7/075-076	Exterior view of S and E sides of Building B.	B	NW	8
72	3/033 7/077	Exterior view of E and S faces of Building C (including modern extension).	C	NW	
73	3/034 7/078	Exterior view of E and S faces of Building C (including modern extension).	C	NW	15
74	3/035 7/079	Detail of pipe supports at the E end of S wall of Building C (main block).	C	NW	
75	3/036 4/001 7/080	Exterior view of E end of Building D (modern extension).	D	W	32
76	4/003-004 5/012 7/081	Exterior view of part of S face of Block C1 (E end).	C	W	18
77	4/005-006 7/082	Exterior view of part of S face of Block C1 (central).	C	W	
78	4/007-008 5/013-014 6/010 7/083	Exterior view of part of S face of Block C1, showing entrances close to the W end.	C	E	
79	7/084	Exterior view of part of S face of Building C (W end).	C	E	
80	4/009 7/085	Exterior view of W face of Building C (S gable).	C	E	
81	4/010 5/015-016 6/011	Exterior view of W face of Building C (both gables).	C	E	16
82	4/011-012 5/017-018 6/012 7/086	Exterior view of N face of Building C and works railway line.	C	E	17
83	4/013 7/087	Exterior view of W face of Building C and medical station.	C	SE	

View-point	Film/frame no	Description	Building no	Direction	Plate no
84	4/014 7/088	Detail of works railway line remnant to W of Building A.		NE	
85	4/015 7/089	Detail of works railway line to N of Building A.		NE	38
86	4/016 7/090	Detail of works railway line between Buildings A and C.		E	
87	4/017-018 7/091	Detail of works railway line between Buildings A and C.		E	
88	4/019 7/092	Exterior view of N face of Building C.	C	SW	
89	7/093	Detail of works railway line between Buildings A and C.		W	
90	7/094	Detail of works railway line to E of Building C.		W	39
91	4/020 5/019-021 7/095	View of revetment wall on S bank of River Don, to E of works access bridge, showing blocked windows of earlier work buildings.		SE	37
92	4/021-022 5/022-023 7/096	View of sandstone revetment wall on S bank of River Don to W of works access bridge.		S	
93	4/023-024 5/024-025 7/097	View of sandstone revetment wall on N bank of River Don to W of works access bridge and Buildings C and D.		NW	31
94	4/025-026 5/026 7/098	View of sandstone revetment wall on N bank of River Don to W of works access bridge, and Buildings C and D behind.		NW	
95	4/027-028 5/027-028 6/013 7/099	View of Buildings C and D from viewpoint 93.	C, D	N, NW	

Film types:

Films 1-4: Black and white print

Film 5: Colour slide

Film 6: Medium format black and white print

Film 7: Digital colour photographs

APPENDIX 3 – Written Scheme of Investigation

WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL BUILDING RECORDING

Prepared for the Brite Partnership by ArcHeritage, April 2011

Site Location: Former Firth Rixson steelworks site at Ickles, Rotherham

NGR: SK 4170 9191

Proposal: Biomass energy development

Status of WSI: Final

1 SUMMARY

1.1 This Written Scheme of Investigation (WSI) has been prepared in response to a Brief supplied by South Yorkshire Archaeology Service. The work will be carried out in accordance with the Brief and this WSI.

2 SITE LOCATION & DESCRIPTION

2.1 The proposal site is centred on NGR SK 4170 9191 located between Sheffield Road to the south and the Sheffield and Mexborough branch of the Great Central Railway to the north (Figure 1). The western side of the site is bounded by Bessemer Way, and the eastern side by a railway viaduct adjacent to Mexborough South Junction, and the site is bisected by the River Don (Figure 1). The site is located on flat land adjacent to the River Don, and comprises an area of c.2 hectares, currently occupied by a group of disused steel works buildings.

3 DESIGNATIONS & CONSTRAINTS

3.1 There are no designations associated with the site. Buildings may contain asbestos tiles. The client has confirmed that these are safe and there is no foreseeable risk.

4 SITE DESCRIPTION & ARCHAEOLOGICAL INTEREST

4.1 Of the standing buildings within the development site (Figure 2), only one, Building C, appears to be related to the earlier development of the works, though heavily modified throughout the 20th century. A second, Building B, also has some architectural interest. Both structures are considered to be of Local archaeological significance. As all the works buildings form a group, the archaeological building recording of the structures will include a photographic survey of all the buildings and internal railway infrastructure, to put the works into context and record the final form of the Ickles branch of the steelworks.

4.2 Building B (centred on SK 41819 91963) is a brick-built structure with two gables and four bays. Each gable has a pitched corrugated metal roof (Plate 2). The structure was first shown on the 1955 OS map, and may be of 1940s construction. There are three wide metal framed windows on the east and west sides, set into slightly recessed panels, and the west side has two small circular windows in the gables, above the ground floor windows. On the south elevation there are two windows flanking a tall, narrow shutter door in the second bay from the west. The door may be a later insertion, or modification of the original door. The interior was not inspected. It has been used as a canteen in recent times, but its form suggests it may originally have been a power transmission house.

4.3 Building C (centred on SK 41720 91902) consists of a long rectangular shed with two parallel workshops, aligned east to west. There is a rectangular addition against the south side of the building. The building appears in its current form on the 1955 map, but appears to contain the shorter structures shown on the 1923 OS map, and therefore possibly elements of the structures shown in 1892. The building has clearly been greatly altered internally, and extended to the east and west. The roofs of the

two workshops are pitched corrugated metal with skylights, with no visible hot working vents apart from a small raised section at the centre of the southern workshop. The main part of the structure has brick walls, with corrugated metal cladding on the exterior walls Internally, the roof is supported on the brick walls and steel I-beams, with lightweight metal trusses. The trusses may have been added as part of a reconstruction of the workshop as they appear to be relatively modern in comparison with the riveted metal tracking for travelling cranes on the internal walls. There are filled-in rectangular pits in the floor of the southern workshop. A railway line formerly ran through the southwest corner of the building. Remains of rails and metal footings are visible set into the concrete floor of the workshops. The easternmost and westernmost ends of the buildings appear to be later additions.

5. LEVEL OF RECORDING

5.1 The purpose of the recording is to determine and identify the multiphase nature and context of the extant buildings. A further objective of this work is to provide a thorough record of the fabric and features of the buildings in advance of their conversion.

5.2 This survey will enable an enhanced understanding of the development of the buildings. Generally this survey will be guided by the requirements provided by SYAS and English Heritage "Understanding Historic Buildings" publication (2006), for a Level 1 record.

6. METHODOLOGY

6.1 A photographic record of the buildings will be made. The primary archive will comprise 35mm black and white negative film. Colour slide and/or digital photographs will be taken to supplement the primary archive, particularly where decorative details or colour are important. The record will include the overall appearance of the principal rooms and circulation areas of the buildings and any external or internal detail, structural or decorative, which is relevant to the building's design. Plans showing the location and direction of each photograph will be compiled.

6.2 A brief written description of the buildings will be produced where necessary to enhance the information contained within the desk based assessment. Attention will also be given to features of interest such as: fixtures, fittings, decorative elements, evidence for power generation/transmission, manufacturing processes. A brief record will also be made of any more recent use of the buildings, as evidenced through graffiti or any other modifications.

6.3 Lighting and access equipment will be brought in where necessary to facilitate the survey.

7. ARCHIVING AND REPORTING

7.1 The report will be in A4 format, with larger drawings either on A3 sheets bound into the report or on separate larger sheets appended to the report. The report will contain:

- A summary statement of the findings
- Location maps
- An outline of the methodology (contained within the WSI and/or Brief. Appended to the report)
- A description of the setting, geology and topography
- A description of the site development
- Historic maps, where appropriate
- The survey results, to include a selection of photographs no smaller than at 5"x4"
- A CDROM of the report, with digital copies of all photographs

7.2 Upon completion of the survey, the field archive will be compiled consisting of all primary written documents, photographs and electronic data (in a format to be agreed by the repository museum).

7.3 After agreement with the property owner, the field archive will be deposited with the relevant museum or archive. In this case, the archaeological contractor will contact Rotherham Museum.

7.4 Copies of the final report will be deposited with the Rotherham Archives, Central Library, Rotherham and with SYAS.

7.5 The owner of the Intellectual Property Rights (IPR) in the information and documentation arising from the work, would grant a licence to the County Council and the museum accepting the archive to use such documentation for their statutory functions and provide copies to third parties as an incidental to such functions. Under the Environmental Information Regulations (EIR), such documentation is required to be made available to enquirers if it meets the test of public interest. Any information disclosure issues would be resolved between the client and the archaeological contractor before completion of the work. EIR requirements do not affect IPR.

8 HEALTH AND SAFETY

8.1 Health and safety issues will take priority over archaeological matters and all archaeologists will comply with relevant Health and Safety Legislation.

8.2 A Risk Assessment will be prepared prior to the start of site works.

9 TIMETABLE

9.1 The recording is anticipated to be carried out on the 14th April 2011.

10 Copyright

10.1 ArcHeritage retain the copyright on this document. It has been prepared expressly for the named client, and may not be passed to third parties for use or for the purpose of gathering quotations.

Any queries relating to this WSI should be addressed to Anna Badcock, ArcHeritage, Campo House, 54 Campo Lane, Sheffield S1 2EG (Tel: 0114 3279793, email: abadcock@yorkat.co.uk)

Figure 1 – Site Location

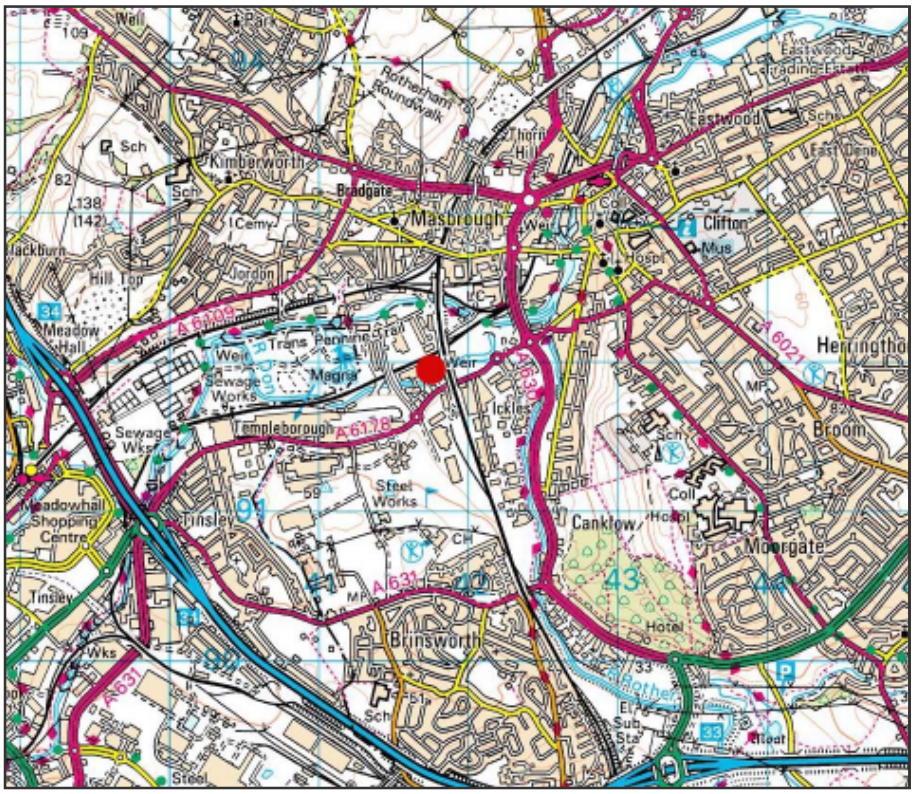


Figure 2 – Site plan showing buildings as identified in the desk based assessment