

Historic Building Investigation Report

and

Email response Mark Walters, CPAT dated 22 June 2022

Richard Purser

From: Mark Walters <mark.walters@cpat.org.uk>
Sent: 27 June 2022 10:04
To: Simon Greenland
Subject: [DKIM:INVALID] Re: P/2022/0065 WIE Bridgeway Centre - Historic Building Investigation

Hi Simon

Many thanks for sending a copy of the Level 3 report. I can confirm that this completes our requirements for recording the WWII buildings remaining on this site and no additional archaeological work is required.

Kind regards

Mark Walters

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Please note that I do not work Fridays

From: Simon Greenland <Simon.Greenland@wrexham.gov.uk>
Sent: 27 June 2022 08:13
To: Mark Walters <mark.walters@cpat.org.uk>
Subject: FW: P/2022/0065 WIE Bridgeway Centre - Historic Building Investigation

Hello Mark,

Please see attached as requested.

Kind regards

Simon Greenland
Swyddog Gorfodi a Cynllunio/Planning and Enforcement Officer
Cynllunio a Rheoleiddio/Planning and Regulatory
Ymddeol 29/7/2022/ Retiring 29/7/2022



University of
Salford
MANCHESTER

Historic Building Investigation

The Bridgeway
Centre,
Wrexham Industrial
Estate
Wrexham

Client:

FI Real Estate
Management Ltd

Technical Report:

Steve Tamburello

Report No:

SA/2022/64



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Summary

In May 2022 Salford Archaeology were commissioned by FI Real Estate Management Ltd to undertake an Historic Building Investigation on buildings within The Bridgeway Centre, Bridge Road, Wrexham Industrial Estate, Wrexham. FI Real Estate Management Ltd have submitted a hybrid planning application to Wrexham Council seeking permission to demolish the current buildings within the Site and erect 33 units for commercial/ industrial use and outline permission for a up to 19 further units (Ref: P/2022/0065)

The Development Control Archaeologist of Clwyd-Powys Archaeological Trust (CPAT) as advisors to Wrexham Council judged that the structures were of archaeological and historical interest and recommended that a Level 3 type Historic Building Survey be undertaken on the structures, relating to the ROF Marchwieli Wrexham works, in advance of any development work.

The building investigation demonstrated that the nine single storey, brick buildings within the site of The Bridgeway Centre were originally constructed in 1940/1 as part of the wider Royal Ordnance Factory works whose main purpose was to produce cordite and other propellants to assist in the war effort. Although these buildings fell into three types, they generally shared the same steel frame structure, infilled with brick with flat concrete slab roofs. Many of the buildings also had projecting lean-tos on one or both sides.

Production at ROF Marchwieli ceased following the end of the war in 1945, after which the buildings within the Site and across the wider works were decommissioned and stripped of any distinguishing features. It is also thought that many of the records relating to the site were destroyed at this point.

There are no firm indications as to the function of buildings within the Site. The close proximity of all buildings suggests that they were not used for the direct manufacture of volatile substances. They also lacked the distinctive protective earth bunds surrounding them like the larger units, which were originally were located to the west and south and across Bridge Road.

The buildings appeared to be arranged to allow for adequate access to the roadway that branched through the Site from Bridge Road, with many of the building comprising at least one large vehicle entrances from the road. The high proportion of vehicle entrances and the proximity of the Site to the main arterial route of Bridge Road may suggest that the various buildings functioned as storage and loading points for the conveyance of the products by road or for receiving non-hazardous materials for distribution with the works. This is reinforced by the presence of trolley cranes and lifting hooks attached to the steel beams within two of the buildings.

The investigation has provided an invaluable opportunity to record some of the last remaining buildings from a vital wartime site in Wrexham.

1. Introduction

1.1 Planning Background

In May 2022 Salford Archaeology were commissioned by FI Real Estate Management Ltd to undertake an Historic Building Investigation on buildings within The Bridgeway Centre, Bridge Road, Wrexham Industrial Estate, Wrexham (hereafter known as the Site)

Fi Real Estate Management Ltd have submitted a hybrid planning application to Wrexham Council seeking permission to demolish the current buildings within the Site and erect 33 units for commercial/ industrial use and outline permission for a up to 19 further units (Ref: P/2022/0065)

The Development Control Archaeologist of Clwyd-Powys Archaeological Trust (CPAT) as advisors to Wrexham Council judged that the structures were of archaeological and historical interest and recommended that a Level 3 type Historic Building Survey be undertaken on the structures, relating to the ROF Marchwiel Wrexham works, in advance of any development work.

This investigation has been undertaken according to guidelines set out in Planning Policy Wales (Edition 11 February 2021). Paragraph 6.1.5 states that the planning system must take into account the Welsh Government's objectives to protect, conserve, promote and enhance the historic environment as a resource for the general well-being of present and future generations. This is supported by the Conservation Principles laid out in Paragraph 1.11 of the Technical Advice Note (TAN) 24 (May 2017) which should be used to assess the potential impacts of a development proposal on the significance of any historic asset to assist in the decision making where the historic environment is affected by the planning process.

Paragraph 1.11 states:

- 1. Historic assets will be managed to sustain their values.*
- 2. Understanding the significance of historic assets is vital.*
- 3. The historic environment is a shared resource.*
- 4. Everyone will be able to participate in sustaining the historic environment.*
- 5. Decisions about change must be reasonable, transparent and consistent.*
- 6. Documenting and learning from decisions is essential.*

1.2 Methodology

The Historic Building Investigation was conducted following the ClfA Standards and guidance for archaeological building surveys (updated December 2014), and was commensurate with a Historic England Level 3-type survey (Historic England 2016).

Photographic Archive: a comprehensive photographic archive for the buildings was produced utilising a high-resolution digital camera with a sensor size of at least 15 megapixels. All frames, excluding general contextual views, incorporated a graduated metric scale.

Site Drawings: A set of measured survey drawings of the building were produced utilising measurements captured using by 3D laser scanner where accessible and features of archaeological significance were annotated onto the drawings. The resultant data was used as the basis of CAD drawings, which were included within this report, where appropriate, as Figures.

Written Description: a description of the historic structures was maintained to Historic England Level 3 standards, as appropriate. The Level 3 records were descriptive and provided a systematic and analytical account of the origin, development and use of the building, which included a description of the plan, form, fabric, function, age and development sequence. The written description included an account of any key architectural features, fixtures and fittings, and a discussion.

1.3 Site location, topography and geology

The Site lies on the south side of Wrexham Industrial Estate, approximately 3 miles to the east of Wrexham. The Site is bounded by Coed Aben Road and the inner core of the Industrial Estate to the north and Bridge Road and the grounds of HMP Berwyn to the east. The Site is bounded by Clywedog Road East and the residential area of Pentre Maelor to the south and Clywedog Road North and further industrial premises to the west (Figs 1 and 2, and Plate 1).

The Site is currently in use as a managed industrial park, with units occupied by a variety of business and services.

The site lies at a height of approximately 30m above Ordnance Datum (aOD) and is located on levelled ground. The solid geology comprises sedimentary bedrock including mudstone, sandstone and conglomerates of the Salop Formation with Milnrow Sandstone bedrock with superficial deposits of Devensian Till (British Geological Survey, 2022)

1.4 Designations

There are no designated buildings within the Site at The Bridgeway Centre and the information held on the Historic Environment Record does not indicate any archaeological records within the development area



Plate 1: Recent aerial view of the of The Bridgeway centre, looking north-east across the north-east end of the Site, with Bridge Road running along the right of the picture

4. Historical Background

The area of the Site is first shown on the detailed mapping of the first edition Ordnance Survey for Denbighshire, surveyed in 1879 (Fig 3) where it is shown as being agricultural land within the township of Abenbury Fawr, to the east of Wrexham. The market town of Wrexham had expanded rapidly in the nineteenth century as the traditional leather industry gave way to Iron working and coal mining with the Industrial Revolution.

The area retained its rural, agricultural setting well into the twentieth century, altering very little through to the outbreak of war in 1939. The Ordnance Survey of 1938 (Fig 4 and Plate 2, captured the Site prior to the massive change that would come with the outbreak of war. The map shows the area of the Site located to the east of the hamlet of Redwither, previously known as Rhyd-fudr prior to anglicisation. To the west, the Site is delineated by the course of Redwither Brook which flowed south-west from the Afon Clywedog. The surrounding area was punctuated with farmsteads, the closest being Coed-Aben on Redwither Lane to the north-west of the Site and Cae Mynach to the south-east, surrounded by a Smithy and the Bethal Chapel.

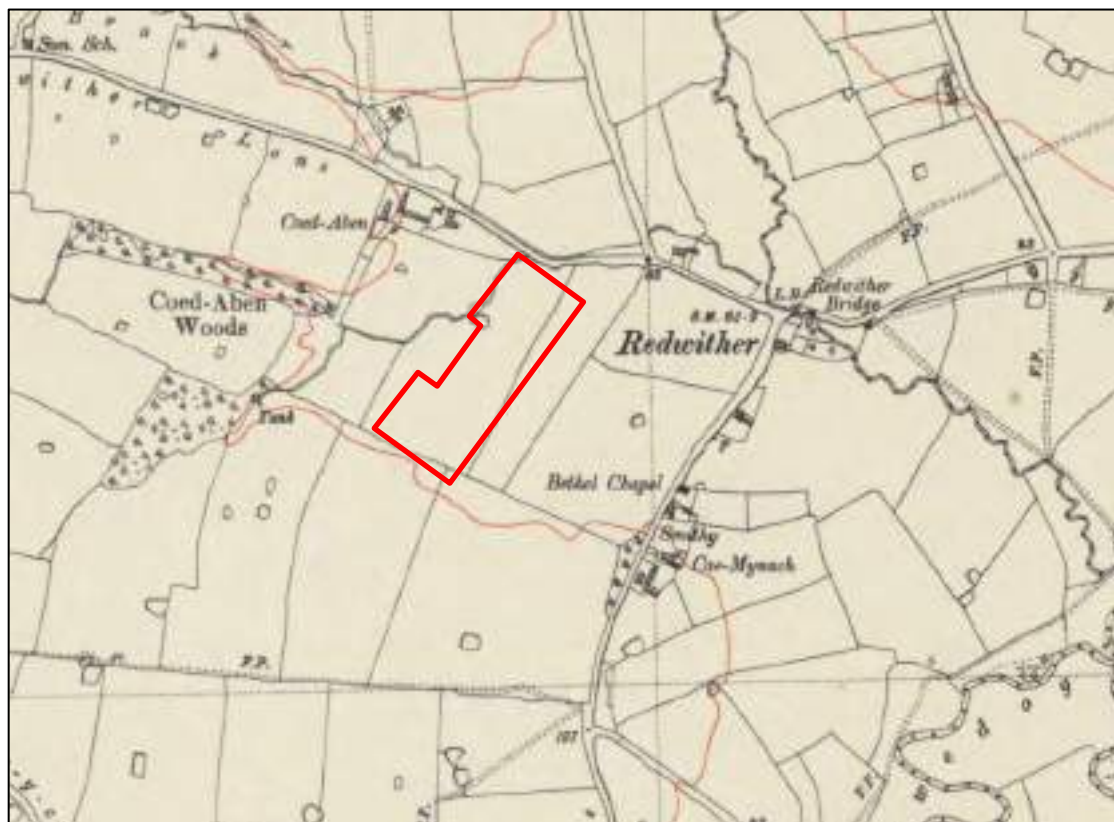


Plate 2: Extract from Ordnance Survey map of 1938, with Site location indicated

In the build up to war the area to the east of Wrexham, incorporating the Site, was chosen as the location for a vast Royal Ordnance Factory, to be named ROF Marchwiell, spanning an area 3km by 2.5km encompassing over 566 hectares (1,400 acres). The purpose of the factory was to produce cordite, a smokeless propellant developed by the United Kingdom to replace gunpowder in artillery, tank weapons and naval guns and further. Further developments were made by the 1940s to produce a flashless version that was extensively used with anti-aircraft projectiles. Cordite was produced by combining two high explosives: nitrocellulose and nitro-glycerine, with the resulting substance formed into dried spaghetti-like filaments (Plate 3).



Plate 3 Cordite filaments in a .303 British Rifle cartridge

Prior to the onset of the Second World War, cordite was still in production at three Royal Ordnance Factory sites which had survived from the First World War, at Waltham Abbey (Essex), Holton Heath (Dorset) and Ardeer (Ayrshire). However, as more variations of Cordite were developed to meet specific propellant needs, so the processes and production sites required became more complex and the remodelling of existing sites was not always feasible.

Output from the existing production sites was impacted early in the war when two cordite Mixing Houses exploded at the Waltham Abbey within months of each other, in January and April 1940, damaging buildings within a 500m radius of them and causing major issues for production (Cocroft, 2000).

The performance and output of the outmoded ordnance sites may have been a factor in the approval of new sites across the country to cope with increased wartime demand for propellants.

In 1937 approval for a new cordite production site was given for ROF Bishopton in Renfrewshire, to cover a site of 1910 acres with around 1500 buildings. Approval for ROF Marchwiell, as the Wrexham site was officially named, was given in August 1939 by the Ministry of Supply to supplement production followed by a much smaller site at ROF Ranskill in Nottinghamshire.

The primary consideration in the choice of location for the site in North Wales was the distance from German bomber bases in mainland Europe and from large population centres, however other factors such as access to a large local workforce due to high unemployment and good existing railway links also played in its favour. The overall flat topography of the area assisted in the construction of a dispersed complex that sought to minimise any damage that could be inflicted from an aerial attack.

The main contractors responsible for the construction of ROF Marchwiell are thought to have been Holland, Hannen & Cubitts, a major building company responsible for a range of large projects in the Second World War, although some sources suggest the firm McAlpine were involved, whose family had owned the nearby Marchwiell Hall since 1913. Work on the Site began in November 1939 and was completed by March 1941 at the cost of £10.9 million and employing more the 10,000 workers.

The Wrexham site was assigned as ROF 35 and its layout is detailed on a facsimile of the original drawings created by the propellant Planning Department of the Ministry of Supply, first issued in November 1940 and amended throughout the war through to November 1944 as additional phases were completed (Plate 4). The plans show the area of the Site near to the middle of the sprawling complex, adjacent to the newly constructed Bridge Road, which bisected the works north-east to south-west. Where possible existing field boundaries, patches of woodland and farm buildings (including Coed Aben) were left in place in an attempt to make the works blend in with the surrounding landscape and protect the site against enemy reconnaissance, although records from the Luftwaffe show that the works were photographed in September 1940, before they had even been completed. The dispersed layout of the buildings over such a wide area also sought to reduce the risk of a chain-reaction of explosions as had happened at Waltham Abbey, should the factories be targeted, with any impact confined to individual buildings. Although the area was targeted by raids early in the war, the ROF site was not hit.

The Ministry of Supply plan does not detail the function of each area of the factory site; however, it is known that three factory units produced nitro-glycerine and two factory units produced nitrocellulose, which supplied the cordite section where they were supplied. Many of the most sensitive buildings such as the Mixing Houses were half underground and covered in turf with the interior completely covered in sheet lead. Such buildings were surrounded by earth bunds and spaced at a distance to their neighbours.

The site also had two smaller tetryl nitration plants and acid towers used for the concentration of sulphuric acid, along with a cluster of magazines, storage areas, administration offices, canteens and workshops.



Plate 4: Extract from Ministry of Supply plan for ROF 35 with location of Site indicated (reproduced courtesy of Wrexham Archive and Local Studies Service)

The Ministry of Supply plan for the specific area of the Site (Plate 5) shows that there were originally many more buildings than currently survive, arranged in a largely symmetrical arrangement either side of a north-west/south-east access road through the middle from Bridge Road. Like the rest of the plan the buildings are not explicitly labelled but do bear number and letter codes to which the key is unavailable

The localised cluster of buildings comprised a series of rectangular buildings adjacent to Bridge Road, which are sequentially numbered 28/229 A, B, C, D etc on the north side of the access road and 28/129 A, B, C etc on the south side of the access road.

These were flanked to the north-west by and series of slightly larger rectangular building with narrow projecting wings to each side. A pair of these larger building are orientated north-east/south-west on either side of the access road and labelled 28/231

A and 28/131. Three further larger buildings are arranged perpendicular to them on each side orientated north-west/south-east and labelled B, C and D. Further buildings are located at the north-east and south-west periphery labelled 28/226 and 28/126 respectively. The building codes may indicate different building designs and possibly different functions. Buildings more likely to have been used in the handling of volatile material are indicated to the immediate south-west of the Site, marked with a perimeter and spaced apart from the neighbouring structures.



Plate 5: Detail of the Site from the Ministry of Supply plan of ROF 35 (reproduced courtesy of Wrexham Archive and Local Studies Service)

ROF Marchwiell ceased production in 1945 shortly after the end of the war, with many of the classified record reportedly destroyed at the time. The layout of ROF Marchwiell was captured in an aerial reconnaissance photograph by the RAF in 1946 when the site was being decommissioned (Plate 6).



Plate 6: RAF reconnaissance photograph taken 2nd April 1946 (courtesy of Royal Commission on the Ancient and Historical Monuments of Wales (RCAHMW) archive no 6432533)

Although the works were decommissioned, many of the buildings across the site were left in-situ for many years. Buildings within the Site appear to be in use by the early 1960s, labelled as 'Works' on the Ordnance Survey map of 1961 (Fig 5 and Plate 7), which also shows many of the larger reinforced buildings still present in the surrounding landscape. The map shows all the buildings from the Ministry of Supply plan still standing, though some seem to have been connected together as they can also be seen in an oblique aerial photograph taken by Aero films Ltd, perhaps around this time (Plate 8).

In the 1950s British Celanese opened a large acetate yarn factory to the north of the Site, in what would become the core of the current Wrexham Industrial Estate. This was followed by other large companies coming to the former ROF site including Kellogg's and JCB.

An aerial photograph of a residential area. A red polygon is drawn on the image, highlighting a specific cluster of buildings and a parking lot. The highlighted area contains several long, rectangular buildings, likely dormitories or apartment units, and a large, light-colored paved area, possibly a parking lot or a cleared field. The surrounding area includes more buildings, trees, and open land. The image is in grayscale, with the red polygon providing a clear visual boundary for the area of interest.

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By the mid-1980s the Site had been grouped together as the The Bridgeway Centre, with a number of subdivided business units (Fig 6 and Plate 8). By this time all bar one of the smaller rectangular buildings adjacent to Bridge Road had been demolished creating a wide embankment. A large factory had been constructed opposite the Site during the 1970s which was subsequently replaced by HMP Berwyn which opened in 2017.

Due to the continuing expansion of the Wrexham Industrial Estate most of the original buildings of the ROF Marchwiell had been demolished by the 1990's leaving only the buildings within the Bridgeway centre along with some ruined structures located within the woods to the south of Oak Road, to the west of the Site.

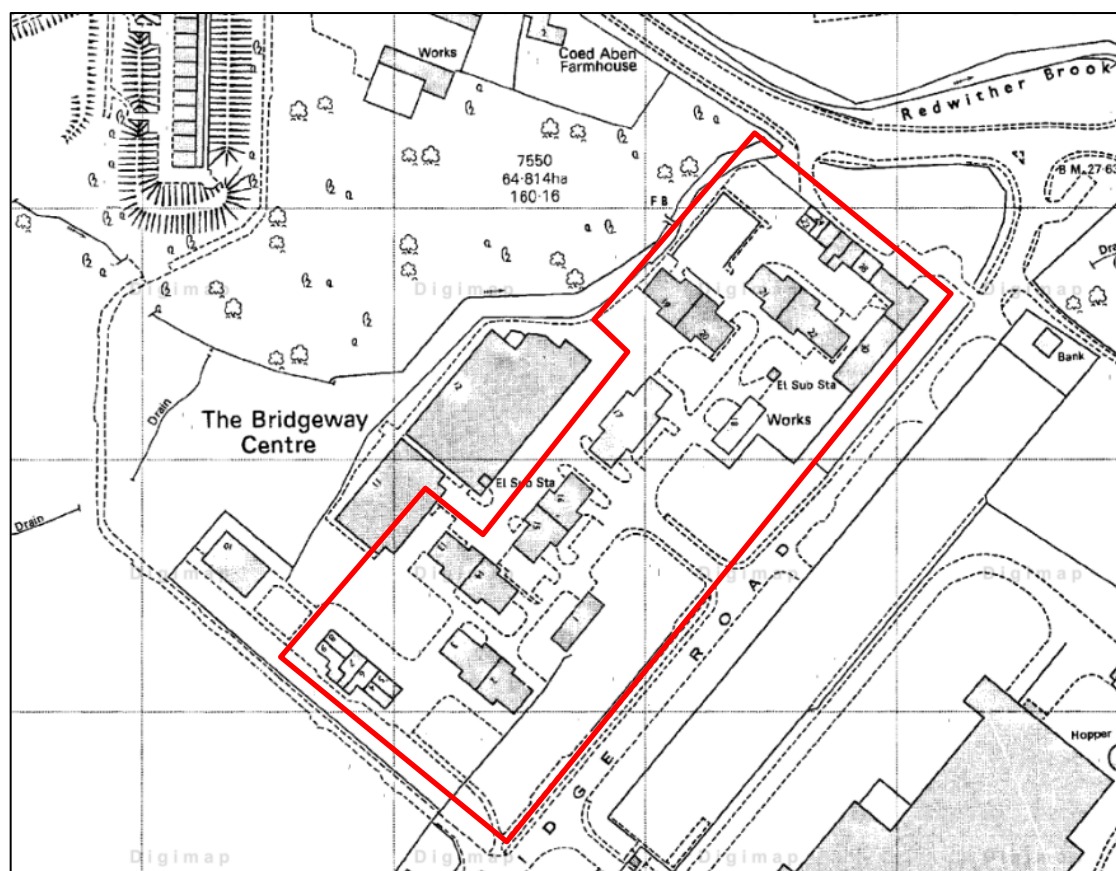


Plate 8: Extract from Ordnance Survey map of 1985 with Site location indicated

5. Building Investigation

5.1 Introduction

A site visit was undertaken on 19th May 2022 to The Bridgeway Centre, Wrexham to investigate the buildings within the Site prior to the proposed redevelopment and demolition (NGR SJ 37782 49395). The Site comprised a series of nine, single storey, brick buildings spaced across the Site, which have been numbered 1 to 9 from the north-west of the Site to the south-west for descriptive purposes of this report (Fig 7 and Plate 9). The majority of the buildings were still in use by a variety of small businesses, meaning that internal access was limited. A measured survey of the exterior of all the buildings and the interior of those that were accessible was undertaken utilising a 3D laser scanner with the resulting data used to produce a representative set of drawings (Appendix 1).

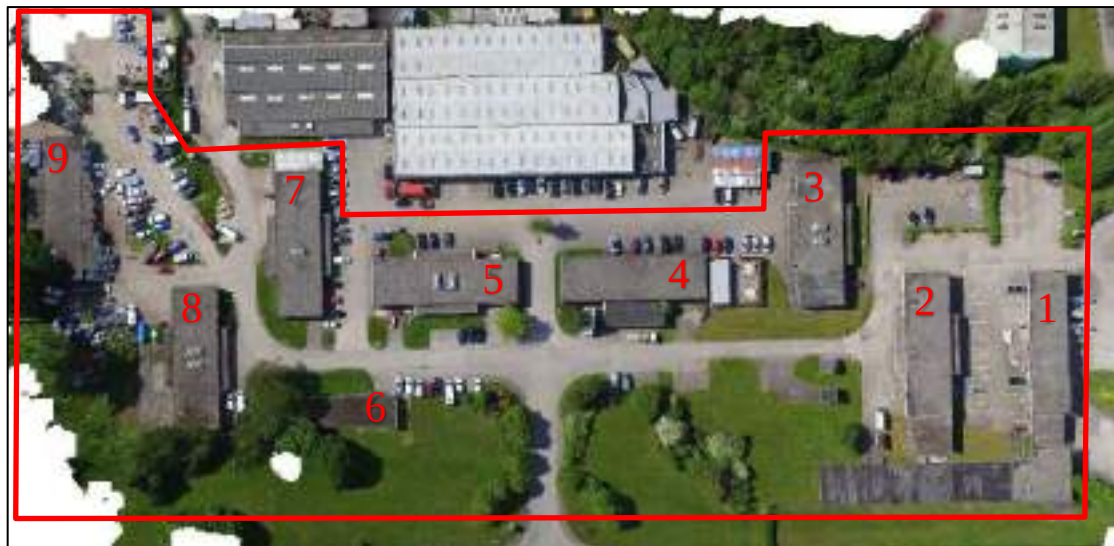


Plate 9: Recent composite UAV photograph of the Site, with simplified Site boundary and building numbers annotated for descriptive purposes

5.2 Building 1

Building 1 was orientated north-west/south-east at the north-east end of The Bridgeway Centre, near to the junction of Coed Aben Road and Bridge Road. The original single storey brick building was rectangular in plan with a flat roof and measured 120 ft /36.85m long by 31 ft wide/ 9.45m by 12 ft./3.65m high, with a short lean-to extension in the centre of the rear south-west side (26ft/8m by 15ft/4.6m). Building 1 was butted on the south-east side by a modern single storey retail extension, connected to a similar late-twentieth century range, orientated north-east/south-west range, parallel to Bridge Road (Fig 8 and Plate 10).



Plate 10: Recent UAV shot of Buildings 1 and 2 (indicated) with modern extensions at north-east end of the Site

The north-east frontage of Building 1 had been significantly remodelled to accommodate a row of four retail units which occupied the building. This comprised a rebuilt brick façade of brown brick which incorporated large shop windows and individual entrances for each of the units. The original brick structure was visible behind the rebuilt façade, above the roofline of the modern extension which butted the south-east, side elevation (Plate 11).



Plate 11: North-east elevation of Building 1, looking west.

The north-west end and rear south-west elevations were both fully clad in modern corrugated steel sheeting, which completely obscured the underlying brick structure. The north-west, side elevation incorporated an inserted, steel framed two-light horizontal window (Plate 12), whilst the rear elevation comprised inserted doorways which corresponded to each retail unit within (Plate 13). The rear lean-to extension comprised a single doorway on the north-west side and a central double doorway on the south-east side and was also fully clad, making it difficult to ascertain whether the underlying structure formed part of the original building.

The interior of Building 1 was inaccessible but had been substantially altered to accommodate the retail units, which included shop floors, café spaces, kitchens and storage spaces.



Plate 12: North-west end elevation of Building 1, looking south-east



Plate 13: Rear, south-west elevation of Building 1, looking north-east

A low, brick-built extension butted the south-west of Building 1 and adjoined it to a modern, brown brick range which extended to the south-west for 67m (10m wide). The modern range comprised a vacant retail unit at the north-west end and open plan office space throughout the remainder of the length (Plates 14 and 15).



Plate 14: Modern office range adjacent to Building 1, along south-east side of the Site



Plate 15: Interior of modern office range adjacent to Building 1

5.3 Building 2

Building 2 was located 20m to the south-west of Building 1, on the same orientation and aligned at the north-west end. The original brick structure was the same length and height as Building 1 but slightly wider, (37.4m/122 ft long by 11.6m/38 ft wide by 3.65m/12ft high) and was butted at the south-east end by a modern extension. The building was constructed of machine-made brick laid in an English Garden Wall five stretcher bond, with a flat, felt lined, concrete slab roof. All of the external façades of the building were coated with white paint, which obscured the mortar. A lean-to projection was positioned centrally on each side of the building (51ft/15.3m long by 7½ ft /2.3m wide) which had a lower roof to the main building (8 ½ ft high/ 2.65m) with brick parapets to each end (Fig 9 and Plate 16).



Plate 16: Recent UAV photograph of Building 2 with modern extension, looking north-east

The south-west elevation represented the principal façade of the building, facing onto the roadway which branched through the Site and incorporating entrances within to the two separate units from doorways at each end of the lean-to (Plate 17). The elevation comprised three-bays on each side of the entrance lean-to, divided by brick pilasters (0.68m wide) which stopped within 0.20m of the roofline and were topped with a sloped cement moulding. The middle bay on each side comprised a vehicle entrance (10ft/3m high by 9ft/2.7m wide), fitted internally with a steel roller shutter.

The window openings on each side each measured 5ft² (1.5m²) and had a simple concrete lintel and a steel sill. The openings housed steel frame divided into five rows of three lights (fifteen in total), of which the two outer lights of the top row opened outwards in an awning style.

The central, entrance lean-to had double doors recessed within a covered porch at each end which afforded access into the two units of the subdivided building. A further

doorway was located south-east of centre in the south-west elevation of the entrance lean-to, accompanied by a nine-light window to its left.



Plate 17: Principal south-west elevation of Building 2, looking east

The flat roofed, modern brick extension (11.5m long by 9m wide by 2.65m high) butted and obscured the south-east end elevation of Building 2. It is uncertain whether the extension was linked internally to the original building as the south-east unit was inaccessible. The modern extension was constructed of brown brick, laid in a stretcher bond and comprised three large timber framed windows to each side and a central door in the south-east elevation (Plate 18).

As with the front, south-west west elevation, the rear north-east façade was divided into three bays either of a projecting lean-to. Each of the six bays comprised windows opening matching those of the other facades (5ft²/1.5m²), each of which housed a fifteen-light, steel framed window with a concrete lintel and steel sill (Plate 19).

Original openings (7ft/ 2.15m by 5.5ft/1.68m), spanned by concrete lintels, had been remodelled at both ends of the lean-to. At the south-east end the opening had been reduced to accommodate a single width doorway, spanned across the top by transom windows (Plate 20), whilst at the north-west opening had been completely infilled with brick laid in a similar English garden wall bond to the main construction (Plate 21).



Plate 18: North-east elevation of Building 2 butted by modern extension, looking west



Plate 19: Window bays within the north-east elevation of Building 2, looking west



Plate 20: Remodelled entrance at south-east end of lean-to on north-east side of Building 2, looking north-west



Plate 21: Infilled entrance at north-west end of lean-to on north-east side of Building 2, looking south-east

The north-west elevation comprised a row of three window openings spread equally across the façade. The openings housed fifteen-light steel framed windows, matching the form seen previously in Building 2 with the addition concrete lintels underlying the two outer windows (Plate 22).



Plate 22: North-west elevation of Building 2, looking south-east

Internally Building 2 had been most recently divided into two discreet business units, of which only the north-west half was vacant and accessible. Access was afforded to the unit from the south-west side of the building, by way of a double doorway recessed into the north-west end of the entrance lean-to (Plate 23). The doorway afforded access into a vestibule which led to a small storage room (4m by 2m) located solely within the lean-to. The storage room had a horizontal, steel framed window in the south-west wall and an infilled doorway in the south-east corner which previously would have led into the main building (Plate 24).



Plate 23: Entrance to north-west unit within Building 2, from south-west elevation, looking south-east

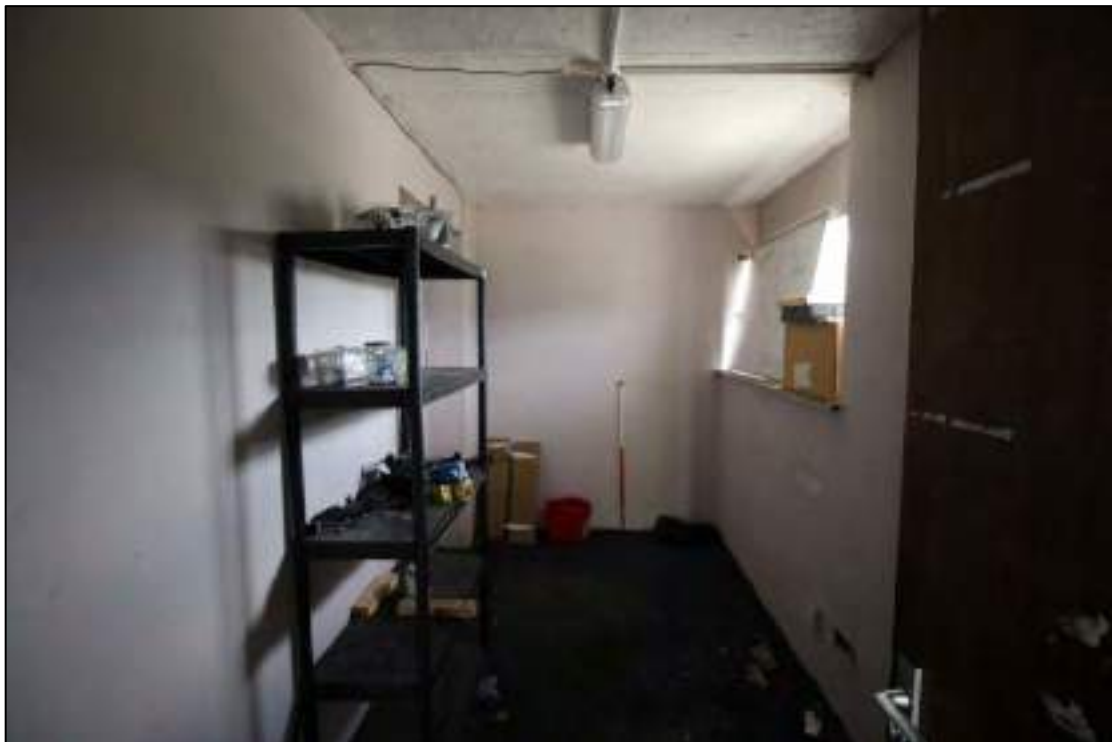


Plate 24: Storage room within south-west lean-to of Building 2, looking south-east

Access was also afforded from the lean-to vestibule into the north-west half of the main building, which had been divided from the south-east half by a cinder block wall (Plate 25) leaving an area 60ft /18.5m 36ft /11m. This space had latterly been subdivided into three rooms by timber partition walls across the width of the building (Plate 26).



Plate 25: Inserted cinder block dividing wall across the centre of Building 2, looking south-west



Plate 26: Central subdivision of north-west of Building 2, looking north-east

The ceiling comprised poured concrete bearing the imprint of timber plank shuttering and was spanned longitudinally by a pair of 12" by 4" (0.3m by 0.10m) universal steel I-beams spaced 12ft/3.65m apart. The beams bore the company rolling stamps of "DORMAN LONG & CO LD MIDDLESBOROUGH ENGLAND". The beams were carried by square, brick columns and reinforced with brackets on the underside and cross beam between the columns (Plate 27).

A travelling beam trolley for the purpose of lifting was fitted to a beam in north-west room, bearing the company name Morris and a limit of 500kg (Plate 28).



Plate 27: Interior of Building 2, spanned by steel I beams, looking south-east



Plate 28: Detail of travelling beam trolley attached to I-beam at north-west end of Building 2

As seen on the exterior façades, the side walls and north-west, end wall were each lined with a row of three window openings, each of which housed steel framed windows, with the exception of the middle bay of the south-west wall which comprised a vehicle entrance fitted with a galvanised steel roller shutter (Plate 29). Concrete lintels were visible above and below the window openings which were fitted with steel grates on the internal face (Plate 30).



Plate 29: Window openings with the north-west, end wall and vehicle entrance within the south-west wall of Building 2, looking west



Plate 30: Detail of interior of window opening, within north-west wall of Building 2, looking north-west

The interior of the rear, north-east lean-to comprised a toilet and washing facilities divided by an inserted cinder block wall, and external access via a single door within the north-east wall (Plate 31).



Plate 31: Interior of rear, north-east lean-to, looking north-west

5.4 Building 3

Building 3 was located 16m to the north-west of Building 2, on the same north-west/south-east orientation but positioned further to the north-west. Building 3 matched the dimensions of Building 2 (122 ft/37.4m by 38 ft/11.6m/ by 12ft/ 3.65m high) including similar lean-to projection on either side of the building (each 51ft/15.3m by 7½ ft/ 2.3m). In contrast to Building 2 the flat concrete slab roof incorporated a pair of ridged skylights in the centre (Fig 10 and Plate 32).

The exterior of the building was clad entirely in corrugated steel sheeting, which obscured the underlying original structure with the exception of window and door apertures. These were arranged in the same configuration as seen on Building 2, with a pair of windows flanking a central vehicle entrance either side of the central lean-to on the principal north-east façade. The window opening matched the dimensions and configuration of the fifteen-light steel framed windows within Building 2. Both the north-west and south-east end elevations comprised a row of the three windows (Plate 33 and 34) whilst the rear south-west elevations comprised a row of three windows on each side of the central rear lean-to (Plate 35).

Both units of Building 3 were occupied by businesses and were internally inaccessible.



Plate 32: North-east elevation of Building 3, looking south-west



Plate 33: North-west end elevation of Building 3, looking east



Plate 34: South-east end elevation of Building 3, looking north-west



Plate 35: Rear south-west elevation of Building 3, looking north-east

5.5 Building 4

Building 4 was orientated north-east/south-west, perpendicular to Building 3, and positioned 24m to the south-west (Fig 11 and Plate 36). Together with Building 5 it formed a pair of similar buildings located at the centre of the Site, either side of the entrance road from Bridge Road. As with Buildings 2 and 3, the rectangular core of Building 4 measured 122 ft/37.4m long by 38 ft/ 11.6m wide and 12ft/ 3.65m but in contrast only had a single lean-to which projected from the front, south-east side (50ft/15.5m by 21ft/6.5m).



Plate 36: Recent UAV photograph of centre of Site showing location of Building 3 in relation to the surrounding buildings

The majority of the external façade had been clad in corrugated steel sheeting, in a similar manner to Building 3, with the exception of a later extension to the south-east lean-to which extended the width by a further 4m (Plate 37). The extension to the lean-to comprised painted brick, laid in a stretcher bond and incorporated a row of three timber framed windows along the front, south-east elevation, accompanied by a timber-framed doorway at the south-west end (Plate 38).

The south-east elevation of the main building comprised three bays to the south-west of the lean-to, each of which contained a vertical window opening (1.8m high by 1.4m wide) which housed modern uPVC frames. A vehicle entrance was positioned in the central bay, to the north-west of the lean-to which measured 10ft/3m high by 9ft/2.7m wide and was fitted with a galvanized steel roller shutter. The window openings within

the two adjacent bays were the same size as those at the south-west end of the elevation (6ft/1.8m by 4 ½ ft /1.4m) but housed steel framed windows, of the same style, though larger than those seen on Buildings 2 and 3. These windows, and those seen around the remainder of the building, comprised steel frames divided into eighteen rectangular lights, of which the top four on each side opened outward in an awning style. Each window frame had reinforcing vertical window bars on the interior.



Plate 37: Modern extension to lean-to on front, south-east elevation, looking north-east



Plate 38: Later brick extension to south-east lean-to

Both the south-west and the north-east ends comprised a row of three eighteen-light steel framed windows (Plates 39 and 40). The rear, north-west elevation comprised three window bays, to the south-west and north-east ends, each of which housed an eighteen-light steel framed window. The central section of north-west elevation incorporated an additional 8m long area of cladding, flanked on either side by a single doorway which had been remodelled into a window (Plate 41). This suggested that a lean-to had originally been present on the rear elevation but had been latterly removed and blocked.

The building had most recently been occupied by steel fabrication company and was not accessible internally at the time of the survey.



Plate 39: Oblique view of north-east end elevation and rear, north-west elevation of Building 4



Plate 40: South-west elevation of Building 4, looking north-east



Plate 41: Rear, south-west elevation of Building 4, looking east

5.6 Building 5

The rectangular core of Building 5 matched the dimensions of Building 4 (122 ft / 37.4m long by 38 ft / 11.6m/ wide and 12ft / 3.65m high) to which it was aligned on the south-west side of the entrance road (spaced 37 ft / 11.25m apart). In contrast to its neighbour Building 5 retained narrow lean-to projections to both the front and rear elevations. Once again, the exterior was covered in corrugated steel cladding with only the window and door openings exposed (Fig 12 and Plate 42)

The front, south-east elevation faced toward Bridge Road and comprised three bays to each side of the lean-to. A vehicle entrance, fitted with a galvanized steel roller shutter occupied the middle bay on each side (10ft/3m high by 9ft/2.7m wide), which were flanked on either side by vertical, rectangular windows (6ft/1.8m by 4 ½ ft / 1.4m) which housed eighteen-light, steel framed windows, matching those on Building 4.

Recessed double doorways located at each end of the steel-clad lean-to afforded internal access to the building. A series of four small, square windows were arranged along the south-east façade of the lean-to at varying heights.

The remainder of the building largely mirrored that of Building 4, with three steel-framed, eighteen-light windows positioned at each end of the building (Plate 43). Likewise, the rear north-west elevation comprised a row of three 18-light windows on either side of the central lean-to which was still present on Building 5.



Plate 42: Oblique view of front, south-east elevation of Building 5, looking north



Plate: 43: North-east end elevation of Building 5, looking south

Internally the body of Building 5 was largely open plan, divided only by a brick wall running through the centre of the building from front to back and temporary modern partitions. Access was afforded between the two sides by an open, double width doorway in the centre (Plate 44). The full length of the building was spanned by a pair of 12" by 4" (0.3m by 0.10m) universal steel I-beams similar to those seen in Building 2. These were carried by a series of vertical I-beam columns, interspersed with brick columns. The lengths of ceiling beam joined to the vertical steel columns by riveted steel brackets and were stamped with the company name of Dorman Long (Plate 45). The ceiling comprised a concrete slab and incorporated a pair of ridged rectangular skylights positioned either side of the centre wall and fluorescent electric lighting (Plate 46).



Plate 44: Interior of Building 5, looking north-east towards the centre wall



Plate 45: Detail of junctions between ceiling beams and columns, in north-east end of Building 5, looking south-east

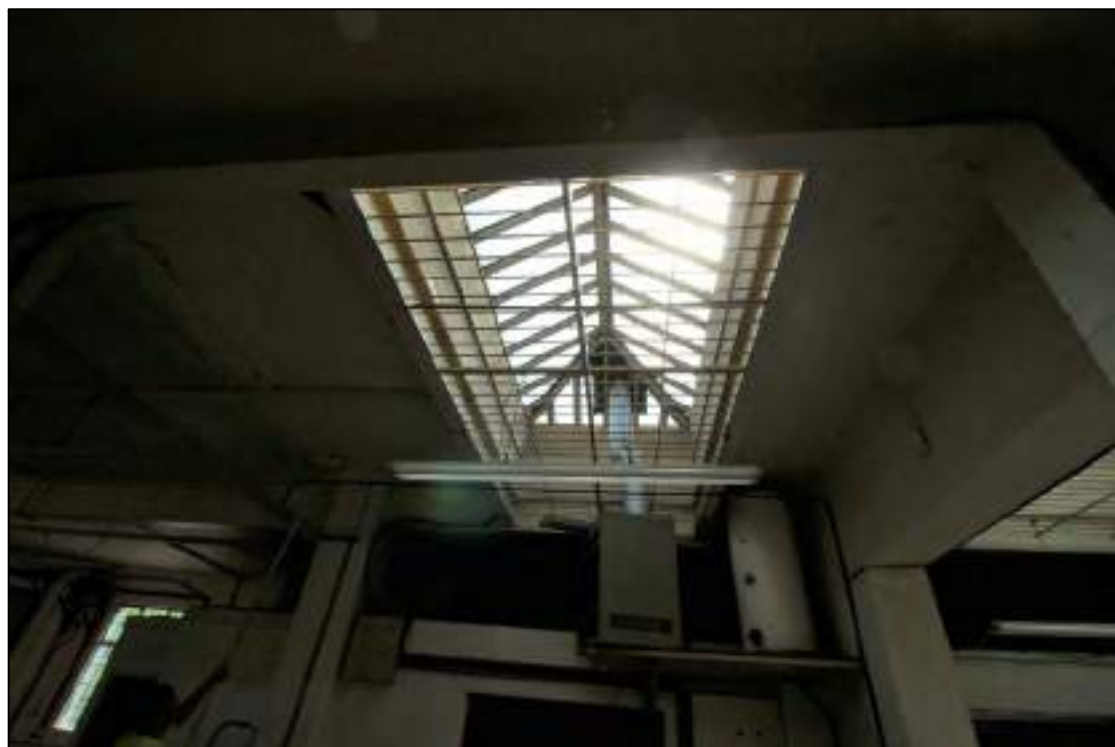


Plate 46: Ridged skylight adjacent to centre wall within ceiling of Building 5

As seen externally, the outer walls were lined with vertical rectangular windows, which housed eighteen-light steel framed window frames. Both end walls comprised a row of the three window bays, divided by projecting brick buttresses which carried the ceiling beams (Plate 47). Three window bays were located on either side of the lean-to area at each end of the rear north-west wall. Within the front south-east wall, a vehicle entrance was located in the middle bay at each end, between two window bays.

A hanger clamp, fitted with a lifting hook, was attached to one of the ceiling beams, aligned with the south-west vehicle entrance, suggesting a possible loading position (Plate 48).



Plate 47: Windows within south-west end of Building 5, looking south-west



Plate 48: Vehicle entrance at south-west end of front, south-east wall with hanger clamp attached to ceiling beam, looking south-east

Although the interior of the front lean-to had been modified to provide the current access into the building, the rear lean-to remained largely undeveloped as a through passage, with a double doorway located at the south-west end (Plate 49) and an entrance infilled with cinder block at the north-west end (Plate 50). A single, central doorway with chamfered reveals, which previously afforded access from the lean-to into the main building had been blocked, leaving one larger internal entrance to the north-west.



Plate 49: Interior of rear lean-to, looking south-west towards double doorway



Plate 50: Interior of rear lean-to looking north-east towards infilled entrance

5.7 Building 6

Building 6 faced Buildings 5 and 7 across the north-east/south-west access road through the Site. The building was orientated south-west/north-east, parallel to Building 5 and Bridge Road (Fig 13). The form of the building was distinct from the others present on the Site, being rectangular in plan with no side lean-tos, and smaller in size (78ft/23.77m long by 27ft /8.26m/ wide by 3.15m/10 ft high). Building 6 was constructed of machine-made brick laid in a five stretcher English Garden Wall bond, with all the external elevations painted white. The concrete roof was flat and felted, with brick parapets rising at each end (c.0.40m high).

The north-west elevation represented the principal façade of Building 6, with three entrances arrayed along its length (Plate 51). A double doorway was recessed into a porch area at the north-east end of the elevation. The porch opening (7ft/ 2.1m by 5ft/1.5m) had a concrete beam lintel and was fitted with steel framed outer gates. The inner double doorway had been refitted with a uPVC doorframe. A vehicle entrance was located to the immediate south-west of the porch and doorway between brick pilasters. The larger entrance measured 8ft / 2.5m high by 7ft/ 2.1m and was spanned by a recessed, flat concrete lintel which extended to the roofline. The entrance was fitted with a galvanized steel roller shutter on the internal face.

Three equally spaced window openings (13ft / 4m apart) were located within the elevation to the south-west. The original apertures in the brickwork measured 6ft/1.8m by 4 ½ ft/ 1.4m but had all been reduced in size to accommodate shorter, modern uPVC, four-light window frames.

A double doorway recessed within a porch was located at the far south-west end of the elevation, mirroring the doorway present at the north-east end.



Plate 51: Front, north-west elevation of Building 6, looking south-east across access road

Both openings within the south-west elevation looked to have been remodelled. A horizontal window opening located within the centre of the end wall had been reduced in width. The aperture had a 2.25m wide concrete lintel which spanned a 1.4m wide window aperture (0.90m high), with the full original width infilled on either side with newer brick. The remodelled opening housed an eight-light steel framed window with an asymmetric double height light on the lower south-east side (Plate 52).

A single width (0.80m) doorway was positioned to the south-west of the window, spanned by a concrete lintel beam and infilled with brick.



Plate 52: Remodelled openings with south-west elevation of Building 6

The rear, south-east elevation of Building 6 comprised three, vertical window openings positioned in alternating bays to those on the front, north-west façade. The windows extended to the roofline and retained the tall, eighteen-light steel window frames as seen on Buildings 3, 4, 5 and 7 (Plate 53).

A concrete lintel positioned toward to the north-east end of the elevation, beside the north-easternmost window, suggested the previous location of another brick-infilled single doorway.

The north-east end elevation was plain with the exception of a concrete lintel located in the upper south-east corner (0.90m wide). Junction lines in the coursing below the lintel suggested that a square opening (c. 0.50m²) had been latterly infilled with brick (Plate 54).



Plate 53: Rear, south-east elevation of Building 6, looking north-west from verge of Bridge Road



Plate 54: North-east elevation of Building 6

The interior of Building 6 was open plan, with the exception a timber partition wall at the north-east end and an inserted toilet room and entrance foyer at the far south-west end. The steel ceiling beams were arranged across the width of the building in contrast to the arrangement of the other buildings on the Site, where the beams spanned their length. A series of eight 12" by 4" (0.3m by 0.10m) universal steel I-beam spanned the building from north-west to south-east, spaced 8ft/ 2.5m apart, bearing the rolling stamp name of Dorman and Long Co. Ltd. The beams were carried by brick buttresses (0.44m by 0.23m) which projected from the side walls, either side of the window bays. The buttresses had square corners at the top but transitioned to rounded corners, utilising bullnosed bricks, at head height (Plate 55).

Within the north-west wall window bays were positioned in the 2nd, 4th and 6th bays from the south-west end with the vehicle entrance and the double doorway located in the 8th and 9th bay respectively. All three of the windows had been refitted with modern uPVC window frames which were c. 0.35m shorter than the original brick aperture (Plate 56)

Within the rear south-east wall, window openings were positioned within the 3rd, 5th and 7th bays from the south-west end and thus not in alignment with those on the opposite north-west wall. All three of the windows within the rear wall retained original eighteen-light, steel-framed windows which were all enclosed by steel grates affixed to the interior window reveals (Plate 57).



Plate 55: Interior of Building 6, looking south-west toward modern partition wall



Plate 56: Remodelled windows with the front, north-west wall, looking north-west



Plate 57: Tall, steel framed window within rear, south-east wall

5.8 Building 7

Building 7 was located on the south-west side of the Site and mirrored the position, in relation to the central access road, as Building 3 on the north-east side. As with Building 3, Building 7 was orientated north-west/south-east, perpendicular to its nearest neighbour, Building 5 (Fig 14 and Plate 58). Building 7 also matched the dimensions of Building 3, measuring 122 ft /37.4m long by 38 ft/ 11.6m wide and 12ft / 3.65m/ high with lean-to projections to each side.



Plate 58: Recent UAV view of south-west site of the Site with buildings indicated, looking south-west

The south-west elevation of Building 7 functioned as the principal façade, facing onto the roadway which branched through the Site (Plate 59).

Although the white painted brickwork was largely exposed across the building, the north-west end had been clad in corrugated steel sheeting, which extended to the lean-to on the south-west elevation and encompassed a vehicle entrance at the north-west end. Access was afforded to the interior of the building by double doorway, recessed within covered porches at each end of the lean-to. A single doorway was located in the centre of the south-west elevation of the lean-to, accompanied either side in the upper section of the wall by a small, square four-light window.

The exposed south-east end of the elevation was divided into three bays, separated by brick pilasters, with a window opening to each bay (Plate 60). The concrete lintels above the windows of Building 7 were distinct from those seen across the rest of the Site, bearing the extra embellishment of a keystone moulding in the centre of each lintel. Each vertical window opening (6ft/1.8m by 4 1/2 ft 1.4m) housed an eighteen-light steel framed window with the upper four lights to each side opening outward in an awning style.



Plate 59: Oblique view of front, south-west elevation of Building 7, looking east



Plate 60: South-east windows bays of south-west elevation of Building 7, looking north

The south-east end elevation comprised two further such windows, accompanied by a vehicle entrance on the north-east side which was served by a ramp from the service road (Plate 61).

The rear north-east elevation followed the standard form of three window bays either side of the central lean-to (Plate 62). The embellished lintel design seen on the previous elevations continued to the rear façade and housed the same style of steel framed window. The doors within the rear lean-to had been remodelled at both ends, with outer doors fitted to enclose the porch area at the south-east end and the reduction in width of the doorway at the north-west to accommodate a single doorway within the porch (Plate 63)

Access to the interior of Building 7 was heavily restricted due its ongoing occupation by a sensitive business, however, a pair of steel I-beams were visible running longitudinally through the building, carried by alternating steel and brick columns, as seen throughout the Site (Plate 64).



Plate 61: South-east elevation of Building 7, looking north-west



Plate 62: Rear north-east elevation of Building 7, looking west



Plate 63: Remodelled doorway within porch at north-west end of rear, north-east lean-to



Plate 64: Interior of north-west end of Building 7, looking north-east through vehicle entrance

5.9 Building 8

Building 8 was located within the south-west side of the Site, and faced Buildings 6 and 7 across the bend of the service road. Its position, in relation to the centre of the Site, and its north-west/south-east orientation mirrored that of Building 2 in the north-east half of the Site (Fig 15). The overall dimensions also matched Building 2, with the rectangular core measuring 122 ft /37.4m long by 38 ft/11.6m wide and the presence of lean-to projections on either side (51ft/ 15.3m long by 7½ ft/ 2.3m wide). The single storey brick building had a flat, concrete roof which was 12ft high/ 3.65m with the flat, lean-to roof level extending to 8 ½ ft /2.65m high, with brick parapets to each end (Plate 65).

The building had been latterly divided into two separate business units to which access was afforded to the south-east side from the north-east elevation, and to the north-west unit from the south-west elevation. A Double door opening (1.65m wide), below a wide, concrete lintel, was positioned south-east of centre within the north-east elevation of the lean-to and afforded access to the south-east unit in Building 8. North-west of centre, a single doorway with transom window above, afforded rear access to the north-west unit.

The north-east elevation, which faced into the Site, followed the standard form of three bays on each side of the central lean-to. The bays were divided by brick pilasters (0.68m wide) with sloped cement mouldings to the roofline at the top.

The windows at the south-east end, including three within the south-east end elevation (Plate 66) comprised plain rectangular concrete lintels, mounted flush with the wall. The window openings across all the elevations housed eighteen-light steel framed windows, of which the top outer lights opened outwards in an awning style.

An original entrance (6 ½ ft /2m high by 5.5ft /1.7m wide), spanned by a concrete beam lintel, was located within the south-east end of the north-easts lean-to. This had been infilled with brick approximately matching the coursing of the lean-to and was partially tied into the surrounding brickwork (Plate 66). A similar former entrance, located at the north-west end of the lean-to, was obscured by foliage but looked to have been blocked in the same way.



Plate 65: North-east elevation of Building 8, looking south-west across bend of service road



Plate 66: South-east elevation and south-east end of north-east elevation, looking west

To the north-west of the lean-to and across the remaining north-west and south-west elevations, the window openings comprised raised, flat-arched concrete lintels with central keystone embellishments, similar to those seen on Building 7 and 9 (Plate 67).

The north-west end elevation comprised a row of three such embellished windows which housed the steel framed windows, all of which were fitted with an external steel grate (Plate 68).

The south-west elevation functioned as the main access into the north-west unit and comprised a vehicle entrance positioned between a pair of brick pilasters, with embellished windows on either side. A further double doorway, recessed within a porch at the north-west end of the lean-to afforded pedestrian access the building (Plate 69).



Plate 67: North-west end of north-east elevation of Building 8, looking south



Plate 68: North-west elevation of Building 8, with examples of embellished lintels, looking south-east



Plate 69: Vehicle entrance at north-west end of south-west elevation, looking east

Access to the occupied north-west half was limited however, it appeared to match the layout of previous buildings including the presence of the steel framework which was carried by alternating steel and brick columns (Plate 70). A rectangular, ridged skylight was located within the ceiling, adjacent to the inserted cinder block centre dividing wall (Plate 71).



Plate 69: Interior of north-west half of Building 8, looking north-west



Plate 70: Interior of north-west half of Building 8, looking south-east toward centre division and skylight

The north-west/south-east alignment of two steel I-beams continued through the length of the building to the south-east half of the building, carried by alternating brick and steel columns (Plate 71). The longitudinal beams were bolted to the vertical steel beams with angle brackets and were reinforced by a cross beam at the south-east end in a similar manner (Plate 72). Further crossbeams braced the longitudinal beams below the rectangular, ridged skylight (3.45m by 1.50m) located adjacent to the central partition which mirrored the skylight in the north-west half of the building (Plate 73).



Plate 71: South-east half of Building 8, looking north-west toward cinder block partition wall



Plate 72: Detail of bolted angle brackets between steel columns and beams



Plate 73: Detail of ridged skylight and surrounding beams, adjacent to centre wall

A vehicle entrance, fitted internally with a galvanized steel roller shutter, was positioned within the south-east end of the south-west wall, between two window bays. Three further window bays were located within the end south-east end, adjacent to three within the south-east end of the north-east wall (Plate 74).

Although still largely open in plan, the south-east half of Building 8 had been remodelled somewhat with the addition of a series of rooms along the north-east side, contained within a rectangular cinder block structure (11.70m by 3.90m). The inserted internal rooms had a low ceiling (2.65m) which left a gap above to the main roof and the ceiling beams.

The interior of the south-west lean-to in the south-east half of Building 8 had been remodelled to accommodate toilet and kitchen facilities whilst the south-east lean-to had been repurposed as offices.



Plate 74: Interior of south-east half of Building 8, looking south-east

5.10 Building 9

Building 9 was orientated north-west/south-east along the far, south-east boundary of the Site (Fig 16 and Plate 75) and measured 122 ft/37.4m by 31ft/9m. The building had a flat concrete roof which was noticeably taller than the other buildings within the site, measuring 13ft/3.96m high.



Plate 75: Recent UAV photograph of Building 9 (indicated) at south-west boundary of Site, looking south-west

The rear south-west elevation and rear lean-to (28ft/ 8.5m by 15ft/4.5m) were largely inaccessible due to their proximity to the boundary, however, it was evident that an original entrance within the south-east end of the lean-to, delineated by a concrete lintel, had been reduced in stages and eventually fully blocked with modern brick (Plate 76).

Two vehicle entrances were located within the south-east end elevation and comprised a slightly smaller opening on the left side (2.6m high by 2.5m wide) which housed timber panelled folding doors, and a slightly larger opening to the right (2.8m high by 3m wide), fitted externally with a galvanized steel roller shutter. The openings appeared to be original to the building rather than later insertions, with no obvious disturbance to the surrounding brick courses (Plate 77).



Plate 76: Blocked opening in south-east end of rear lean-to, looking north-west along rear south-west elevation



Plate 77: Vehicle entrances in south-east elevation of Building 9

The north-west elevation faced into the Site and functioned as the principal façade of Building 9, in use as a car repair garage (Plate 78). The elevation was divided into twelve bays, each of which comprised either a window or door opening. A group of three window openings were located at the south-east end of the elevation. Whilst the end pair had plain rectangular concrete lintels, the third opening comprised a flat arched lintel embellished with a central keystone moulding, which was repeated across all the subsequent openings on the façade, with the exception of the taller vehicle entrances. The three window openings housed twelve-light steel framed windows (4ft /1.2m high by 5ft /1.5m wide), of which the top, outer two lights opened outwards in an awning style. The central section of the elevation comprised two central vehicle entrances (each 9ft² /2.8m²), flanked on either side by two single doorway, each with transom and side windows.

The north-west end section comprised twelve-light steel framed windows in the tenth and eleventh bays and a final vehicle entrance to the end bay (Plate 79).

The north-east end elevation comprised a central twelve-light steel framed window, with a simple concrete lintel, accompanied by a larger doorway (2.5 high by 2.4m wide) fitted with a galvanized steel roller shutter.



Plate 78: Front north-east elevation of Building 9, looking west



Plate 79: North-west end of north-east elevation of Building 9, looking south



Plate 80: North-west elevation of Building 9, looking south-east

The interior of Building 9 had been significantly remodelled and subdivided internally to accommodate garage workshop space. This included the insertion of cinder block partition walls along the line of the supporting columns on the long axis of the building

(Plate 81). Sections of the steel I-beam structure were visible spanning the central garage bay between two such brick columns, latterly incorporated into the internal walls (Plate 82).



Plate 81: Interior of garage workshop at south-east end of Building 9, looking north-west

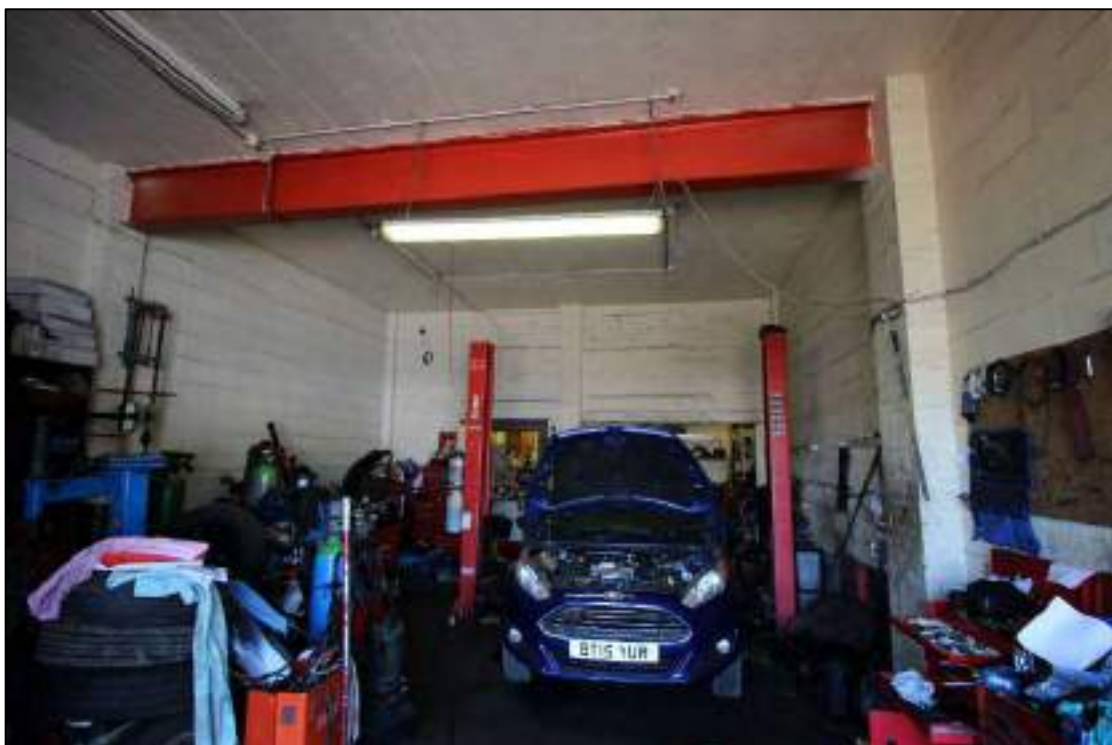


Plate 82: Interior of garage workshop in centre of Building 9, looking south-west

6. Discussion

6.1 Introduction

The series of nine surviving, single storey, brick buildings located at The Bridgeway Centre had their origins in the establishment of the Royal Ordnance Factory Marchwiel which began production of propellants, including Cordite, in March 1941 to aid the British war effort of the Second World War. Following their closure in 1946 the works, including buildings within the Site were decommissioned and stripped of the war time functions. Following the repurposing of the wider site as an industrial estate, the buildings within the Site remain amongst the last surviving remnants of munitions works.

The extant buildings of the ROF Marchwiel within the Site were surrounded by modern business units and had in some cases been extended and adapted for modern use (Plate 83). Despite this, many of the original structural and cosmetic features from the 1940/1 construction remained intact. All the buildings comprised a standard structural form of a steel framed building with brick infill, incorporating steel framed windows and roofed with a flat concrete slab. The steel structure of each of the building comprised 12" by 4" (0.3m by 0.10m) universal steel I-beams manufactured by steel manufacturers Dorman Long & Co of Middleborough, who had been responsible for building the Sydney Harbour Bridge in the 1920s and the second largest bridge in the world in 1937, which still stands in Denmark.

Despite the similarities in construction across all the buildings some variation was noted with regards to their size and plan, notwithstanding later remodelling. Three general styles of building were noted within the broadly symmetrical site, arranged either side of a central service road, which branched into the site from Bridge Road, a newly created artery through the ROF site.

6.2 Building Type summary

Group 1- Buildings 2,3,4,5,7 and 8

Six of the nine surviving buildings concentrated in the central area of the Site shared the same basic size and form as each other. These included Buildings 2, 3 and 4 (labelled 28/231a, b and c on the Ministry of Supply plan) to the north-east of the central access road and 5, 7 and 8 on the south-west side (labelled 28/131a, b and c). Buildings 4 and 5 were orientated north-east/south-west, aligned each side of the central access road which branched across the site in front of them. Buildings 3 and 7 were positioned perpendicular to them on the outer side forming a crescent. Buildings 2 and 8 were also orientated north-west/south-east, positioned symmetrically to either side of 3 and 7, though closer to Bridge Road.

Each of the buildings of this type measured 37.4m/122 ft long by 11.6m/38 ft wide and were 3.65m/12ft high, with a flat concrete roof. They also typically comprised lean-tos which projected from the centre of each long elevation. These measured 15.3m/51ft long by 2.3m/7½ ft wide and had a lower roof than the main building (2.65m/ 8 ½ ft

high) with brick parapets to each end. Access to the lean-tos and ultimately to the main building looked to originally been afforded by double doors, which were recessed within a covered porch at each end of the lean-tos, though many of these had been altered or completely infilled in later years.

The structures did not look to have been significantly altered externally from their original form, with the exception of a modern extension to Building 2 and the steel cladding which covered Buildings 2 and 3 and part of Building 7. Within this group Building 4 looked externally to have undergone the greatest alteration with the complete removal of the rear lean-to and an extension of the front lean-to.

The elevations either side of the central lean-tos were divided into three bays, with each of the end elevations comprising three bays also. Typically, the principal elevation, which faced the Site roadway, comprised two vehicle entrances (3m high by 2.7m wide), positioned in the central bay, either side of the lean-to. These looked to be original to the building, rather than later insertions. Buildings 4, 7 and 8 did display some variation of this arrangement with only one vehicle entrance present on the north-east side of Building 4 and on the north-west east side of the south-west façade of Building 7 and 8 and an additional entrance within the south-east end of elevation of Building 7.

The remaining bays across the facades comprised window openings which housed original steel framed windows, typically measuring 1.8m high by 1.4m wide and divided into eighteen lights, of which the outer top four lights opened outward in an awning style. The steel-framed windows with Buildings 2 and 3 matched the overall style as seen across the other buildings but were smaller (1.5m²/ 5ft²) and divided into fifteen lights.

The window openings were spanned by concrete lintels which were obscured externally on the three, steel-clad buildings. Of the remaining buildings the windows of Building 2 were spanned by plain rectangular concrete lintels whilst Building 7 and 8 comprised more elaborate flat arched concrete lintels with a keystone moulding at the centre.

Internally, all the buildings appeared to have been open plan originally, spanned by a pair of steel universal I-beams along the longitudinal axis and spaced 3.65m/12ft apart, which were supported by alternating steel and brick columns. The majority of the buildings of this style, with the exception of Building 2,3 and 7 had a pair of ridged skylights positioned with the centre of the ceiling, with just a single skylight within Building 7 and none with 2 and 3. The lean-tos, where unaltered appeared to function as through passages affording indirect access to the main body of the building.

Group 2- Buildings 1 and 9

The second group included Buildings 1 and 9 at the far north-east and south-west edges of the Site and represented the building that had been remodelled the most from their original forms. Building 1 had been labelled 28/226 on the Ministry of Supply plan and Building 9 labelled 28/126 had been extensively refitted to accommodate retail units whilst Building 9 had been subdivided to house garage workshops. Both buildings matched the length of the main group of building but were slightly narrower (9.5m

wide), and had shorter lean-to (8.5m by 4.5m) projecting just from the rear south-west elevations and not the front. The front elevation of Building 1 had been entirely remodelled so it is not known whether it also originally comprised two central vehicle entrances flanked by a number of doors like those seen on Building 9. Likewise, the window lintels on Building 1 were either no longer present or covered so could not be compared to the embellished flat arch lintels of Building 9.

Group 3- Building 6

Building 6 represented the sole remaining example of the third style building within the site (28/129A). Building 6 was the smallest of the structures (23.77m/78ft long by 8.26m/27ft wide by 3.15m/10 ft high) with double doors to each end of the front, north-west elevation and no attached lean-tos. The internal steel frame was also arranged laterally across the building in contrast to the longitudinal framework of the other building. The Ministry of Supply plan and Ordnance Survey map of 1961 shows Building 6 to have been one of four of this style of building originally positioned on each side of the site entrance.

6.3 Discussion

There are no firm indications as to the function of any of these three types of buildings within the Site. The close proximity of all buildings suggests that they were not used for the direct manufacture of volatile substances. They also lacked the distinctive protective earth bunds surrounding them like the larger units, which were originally were located to the west and south and across Bridge Road.

The buildings appeared to be arranged to allow for adequate access to the roadway that branched through the Site from Bridge Road, with many of the building comprising at least one if not more large vehicle entrances from the road. ROF Marchwiell had its own internal railway system to transport materials around the wider site which was powered by diesel engine to limit the chance of sparks igniting the hazardous substances. The high proportion of vehicle entrances and the proximity of the Site to the main arterial route of Bridge Road may suggest that the various buildings functioned as storage and loading points for the conveyance of the products by road or for receiving non-hazardous materials for distribution within the works. This is reinforced by the presence of trolley cranes and lifting hooks attached to the steel beams within two of the buildings.

Although ROF Marchwiell was connected to the Wrexham and Ellesmere Railway mainline through sidings at the north of the works there are also records of the finished propellants leaving the site by road. An interview carried out in 1986 by the Wrexham Museum Research Office with Mr J Clarke, a former Transport worker at Marchwiell, records some of the procedures for the shipment of liquid nitro-glycerine by road. The liquid nitro was transported in jerry cans which were padded with straw and packed according to regulations of the Explosive Act. This meant only two tons could be packed on the 18/20-ton lorries that were used which left in convoys of 8-10 vehicle spaced at a regulation distance of 70 yards apart with a pilot vehicle ahead and a motorcycle rider behind. In the case of an accident the leader could call upon the Army, Navy, RAF or police for assistance.

The work undertaken at the site was considered 'front line duty', a phrase included on the ROF uniform badge, and the workers employed at the Royal Ordnance Factories were covered by the Official Secrets Act. Furthermore, it is believed that the bulk of the documentary material for ROF Marchwiel was destroyed shortly in the late 1940s after the site was decommissioned and effectively stripped of all distinguishing features. This has unfortunately resulted in a limited avenues for research into the function of the remaining buildings with the Site. The investigation has however, provided an invaluable opportunity to record some of the last remaining buildings from a vital wartime site in Wrexham.



Plate 83: Recent orthographic photograph modern extensions to building within the Site

8. Sources

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Acknowledgements

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The building survey was carried out by Steve Tamburello who also compiled the report. The illustrations were produced by Richard Ker. The report was edited by Lewis Stitt, who was also responsible for project management.

Appendix 1: Figures

- Figure 1: Site location map
- Figure 2: Site boundary superimposed onto the Ordnance Survey of 1879
- Figure 3: Site boundary superimposed onto the Ordnance Survey map of 1938
- Figure 4: Site boundary superimposed onto the Ordnance Survey map of 1961
- Figure 5: Site boundary superimposed onto the Ordnance Survey map of 1985
- Figure 6: Site Boundary superimposed on modern map
- Figure 7: Exterior plate photograph number locations/directions

- Figure 8: Elevations and plan of Building 1
- Figure 9: Elevations and plan of Building 2
- Figure 10: Elevations and plan of Building 3
- Figure 11: Elevations and plan of Building 4
- Figure 12: Elevations and plan of Building 5
- Figure 13: Elevations and plan of Building 6
- Figure 14: Elevations and plan of Building 7
- Figure 15: Elevations and plan of Building 8
- Figure 16: Elevations and plan of Building 9



The Bridgeway Centre, Wrexham Industrial Estate,
Wrexham

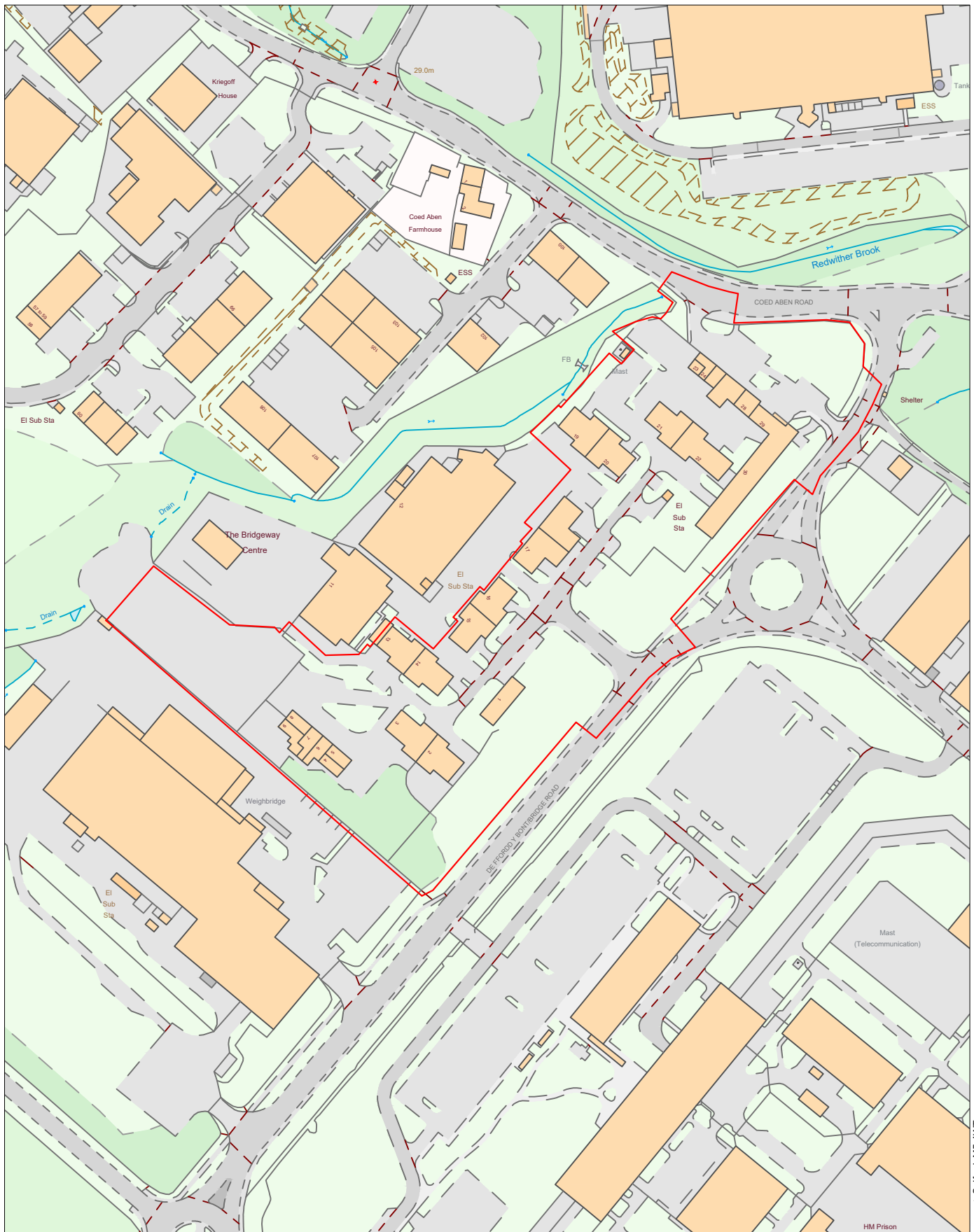
Figure 1 : Site Location



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Site location

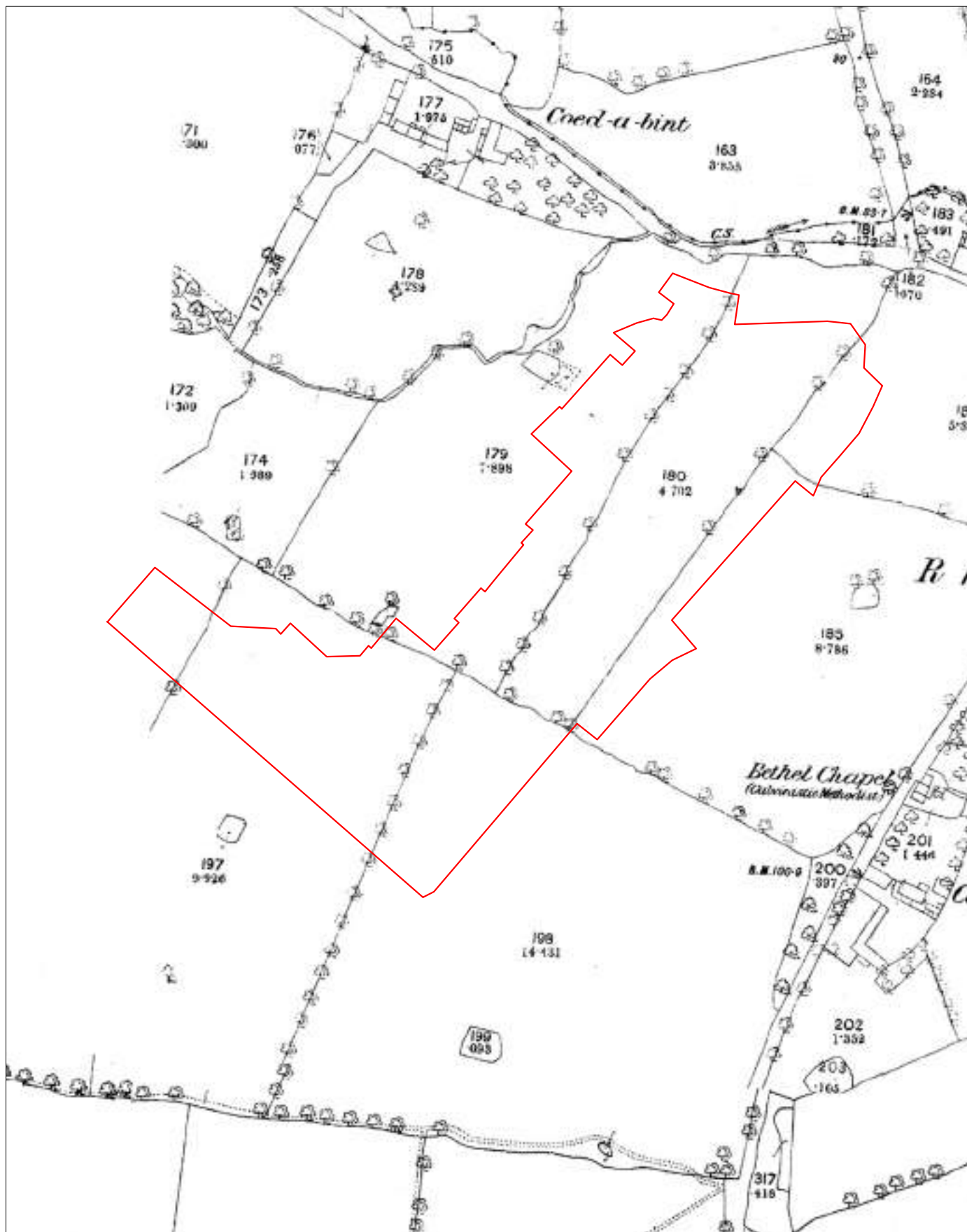


The Bridgeway Centre, Wrexham Industrial Estate, Wrexham

Figure 2: Site boundary superimposed on modern map

Key:

Site boundary



The Bridgeway Centre, Wrexham Industrial Estate, Wrexham

Figure 3: Site boundary superimposed on Ordnance Survey map of 1879



Key:

Site boundary

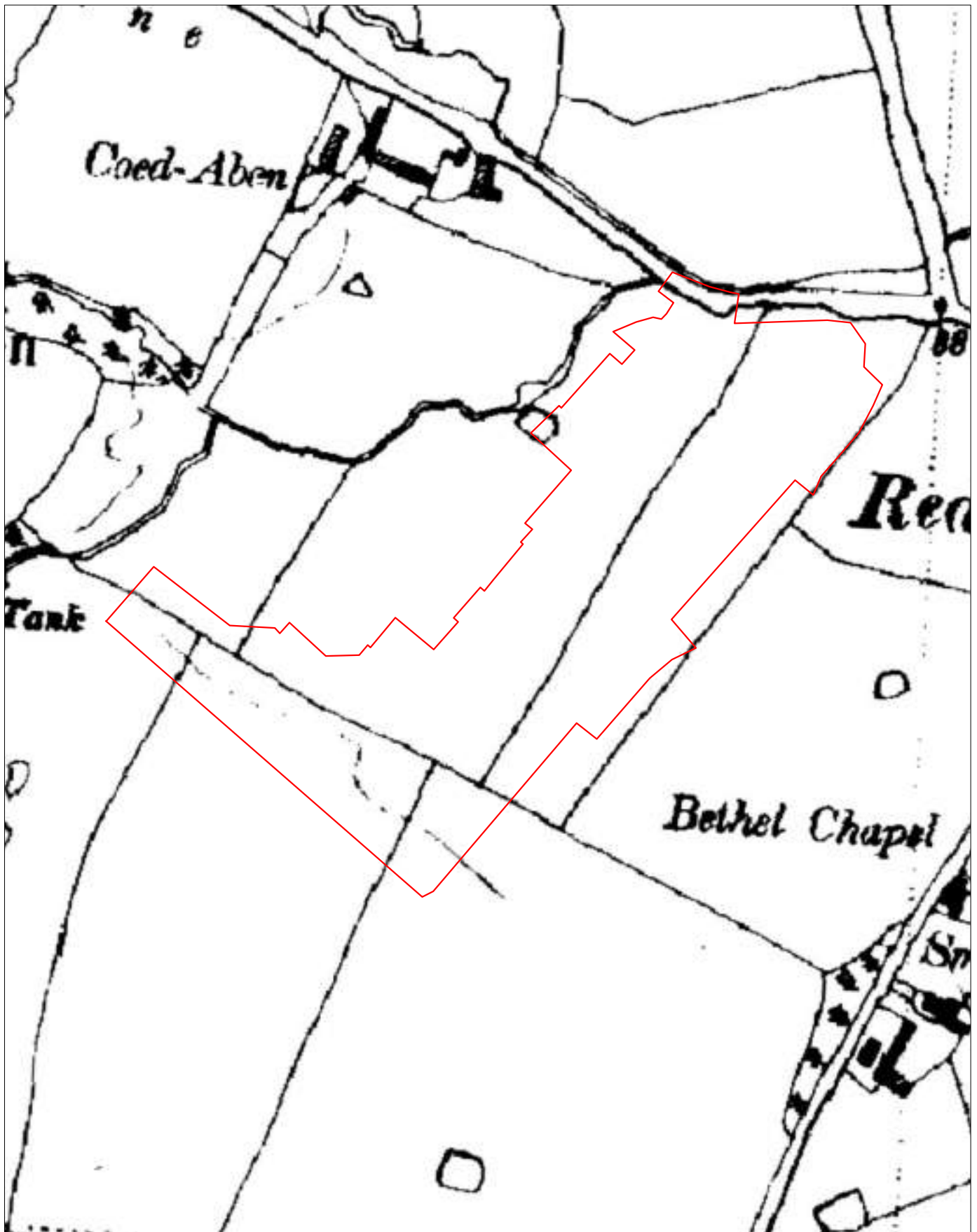


**SALFORD
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Scale at A4 1:2500



The Bridgeway Centre, Wrexham Industrial Estate, Wrexham

Figure 4: Site boundary superimposed on Ordnance Survey map of 1938



Key:

Site boundary

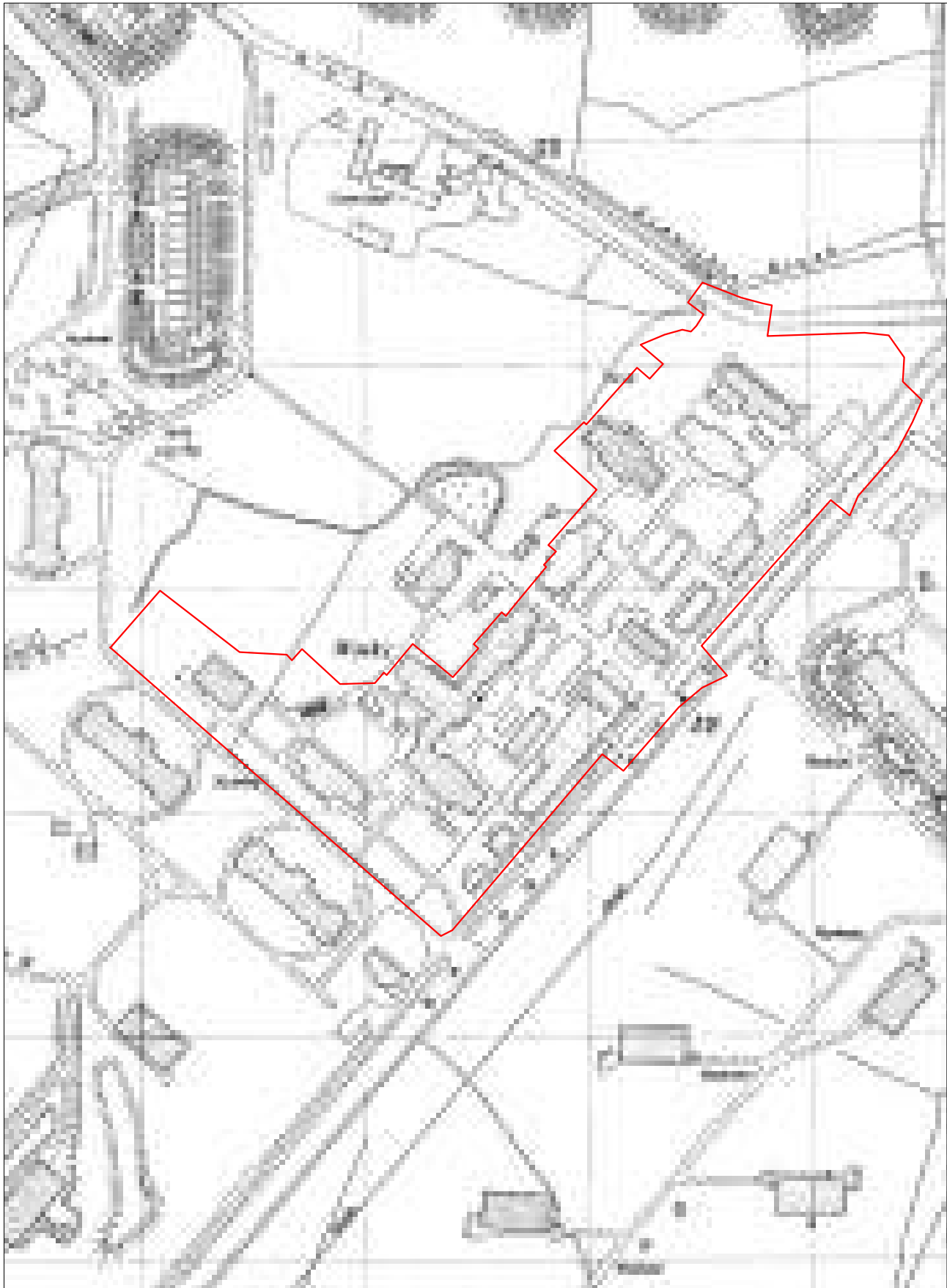


**SALFORD
ARCHAEOLOGY**

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Scale at A4 1:2500



The Bridgeway Centre, Wrexham Industrial Estate, Wrexham

Figure 5: Site boundary superimposed on Ordnance Survey map of 1961



Key:

Site boundary

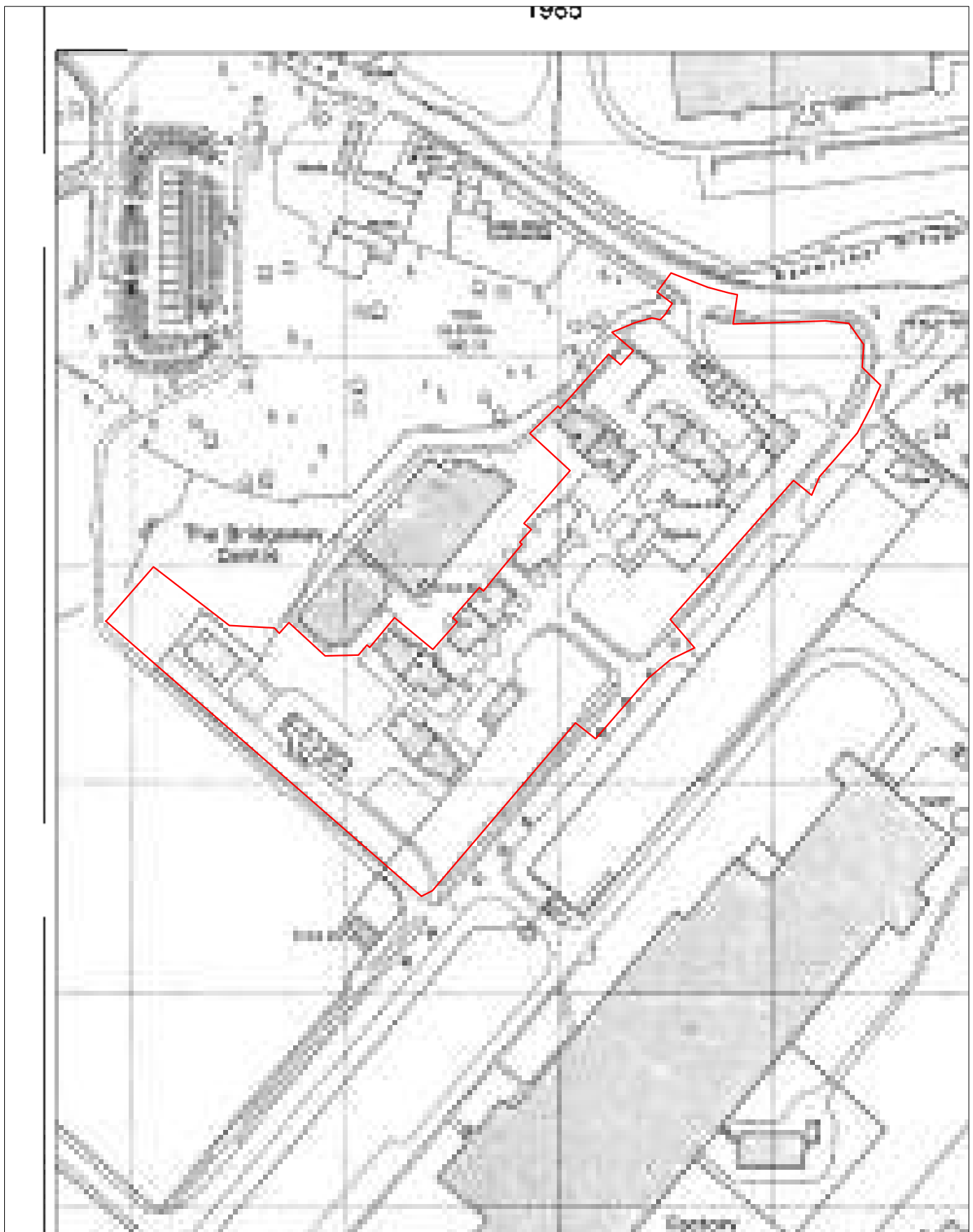


**SALFORD
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The Bridgeway Centre, Wrexham Industrial Estate, Wrexham

Figure 6: Site boundary superimposed on Ordnance Survey map of 1985



Key:

Site boundary

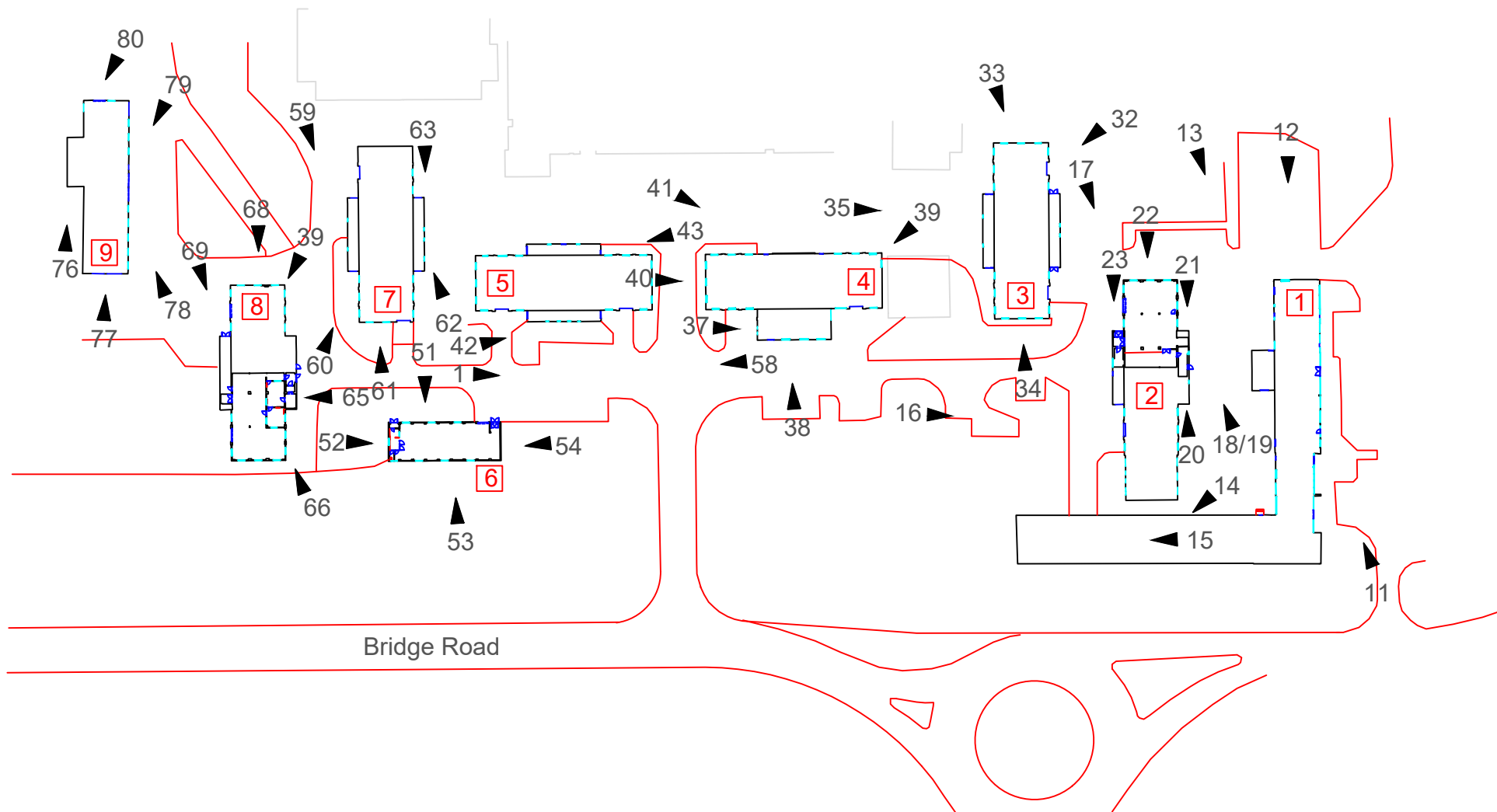


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The Bridgeway Centre, Wrexham Industrial Estate, Wrexham

Figure 7: Exterior photograph plate number locations

Key:

1 Building no. in report

16 Plate no and photograph direction



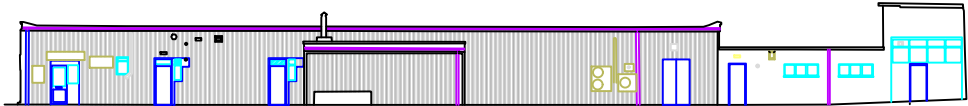
**SALFORD
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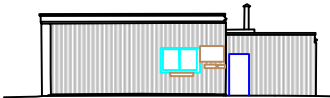
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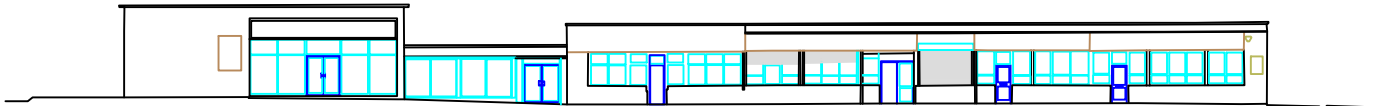
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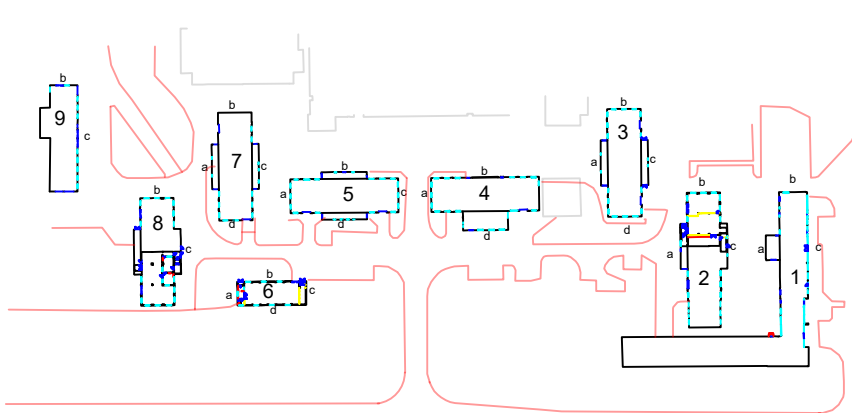


Plan

b

a

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Key:

Elevations

2

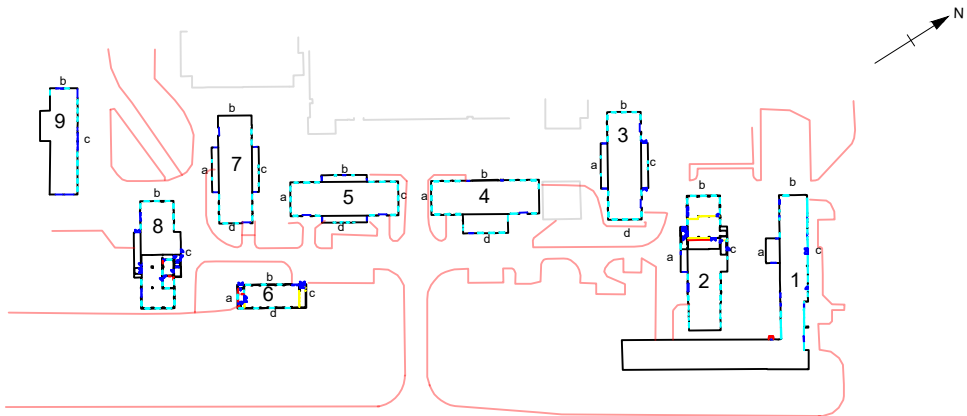
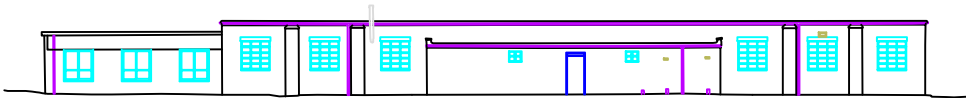
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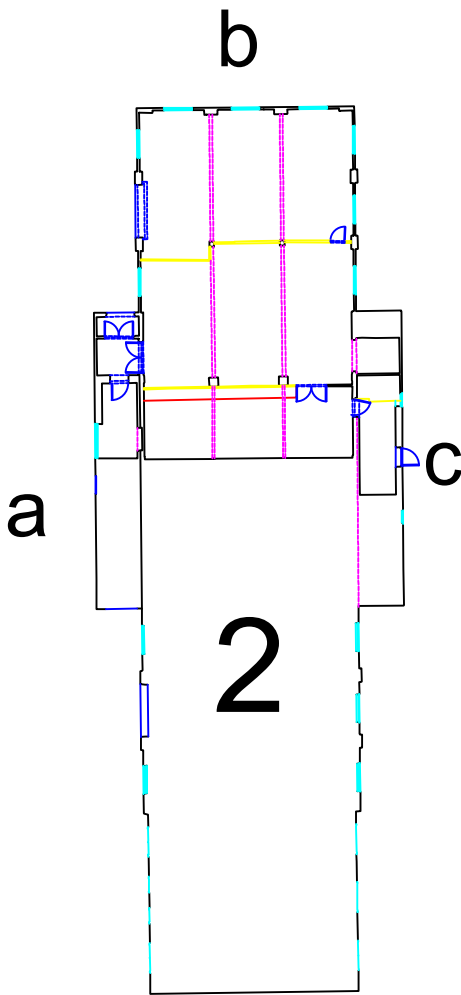
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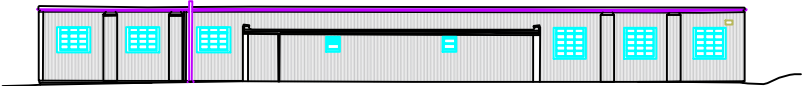
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Elevations

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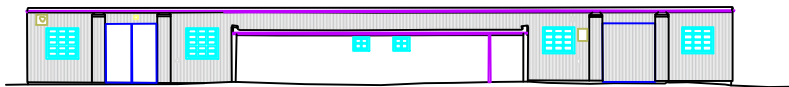
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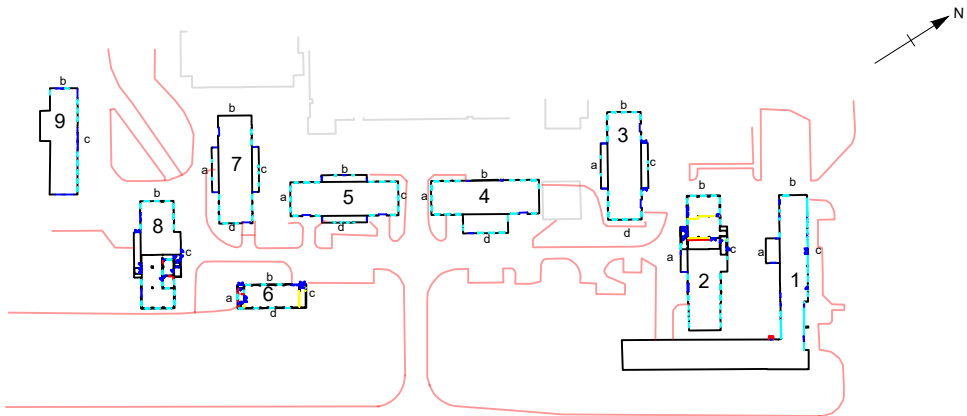
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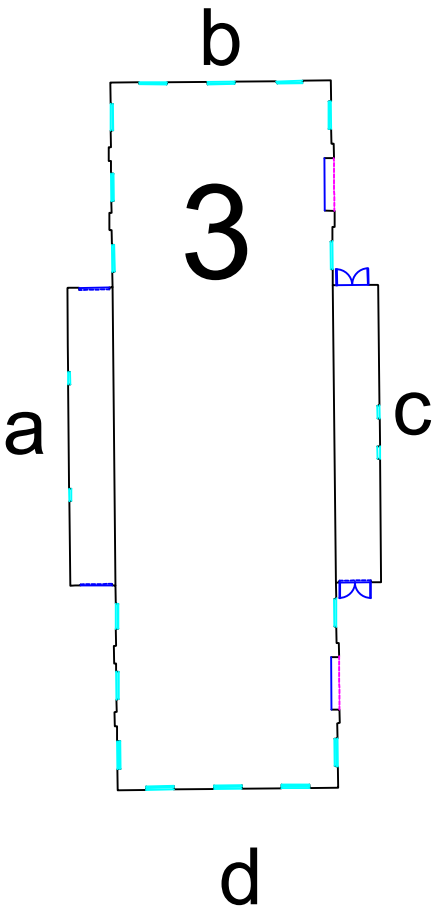
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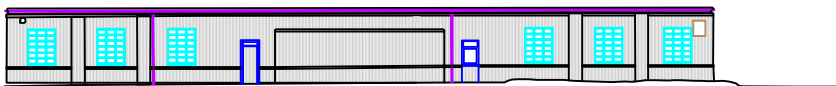
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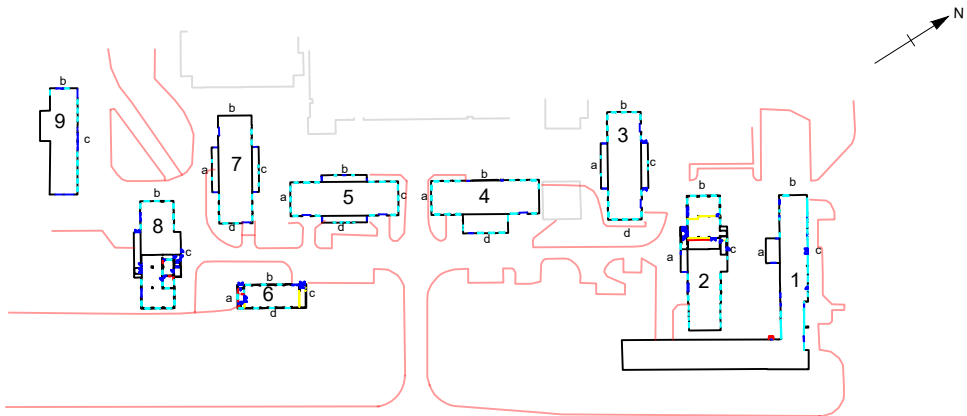
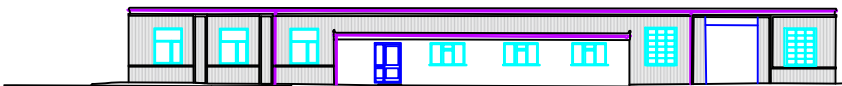


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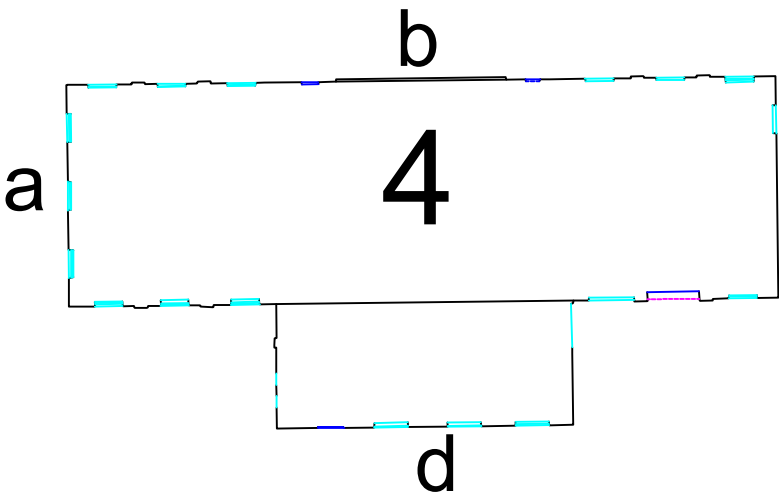


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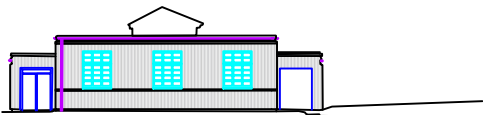


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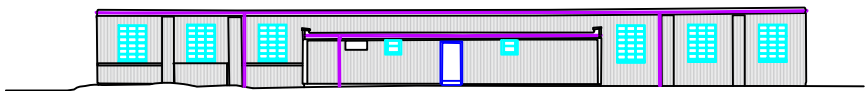
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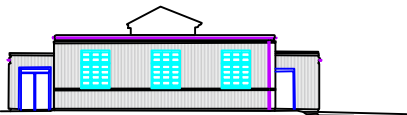
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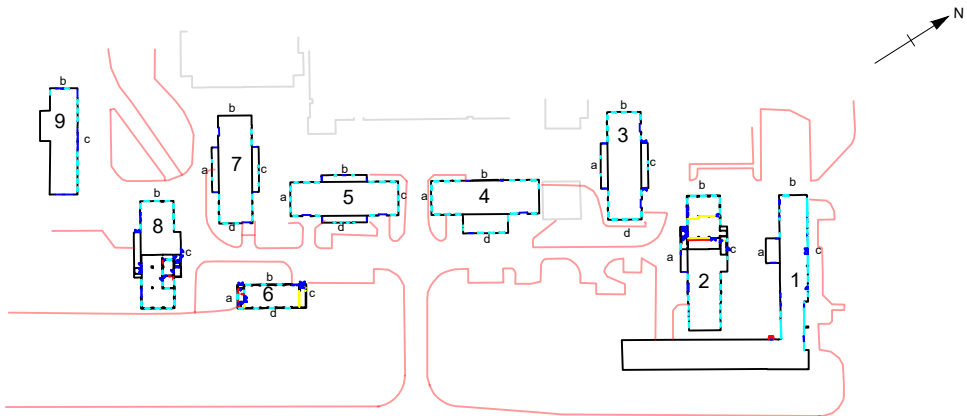
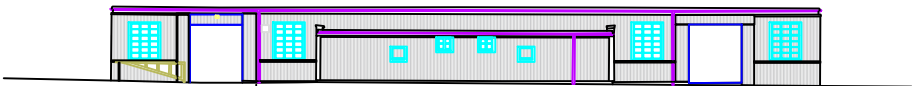
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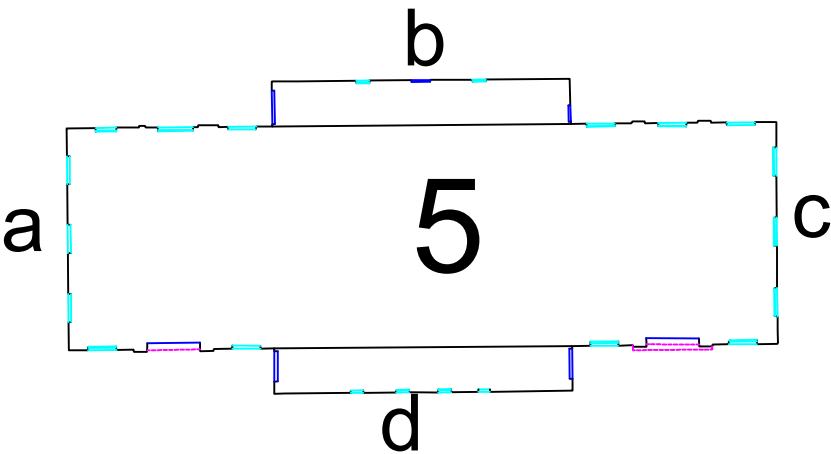
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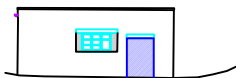


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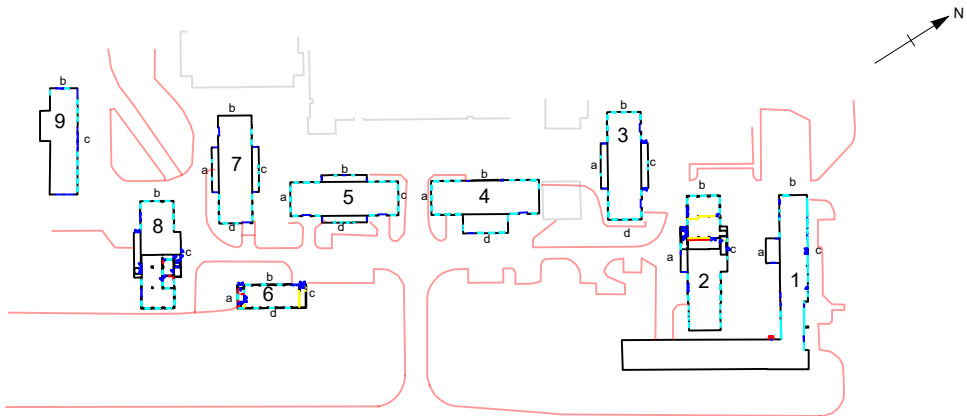
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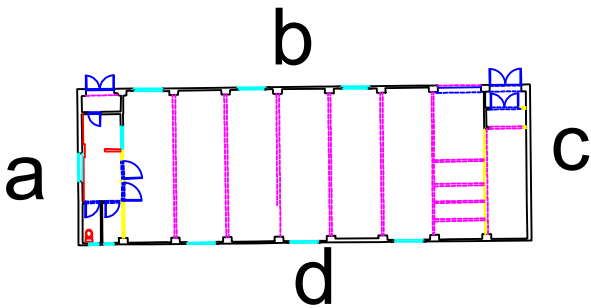
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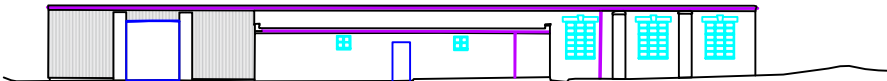


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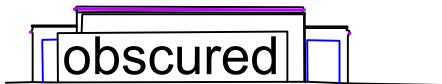
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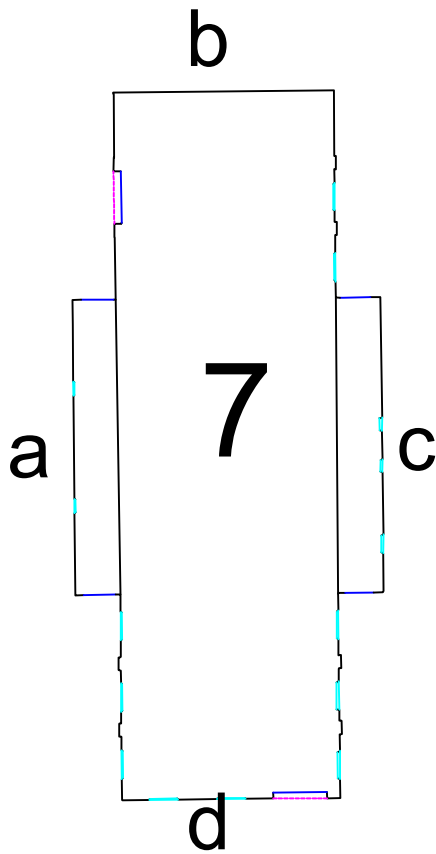
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Plan



Key:

Elevations

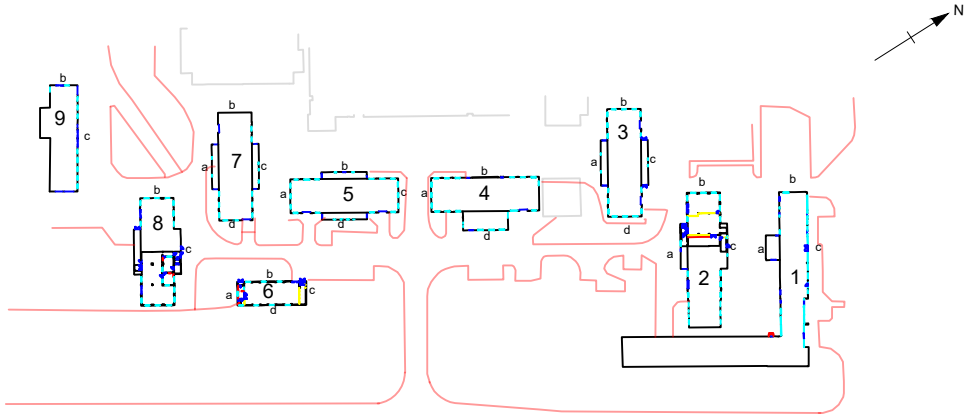
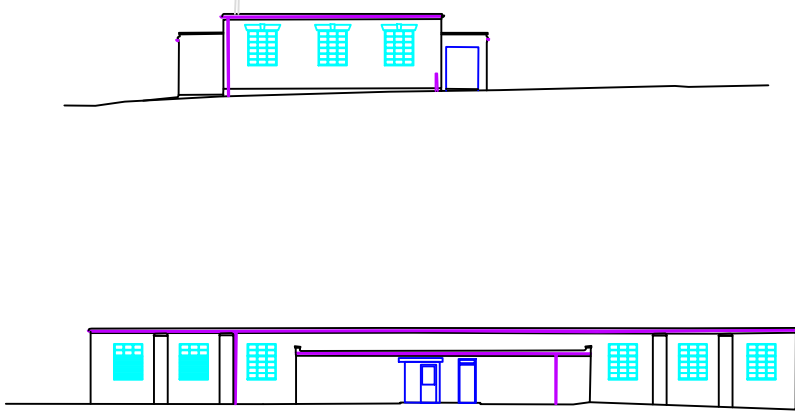
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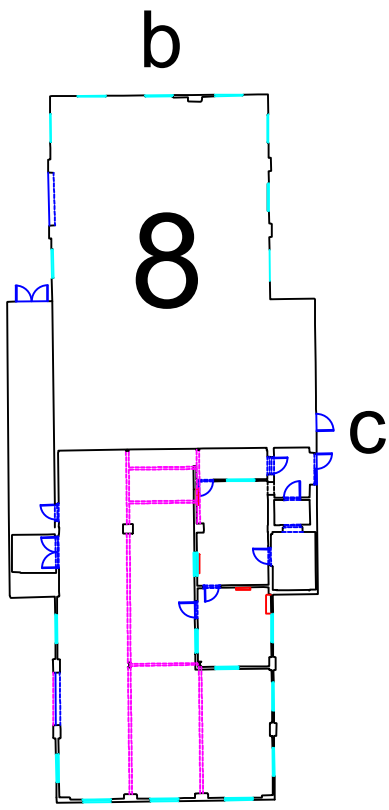
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Elevations

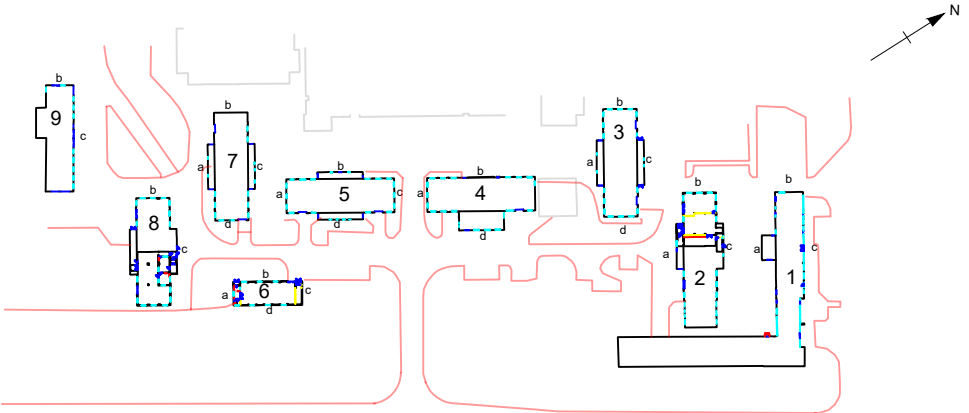
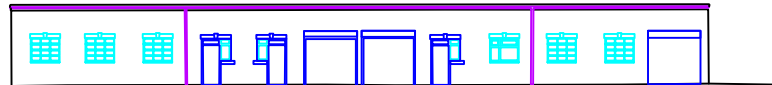
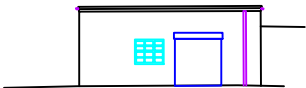
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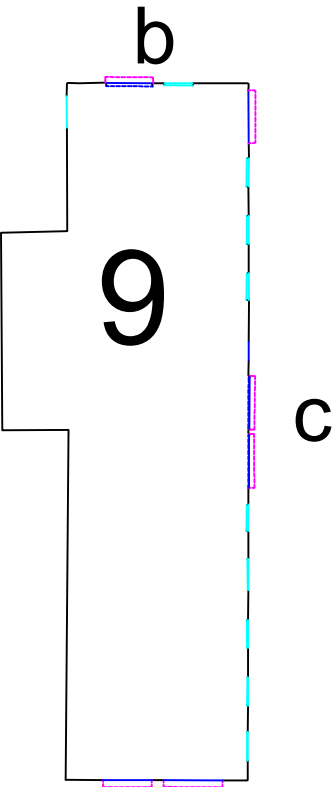
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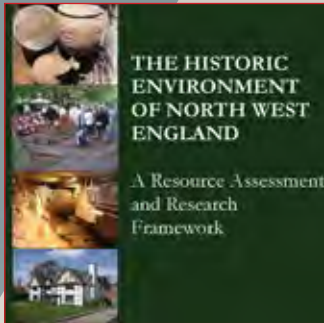


Plan





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EXCAVATION



BUILDING SURVEY



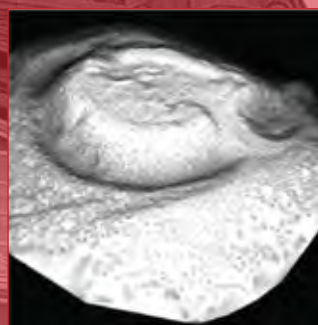
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COMMUNITY INVOLVEMENT



LANDSCAPE SURVEYS



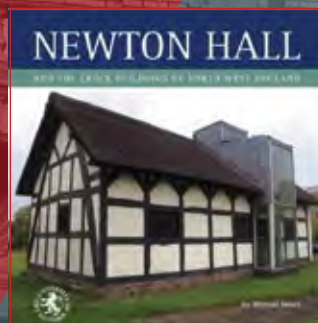
DRONE SURVEYS



WORKSHOPS & VOCATIONAL TRAINING



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