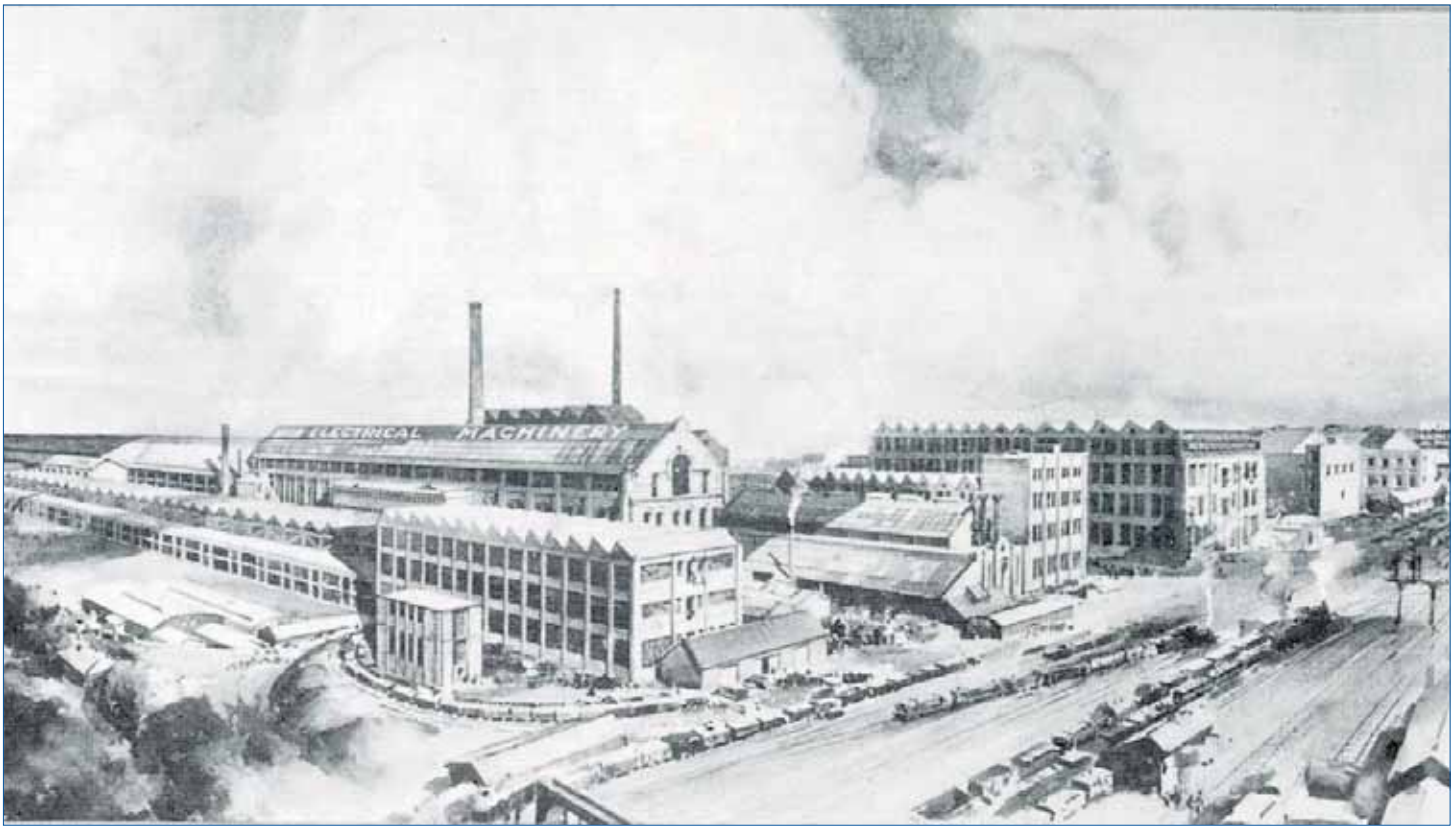
Conservation Management

Land at Leicester Road, Rugby, Warwickshire

Phase 1 Building Assessment



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Wessex Archaeology

June 2007

LAND AT LEICESTER ROAD, RUGBY, WARWICKSHIRE

Phase 1 Building Assessment

On Behalf of:

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LAND AT LEICESTER ROAD, RUGBY, WARWICKSHIRE

Phase 1 Building Assessment

1.0 INTRODUCTION

1.1 Origins and scope of the report

1.1.1 Outline planning consent has been granted for the redevelopment of the former British Thomson-Houston Co. Ltd works in Rugby.

1.1.2 One of the conditions attached to the outline consent states that:

> *"No development shall take place until the applicant, or their agents or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant and approved in writing by the Local Planning Authority."*

1.1.3 A Brief for the first phase of the archaeological work was prepared by the Planning Archaeologist at Warwickshire County Council. The scope of this first phase of work is a programme of Building Assessment of all of the buildings on the site to be altered or demolished, with an aim to identify those buildings and building components considered worthy of preservation 'by record'.

1.1.4 Wessex Archaeology were commissioned by St Modwen Properties PLC, through their agents, The Barton Willmore Planning Partnership-Midlands, to carry out the phase 1 Building Assessment. This has been carried out in accordance with a Written Scheme of Investigation approved by the Warwickshire CC Planning Archaeologist.

1.2 Site location and description

1.2.1 The site to which this assessment report relates - referred to as 'Land at Leicester Road, Rugby' – is situated to the north of Rugby town centre. The site is bounded to the south by the main railway line, immediately to the north-west of the station, and to the north by the River Avon. The site is approximately 33 hectares in area (Fig. 1).

1.3 Brief outline of development proposals

1.3.1 The development proposals for which outline planning consent has been granted include the erection of 540 dwellings, college buildings and associated facilities with car parking for Warwickshire College, a DIY store, a garden centre and builder's yard.

1.3.2 With the exception of buildings 140 and 193, and the northern halves of buildings 29 and 4b, all of the buildings currently surviving on the site are to be demolished (Fig. 2). The retained buildings will continue in use by the ALSTOM company.

1.4 Scope and limitations of the documentary record

1.4.1 The holdings of the following archives were investigated during the research for this assessment:

Warwickshire SMR
Warwickshire Records Office
Rugby Local Studies Library
Rugby Museum
Modern Records Centre at the University of Warwick Library
ALSTOM company archive
National Monuments Record

1.4.2 Pre-WWII mapping for the site was generally available at both 6" and 25 " scales. Post war mapping was less readily available, and cannot be reproduced here due to copyright restrictions.

1.4.3 Some small collections of historical photographs of the works appear to survive. Such photos were discovered on the ALSTOM website, the Rugby local history website, and it is understood that Rugby museum has between 20 and 30 photos dating to the 1920s in their collection.

1.4.4 The papers of Arthur Primrose Young, B.T.H. Works Manager from 1929-45, are held at the Modern Records Centre at the University of Warwick library. Research of the catalogue of these papers identify a number of items of potential relevance to the works buildings, but these are yet to be researched.

1.4.5 The National Monuments Record holds 112 aerial photographs of the site – 7 oblique and 105 vertical.

1.4.6 It is unfortunate that attempts to contact ALSTOM with regard to the continued existence of a company archive which might retain historical material relating to the site failed to elicit a response, and it remains unclear whether the company retains historical archive material at all.

1.4.7 It is understood that a former ALSTOM archivist works as a volunteer at the Rugby museum. It was unfortunately not possible to make contact with this individual during the course of the phase 1 assessment, but it is considered important that he is consulted as part of the phase 2 recording.

1.4.8 Similarly, the English Heritage adviser who carried out research into one of the buildings on the Boughton Road site (Building 3) in response to an application for it to be listed, managed to make contact with a former B.T.H employee who had managed to salvage archive material from a skip when it was discarded some years ago. It is hoped that contact details for this individual will be forthcoming soon, and that any documentation that he retains might be made available for use in the phase 2 recording of the works.

1.5 Structure of the assessment report

1.5.1 The main body of the report provides an overview of the history of the B.T.H. Rugby works as derived from documentary sources, to provide a historical context within which the origins and development of individual buildings can be discussed.

1.5.2 The assessment of the individual buildings surviving on the site is provided primarily by means of individual Building Data Sheets which are included at Appendix One. These are derived from entries into an Access database, which is linked to files containing extracts from the site plan, showing the location of the individual building, and at least one photograph. Only a brief summary of the principal findings and conclusions of the assessment of the standing buildings is included in the body of the report, and photographs of individual buildings are not used to illustrate the report.

1.5.3 The assessment of the individual buildings, presented by means of the Building Data Sheets, includes a short section on the history of each building, its date of construction, a description of the building as surviving, an assessment of the significance of the building, and recommendations with regard to whether the building should be included in the phase 2 programme of archaeological recording, and if so, what level of detail of record is considered appropriate.

1.5.4 The levels of recording recommended are in accordance with the guidance provided by *Understanding Historic Buildings: A guide to good practice* (English Heritage, 2006). However, where that document provides a range of elements which might appropriately be included for each level of record, this assessment report has made recommendations with regard to the specific elements considered appropriate for the recording of individual buildings, or groups of buildings.

2.0 HISTORICAL BACKGROUND

2.1 The development of the British Thomson-Houston Company

2.1.1 The origins of British Thomson-Houston Company started in America, approximately 16 years before the company was formed in England. Elihu Thompson (1853 – 1937) and Edwin J Houston (1847 – 1914) formed the Thomson-Houston Electric Company in 1879. In 1892 this merged with the Edison General Electric Company to become the General Electric Company. In the UK, the company Laing, Wharton & Down was formed as a syndicate to sell to the UK market products manufactured the Thomson-Houston Electric Company. By 1894 a new company was formed, called British Thomson-Houston Limited which no longer acted as agent, as it had purchased the existing patents of the US company with the exclusive right to manufacture and sell machinery and apparatus in the UK and Ireland. By 1896 this had changed to "The British Thomson-Houston Co. Ltd", however, the company quickly became known as "the B.T.H." (Price-Hughes 1946, 9).

2.1.2 By 1899, the need for its own manufacturing facilities led the B.T.H. Company to look for suitable land on which to develop. The choice of Rugby for a manufacturing base centred around the town's location and communication network.

2.1.3 At the turn of the century, Rugby was a quiet market town, known for its public school, founded in 1567 and for being an important railway junction. The London and Birmingham Railway had been the first to open in 1838 and was soon followed by the Midland Counties line. Gradually more railways moved into the town necessitating a larger and more efficient station to be built in 1886 to cope with the growing traffic (Robinson 1993, 23).

2.1.4 The B.T.H. Company was not the first electrical engineering company to establish itself in Rugby. Willans and Robinsons (later English Electric) had been investigating the possibilities of building a factory at Rugby since 1894. Their works opened in 1896 and by 1898 almost 2,000 men had found employment with the company (ibid, 23). Other industry in Rugby by this point was limited to the Rugby Portland Cement Company, which began production in 1872, and the Rugby Corset Factory, which had opened in 1881. The majority of employment in the town at the turn of the century was provided by the railway companies where much of the workforce were employed as drivers, firemen, signalmen, porters and general station staff (ibid, 23).

2.2 British Thomson-Houston in Rugby

2.2.1 This section of the report provides a discussion of the development of the B.T.H Rugby works as a whole. The early development of the works relates only to the original site, the Leicester Road site, but provides a background to the expansion of the works onto the Boughton Road site. It also demonstrates the scale and rapid development both of the works complex, and the range of products manufactured by B.T.H, and, as such, demonstrates the significant role that this large engineering company played in the economy of the town.

2.2.2 The land around the railway station was available for purchase and development. The B.T.H. Company realised the potential of being so close to a number of railway networks and in addition felt that Rugby was also convenient due to its proximity to coal fields and the River Avon to provide water for cooling systems in the process of manufacture (ibid, 22).

2.2.3 Approximately 25 acres of land, known as Glebe Farm, and situated between the main railway station and the river, was purchased for £10,000 from Thos. Hunter & Co. (railway wagon builders) in January 1900, as a site for works. Levelling began on January 11th 1900 and building operations commenced a few months later. A photograph dating to 1901 (Plate 1) clearly shows the progress of construction of the

main machine shop (Building 4a & 4b) at this date. Manufacturing is said to have commenced on March 14th 1902 (Price-Hughes 1946, 14).

2.2.4 The initial works were planned for approximately 800 operatives and consisted of 14 substantial steel and brick buildings with a total floor space of roughly 206,000 sq. ft. The principal buildings comprised:

Pattern Stores
Incandescent Lamp Factory
Iron and Brass Foundry
Main Machine Shop
Receiving Stores
Pattern Shop
Smithy
Meter Factory
Power House
Offices
Gate House
Foundry, Coke and Sand Stores
Despatch Stores

Early Developments at Rugby 1902 - 1914

2.2.5 At the end of 1902 an agreement was made between the B.T.H Company and Rugby Urban District Council for the supply of electric lighting and power in the town which commenced in October 1903 and continued until October 1923.

2.2.6 In 1902 B.T.H. acquired the 'Curtis' steam turbine rights and their first contract was in 1903 to the Cork Tramways. F. Samuelson was sent to America to study the General Electric 'Curtis' design turbine in 1903 and on his return to England the manufacture of these machines began at Rugby.

2.2.7 During the first decade of the 20th century the B.T.H. Company was involved in many pioneering projects in the design and manufacture of electrical and mechanical components for industry. Some firsts for the Company included the introduction of electric travelling cranes into engineering workshops and the electrification of shipyards, collieries, rolling mills and textile mills.

2.2.8 Electric traction was very much to the fore at this period and some of the earliest attempts at developing petrol-electric road vehicles were made by the B.T.H. Company in 1904. The B.T.H. petrol-electric system, however, was handicapped by high initial cost and extra weight over its gear driven competitor, and further development was abandoned in 1909 (ibid, 23). Other early projects carried out at Rugby included the equipping of more than 50 tramway systems throughout the country as well as equipment for the tube in London.

2.2.9 During this time the growth in turbine production also started to increase as did the size of the castings with equipment weighing 30 to 40 tons soon becoming commonplace (ibid, 24). This catalyst led to some early development of the site. The main machine shop at Rugby (Building 4) was lengthened by 154 feet in 1904 to provide space for the new turbine manufacturing activity (ibid, 21).

2.2.10 In 1911 the company acquired the trade name of “Mazda” (borrowed from the Persian mythology, where it signified the god or principle of light). This coincided with developments in the production of more robust lamps (light bulbs). Previously, lamps were very fragile and transit caused an excessive amount of breakages. With the development of a system of drawn fire tungsten filaments this allowed for much more robust lamps (bulbs) and a dramatic change to the economics of electric lighting. With the increase in production in lamps this led to production of meters and Tirrill

regulators being transferred to a new premises which was established at Coventry, 11 miles away (ibid, 31).

2.2.11 In the years leading up to the First World War, the B.T.H. Company supplied Auxiliary machinery for naval ships having entered the marine turbine field in 1905. Turbines were supplied to battleships such as the "Ajax" and the "Agincourt" as well as battle cruisers, destroyers and depot ships (ibid, 33).

The First World War 1914 – 1918

2.2.12 Owing to the huge demand for electrical apparatus of all kinds during the war, a very large percentage of the total output from the factories, though for war purposes, was of normal B.T.H. products.

2.2.13 The British government soon found itself in desperate need for magnetos, as the previous source of supply was Germany. This led to the B.T.H. to concentrate the resources of the Coventry factory on the manufacture of magnetos for aircraft. This was to the detriment of the B.T.H. business in metres which ceased production. The pioneering design work with magnetos was achieved by A. P. Young.

2.2.14 In addition to the normal electrical products manufactured by the Rugby works, a vast quantity of war material was manufactured by the B.T.H. Company. This included shells of all sizes, parts for guns, tanks, submarines, warships, depth charges and mines as well as turbines for many naval vessels (ibid, 35).

2.2.15 1,795 B.T.H employees decided to join the armed services during the course of the war and 243 of them were killed. A memorial to those who died was designed by Sir Edwin Lutyens, R. A. and erected at the Mill Road entrance to the Rugby works.

2.2.16 In the run up to war, the manufacturing load was increasing with larger machines being designed and manufactured. This led to some large scale building operations and development of the factory complex further. The first of these projects was authorised in 1912 when it was decided to erect a large reinforced concrete building known as "Building 29" to house the manufacture of large generators and rotary converters. This building, when completed, had a floor area of approximately 60,000 sq. ft. However, the large influx of post-war orders soon necessitated further extension and another 60,000 sq. ft. was added. In the Turbine factory about 20,000 sq. ft. of additional floor space was added between 1913 and 1918, followed soon afterwards by an additional 60,000 sq. ft (Plate 2).

2.2.17 Among other buildings erected during this period was one devoted to traction plant, controllers and tinsmiths work, and later changed to the Control Gear factory. In 1918 a building near the L.N.E.R. Station at Rugby was purchased and fitted out for the purpose of manufacturing projectors, reflectors and other lighting equipment of special B.T.H design (ibid, 37).

2.2.18 During this period the B.T.H. Company was involved with experiments with plastics in 1916, including developing high-frequency, high-speed motors for spinning artificial silk, as well as further turbine development for naval vessels in 1918 - 1919.

Post WWI developments

2.2.19 With the establishment of the BBC in 1922 the B.T.H. Company was interested in the development of radio and the manufacture of wireless apparatus. Thanks to some of the developments made during the war, most of the moulded plastic parts of the sets, head-phones, and insulation were manufactured by the B.T.H Company. The manufacture of these parts was transferred from Rugby to the Coventry works in 1924. Other developments included the production of the RK Loudspeaker, the electrical gramophone as well as the continued development and manufacture of

larger turbines and turbo-alternators for ships and heavy switchgear to be supplied to power stations.

2.2.20 In 1928, the rationalisation of a number of British electrical industries was considered to be desirable as a good way of pooling resources, and consequently Associated Electrical Industries Ltd (AEI) was formed as a holding company in 1928. The new organization bought B.T.H. along with other companies including Metropolitan-Vickers Electrical Co. Ltd. and The Edison Swan Electric Co. Ltd.

2.2.21 During the 1930s the B.T.H. Company was involved in the development of the sodium and mercury discharge lamps which were used in street lighting. The increased production of lamps led to the construction of an additional Lamp Factory (Building 78) on the west side of the works in 1935 (Plate 3). This was a single storey building covering 100,000 sq. ft. and was completed for lamp manufacture by Easter 1936. Between 1940 and 1946 the building was extended to the north by 30,000 sq. ft. for additional space for lamp manufacture.

2.2.22 In 1936, the B.T.H. Company was approached by Frank Whittle with regard to the development of his jet propulsion engine for aircraft. A new company was formed, known as Power Jets Ltd., to exploit the Whittle invention for which the B.T.H. Company was a shareholder. In 1937 the first jet engine was constructed at Rugby under the supervision of Frank Whittle which eventually led to the design and construction of the first aircraft made by the Gloster Aircraft Company in May 1941 (ibid, 100).

2.2.23 However, although B.T.H had a major role in developing the jet engine, the directors seemed skeptical about the design, and in 1940, having transferred development to their Lutterworth works, they withdrew from the manufacture of jet engines, which was transferred to Rover.

2.2.24 Other expansion of the site during this period occurred in April 1937 when work was commenced on a new office block at Rugby (Building 86). The building had an imposing frontage to the east and containing a total floor area of 74,600 sq. ft (Plate 4). It was designed to house the engineering and commercial offices, and was constructed in reinforced concrete with a brick facing. This new building enabled 27,000 sq. ft. elsewhere in the Works to be released for manufacturing functions. The new office building was completed in 1938 (ibid, 83).

The Second World War

2.2.25 As in the First World War, the outbreak of war in September 1939 necessitated changing the course of normal production at Rugby. Many of the B.T.H's peacetime products were indirectly required for the war effort, however, the B.T.H. Company was involved with the research, design and manufacture of widely differing mechanisms and devices for war purposes.

2.2.26 Major changes at Rugby included the expansion of the research laboratory by three times it's pre-war size, refrigerator and switchgear shops were dismantled and turned over to shell lines, the control gear shops were used for making Radar equipment, and the lamp assembly areas were converted into manufacturing areas for special valves and large mines.

2.2.27 In addition to work on jet propulsion engines (see 2.2.22-23 above), the B.T.H Company made an important contribution to the war effort in devising apparatus for the detection of clouds, aircraft and ships, as well as in the manufacture of parts for guns, aircraft, ships and submarines, complex machinery for the remote control of searchlights and gun turrets, radio valves and transmitters, anti-aircraft shells and electric torpedoes. The B.T.H research laboratory personnel also took part in the development of the atomic bomb (ibid, 91) and radar equipment developed by the

B.T.H. was responsible for the sinking of the German battleships “Scharnhorst” and “Bismarck”.

2.2.28 At Rugby the capacity was increased by the introduction of a large night shift which, for the first time, involved women. The inauguration of rest-rooms for female workers, music-while-you-work, and midnight concerts during meal breaks, proved so attractive that night-shift working even became popular (ibid, 92).

2.2.29 The expansion of the Rugby works onto the Boughton Road site, which lay to the north, beyond the River Avon which formed the north boundary of the main Leicester Road works, took place during the Second World War.

2.2.30 Documentary sources note that B.T.H Company was the first British company to develop electrically propelled torpedoes after some were captured from the Germans in 1941, and that this led to the erection of a new torpedo building specially designed and equipped for the purpose. Building BR2 on the Boughton Road site has always been known as the ‘torpedo factory’, yet a historic photograph of the factory assembling electric torpedoes does not conform with the structure of that building.

2.2.31 A new factory, known as the Small Gear Assembly Factory, was built at Rugby specifically for the production of predictors (Building 92). These were fitted to guns so that they would be able to predict how a shell could reach a swiftly moving aircraft at a given time and position. The manufacture of the predictors ceased in 1943 when they were superseded.

Later developments

2.2.32 Following the Second World War, AEI began a massive expansion, but this appears to have led to rivalries between the various formerly autonomous companies of which it comprised. In order to reduce this friction, AEI stopped using the name BTH in 1960, but the whole AEI empire continued to slide into financial trouble. Despite this, a large research laboratory was constructed on the Boughton Road site in 1957(situated to the west of the current Boughton Road development site).

2.2.33 The size and production at B.T.H.’s Rugby works had peaked in the 1960’s, and from the 1980’s began to decline. Buildings were demolished, and areas of land sold off for developments such as the superstore to the west of the Leicester Road development site.

2.2.34 In 1967 GEC bought AEI outright to become the UK’s largest electrical group. In 1989 GEC in Rugby split into GEC Alstom and Cegelec Projects, but the two firms were re-united again in 1998. They continue to operate within certain of the buildings at the north end of the Leicester Road site.

2.3 The role of the B.T.H works in the economy and society of Rugby

2.3.1 Since the start of its production in 1902, until the later decades of the 20th century, the B.T.H works have played an immensely important role in the economy and daily life of the town of Rugby.

2.3.2 The works eventually occupied an absolutely huge site, divided in two by the River Avon, and situated very close to the town centre. Indeed, the area of the works was quite closely comparable to the physical extent of the town centre itself.

2.3.3 The works were also in a very prominent location in relation to the railway line connecting the town with both London and Birmingham, and would therefore have made a strong impression on travelers passing through the town.

2.3.4 The works were originally designed for the employment of 800 people, but through a series of phases of expansion, during World War II were employing some 17,000. Continued expansion meant that at the very height of their operations, in the 1960's, the works are said to have employed c.22,000 people.

2.3.5 The implications of the scale of these employee numbers in a town the size of Rugby are obviously significant. The success or failure of an employer on this scale would have huge repercussions on the fortunes of the town itself.

2.3.6 As the works developed, the firm increasingly needed to source additional workers from places further and further afield. Large numbers of workers were recruited from Liverpool and Scotland, all of whom required lodgings in, or close to the town.

2.3.7 B.T.H. did not, however, pursue the line that many large 19th century companies had, in building their own workers housing. They relied, instead, on private landlords provision, with the exception of a hostel for fifty of their apprentices in Dunchurch Road, and a Guest House in Newbold Road.

2.3.8 An increase in the volume of light assembly work led to the employment of increasing numbers of female employees, particularly with the development of the large new lamp works in the 1930s. The introduction of night shift work also allowed an increase in production and the employment of even larger numbers, within the constraints of the existing works. The night shift apparently became quite popular following the inclusion of female workers on the night shift, and the introduction of music during the rest breaks.

2.3.9 One of the logistics necessary in the employment of such large numbers was the problem of transporting them all to the works site. Fleets of buses were employed in bringing workers in from the surrounding area, and special bus parks, and maintenance departments were necessary to service this. Similarly, the swarm of people entering the site by means of the footbridge over the railway at the south end of Black Path would have been an impressive site.

2.3.10 The recreation and welfare of B.T.H employees is dealt with in detail in *B.T.H Reminiscences – Sixty years of progress* (Price-Hughes, 1946).

2.4 The Chronological development of the Leicester Road site

2.4.1 Construction works on the Leicester Road site began in the summer of 1900, with completion of the first phase of building by March 1902.

2.4.2 The extent of the works at this stage can be clearly seen on a plan of the works made that same year (Fig. 3). It shows that the works were confined to the area to the east of the path which runs north-south through the site, and were accessed by means of a private road from what was then Brownsover Road (now Mill Road) some distance to the east. (The north-south path which runs across the site survives to this day and is known as Black Path, due to its historically being surfaced with waste material from the coke works on Newbold Road).

2.4.3 The two principal buildings initially constructed on the site were the foundry (now lost), and the machine shop (Building 4a & 4b) to its north. A small lamp works lay to east of the foundry, but all other buildings were effectively providing ancillary support to the main manufacturing function, with a power house, offices, pattern stores, a shipping warehouse and stores. The buildings were connected by a railway system provided as a siding of the London and North Western Railway.

2.4.4 One of the reasons for the choice of this site for the works was the availability of water for cooling purposes in the manufacturing process, and for the production of steam power for distribution around the works. It is interesting to note that the power

house was situated immediately adjacent to the River Avon, at the north end of the site. Although not shown on the 1902 plan (Fig. 3), two reservoirs are shown to the north-west of the power house on the 1905 OS map (Fig. 4).

2.4.5 Expansion of the works was very quick, with the extension to the machine shop (Building 4b) and the significant enlargement of the Lamp works by 1905 (Fig. 4).

2.4.6 While the 1914 OS map (Fig. 4) indicates that by this date the works had only expanded to fill the original site, with a major new building for the production of control gear (Building 25), an artist's impression of the works also dated 1914 (Plate 6), suggests that the expansion westwards of the works, onto the adjacent parcel of land, had already taken place by this date, extending the works to the line of Black Path.

2.4.7 The Rugby U.D.C Refuse Destructor, of which structural components survive in the south-west quadrant of the site, is shown on the OS map of 1914 (Fig. 4), set within an area of allotment gardens.

2.4.8 Both sources also indicate the survival of a large area of allotment gardens to the north of the eastern access road at this date, though the works had even begun to extend across this area by 1927, and during the 1930's, they finally expanded westwards beyond Black Path, with construction including the large new lamp works (Building 78). The reservoir, or cooling ponds at the north end of the works were also extended at this time, with the incremental construction of associated structures for water management over the next twenty years.

2.4.9 The plan of the works in 1946 (Fig. 5) provides a very clear indication not only of the scope and extent of the works, but also provides information on the function of each building at this time, when the works were almost at their most extensive.

2.4.10 Interestingly, however, this plan concerns itself only with the main manufacturing and administrative buildings, and omits such structures as the air raid shelters in the south-west quadrant of the site.

2.4.11 Production on B.T.H's Leicester Road works peaked around 1960, although it was not until the 1980's that the physical extent of the works began to decline. One of the first areas to be sold off was the Tesco and Elliots Field site to the west of the works, in 1985.

2.4.12 A number of the more significant former buildings on the site have been lost to date, including, in particular, the foundry to the south of building 4, and the power house towards the north-east corner of the works, which also dated to the initial development of the works in 1901.

2.4.13 The buildings demolished to date were largely confined to three areas of the works: the north-west quadrant, which has already been redeveloped; the area of the foundry to the south of the access road; and the eastern part of the site between the turbine factory (Building 4) and the 1930's office building (Building 86). This latter area contained largely office and research buildings, though was also the location of the 1901 power house. Photographs survive of the demolition of the power house chimney in 1991.

3.0 STANDING BUILDING ASSESSMENT

3.1 Individual Building Assessment

3.1.1 The assessment of individual buildings is contained within the Access database for the Building Assessment.

3.1.2 The database entry for each building is structured to provide information within the following fields:

- Unique building ID
- Building name/ref.
- Date of construction
- National Grid Reference
- History and significance
- Description
- Recommended archaeological recording strategy

3.1.3 The database entry for each building will also be linked to a folder containing an extract from the site plan highlighting the building, and another folder containing at least one photograph of the building.

3.1.4 The Access database has been designed to allow the printing of a report for each individual building, complete with plan extract and photos of the building. These are included in this report at Appendix One.

3.2 Assessment of significance or special interest

3.2.1 There is no single, universally applied and objective means by which to assess the level of significance, or special interest of buildings. However, there are two widely accepted sets of criteria applied to the assessment of historic buildings and sites, which it is considered useful to identify here.

3.2.2 The first is the Secretary of State's 'Statutory Criteria' used when assessing whether a building is of special interest and should be added to the statutory list:

- **Architectural Interest.** To be of special architectural interest a building must be of importance in its architectural design, decoration or craftsmanship; special interest may aso apply to nationally important examples of particular building types and techniques (eg buildings displaying technological innovation or virtuosity) and significant plan forms;

- **Historic Interest.** To be of special historic interest a building must illustrate important aspects of the nation's social, economic, cultural or military history and/or have close historical association with nationally important people. There should normally be some quality of interest in the physical fabric of the building itself to justify the statutory protection afforded by listing.

3.2.3 Whilst it is not anticipated that any of the buildings on the site is likely to attain the level of importance necessary to satisfy the criteria for listing, it is considered that the identification of the elements which might go towards establishing the special interest of a building, as provided above, can also be used as a check list to assess less significant buildings.

3.2.4 The second set of assessment criteria is that provided by the checklist for the Assessment of Significance/Heritage Merit, contained in *Conservation Plans for Historic Places* (HLF, 1998), which notes that sites may be of heritage merit for their:

- Archaeological potential or importance
- Architectural history or design significance

- Association with historic and/or cultural events
- Community, commemorative or social value
- Collections/paintings/furnitutre
- Ecological or wildlife value
- Educational or public potential
- Public or recreational value
- Contribution to townscape character
- Interest as a designed landscape
- Contribution to technological history
- Combination of any of the above

3.2.5 While these have not been individually addressed in the assessment of each of the buildings on the site, the breadth of their scope has been considered and formed the basis of the assessment.

3.3 Summary of assessment

3.3.1 The former B.T.H works occupying the site considered by this report once comprised a very extensive, important and comprehensive engineering works. Once employing more than 20, 000 workers, the importance of the firm in the history of the town of Rugby is undeniable.

3.3.2 The functional lifetime of the works spanned almost the entirety of the 20th century, and the survival of the full complement of buildings would therefore have charted the development of a single firm as it adapted to changing demands and technology throughout the century.

3.3.3 However, successive phases of clearance since the 1980's has reduced the comprehensiveness of the built heritage on the site, and reduced the range of building functions that survive.

3.3.4 Significantly, only a single building (4a-b) survives of the nine buildings which comprised the initial phase of development of the works in 1901-2. (A small element of fabric may survive of a second building dating to that phase (25a), though unrecognizable in its present context within a later building).

3.3.5 The single surviving building, formerly the turbine factory (4a & 4b), was subject to a programme of extension which began within two years of its initial construction, and continued up until the last quarter of the century, during which period the building increased in size by a factor of three.

3.3.6 The tall western element of the early building, (4b) extended incrementally northwards, though its fundamental form and structure was reproduced in the later elements. The northwards extension of (4a) took place later, and paid less attention to replicating the original structure.

3.3.7 The southern (main) elevation of building 4b survives relatively well, and indicates that it was probably architect-designed. It is well-detailed with terracotta detailing, even on the small service range along its west side. Unfortunately, it is this original southern end of the building which is to be demolished as part of the redevelopment of the site. However, the northern half, whose structure and internal detailing replicates that of the original building will survive as a record of the original turbine factory. Unfortunately, the main southern elevation of Building 4a has survived less well, with a modern brick cladding having been added to eaves level along the entire elevation.

3.3.8 Also of significance, the buildings which have been lost in recent decades include some of the more functionally important buildings dating to the early development of the site, the most significant of which perhaps, were the foundry and the power

house. The foundry would have had a close relationship with the turbine factory to its north; providing a fundamental element of the manufacturing process, and its loss, and the loss of the functional connection between the two buildings, reduces the potential significance of the survivor.

3.3.9 Building 29 appears to be a relatively early example of a large concrete-framed industrial building; a structural form which did not enjoy a long or extensive period of use, and could therefore be a relatively unusual example of its building type. However, there was insufficient scope within the rapid phase 1 assessment to fully explore this potential rarity, and it is hoped that further work on this can be included in the phase 2 record.

3.3.10 The later buildings which extended the site westwards, demonstrate the changing focus of manufacturing on the site, particularly with the construction of the major new lamp factory (Building 78) (Plate 3).

3.3.11 The large purpose-built office building (Building 86) (Plate 4) is a good, though not flamboyant, example of a 30's art deco building, with good original detailing to the exterior, and to the interior of the entrance hall. Unfortunately, the replacement of all the windows with upvc components, and the demolition of the central perpendicular range to the west have reduced the interest of the building.

3.3.12 Although the works as a whole were of considerable importance, both in terms of the history of electrical engineering in the UK, and in terms of the economy of Rugby, this significance lay primarily in the function of the buildings, and the manufacturing or other functions which they housed, rather than in their form or fabric.

3.3.13 The buildings are generally of an absolutely standard form and structure for their date of construction, and similar buildings could be found surviving on industrial sites across much of the midlands, if not the country. What is, perhaps, more unusual, is the enormous scale of some of the buildings, particularly (Building 4b) and (Building 29), and as such they are representative of the massive scale of the B.T.H Rugby works.

4.0 RECOMMENDATIONS

4.1 Levels of Archaeological Recording

4.1.1 The recommendations for an appropriate level of archaeological building recording for each of the buildings on the Leicester Road site, will be made with reference to the guidance provided by *Understanding Historic Buildings: A guide to good recording practice* (English Heritage, 2006).

4.1.2 The guidance identifies four potential levels of archaeological record appropriate to the recording of buildings, from the least detailed – Level 1, a basis visual record – to the most detailed – Level 4, a comprehensive analytical record.

4.1.3 The guidance also provides an outline specification for the level of detail required within each level of record for each of:

- Survey and drawings
- Photography
- Written Account

4.1.3 The specifications considered appropriate for each level of archaeological recording, as provided by the English Heritage document, are presented in Appendix Two of this report.

4.2 Recommendations for Phase 2 Archaeological Recording

4.2.1 Paragraph 3.23 of the government planning policy guidance notes PPG15 – Planning and the Historic Environment, advises that:

> "Local planning authorities should consider, in all cases of alteration or demolition, whether it would be appropriate to make it a condition of consent that applicants arrange suitable prorammes of recording of features that would be destroyed in the course of the works for which consent is being sought."

Those buildings recommended for archaeological recording, and the level of recording deemed appropriate, are identified on Figure 7.

4.2.1 As identified in 3.3.9-10 above, it is the former function of the surviving buildings, and their contribution to the group value of the works as a whole which is of greater significance than their individual design, form or fabric. As such, the 'preservation by record' of the structural shells which survive on site today by means other than a comprehensive photographic and written record would be difficult to justify.

4.2.2 Research for this stage 1 assessment identified no surviving detailed plans of any of the buildings. Whilst these would have provided an interesting component of the long-term record of the buildings, it is considered that the relatively low level of interest of the surviving buildings would not justify a programme of detailed measured survey in mitigation of their demolition.

4.2.3 While the brick façade of the turbine factory (Building 4b) has some architectural interest, it is considered that this can be adequately recorded by means of a detailed photographic survey rather than a drawn survey. Internally, the original steel structure of the building was replicated in all subsequent extensions to the building. As the northern half of the building is to be retained, little information of the structural framework will be lost, and it is therefore considered unnecessary that a detailed measured survey should be carried out. This is also true of the adjacent large Machine shop (Building 29) which was also identified as being of some constructional interest.

4.2.4 While the level of detail required for a Level 3 record is considered inappropriate, however, it is felt that a standard level 2 record is perhaps too brief to provide a suitable record for those elements of the turbine factory which survive from the initial

phase of development of the site. It is therefore proposed that an enhanced level 2 record is made of these elements of building (4a and 4b).

4.2.5 For clarity, it is recommended that the enhanced level 2 record for this building includes:

Drawings: 7-9
Photography: 1-8
Written: 1-3, 7-9, 11-13, 17, 18, 20, 21

4.2.6 It is proposed that a slightly enhanced level of detail is also provided for Buildings 25 and 121. They are of lesser significance than Building 4a & 4b, however, and it is recommended that the record of these buildings should comprise the following elements:

Drawings: 7-9
Photography: 1-8
Written: 1-3, 9, 11-13, 17-18

4.2.7 The potential rarity of the early concrete-framed building (29) is currently not fully understood. It is recommended that further research into this specific building type and date is carried out as part of the phase 2 recording. This will supplement the written record of the building, but will not affect the requirements with regard to the drawn or photographic record, particularly in view of the fact that the northern half of the building, which includes a section of the original building, is to be retained.

4.2.8 A less detailed level 2 record should be made of all other buildings recommended for archaeological recording. The scope of this record should include:

Drawings: 7-9
Photography: 1-8
Written: 1-4, 11 & 12

4.2.9 Having identified that it is the group value which contributes significantly to the interest and importance of the buildings on this site, it is recommended that other ancillary features and structures on the site are included in the site record. This should include, specifically, the ponds and associated structures at the north-east of the site, which provided cooling water for the industrial processes in adjacent buildings.

4.2.10 While PPG 15 advises that an archaeological record be made of those features which are to be destroyed by the development proposals, it is considered appropriate, in view of the extensive demolitions which are to take place on this site, that an attempt is made to identify some appropriate individuals in order to include an element of oral history within the record. The scope of this work, if considered appropriate, would need to be clarified in the brief for the Phase 2 recording.

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Price-Hughes, H. A. (1946) *B.T.H Reminiscences Sixty Years of Progress*

Robinson, E. (1993) *A Rugby Company & Their Female Workers: The British Thomson Houston Company Ltd, 1930 – 1955* (Dissertation)

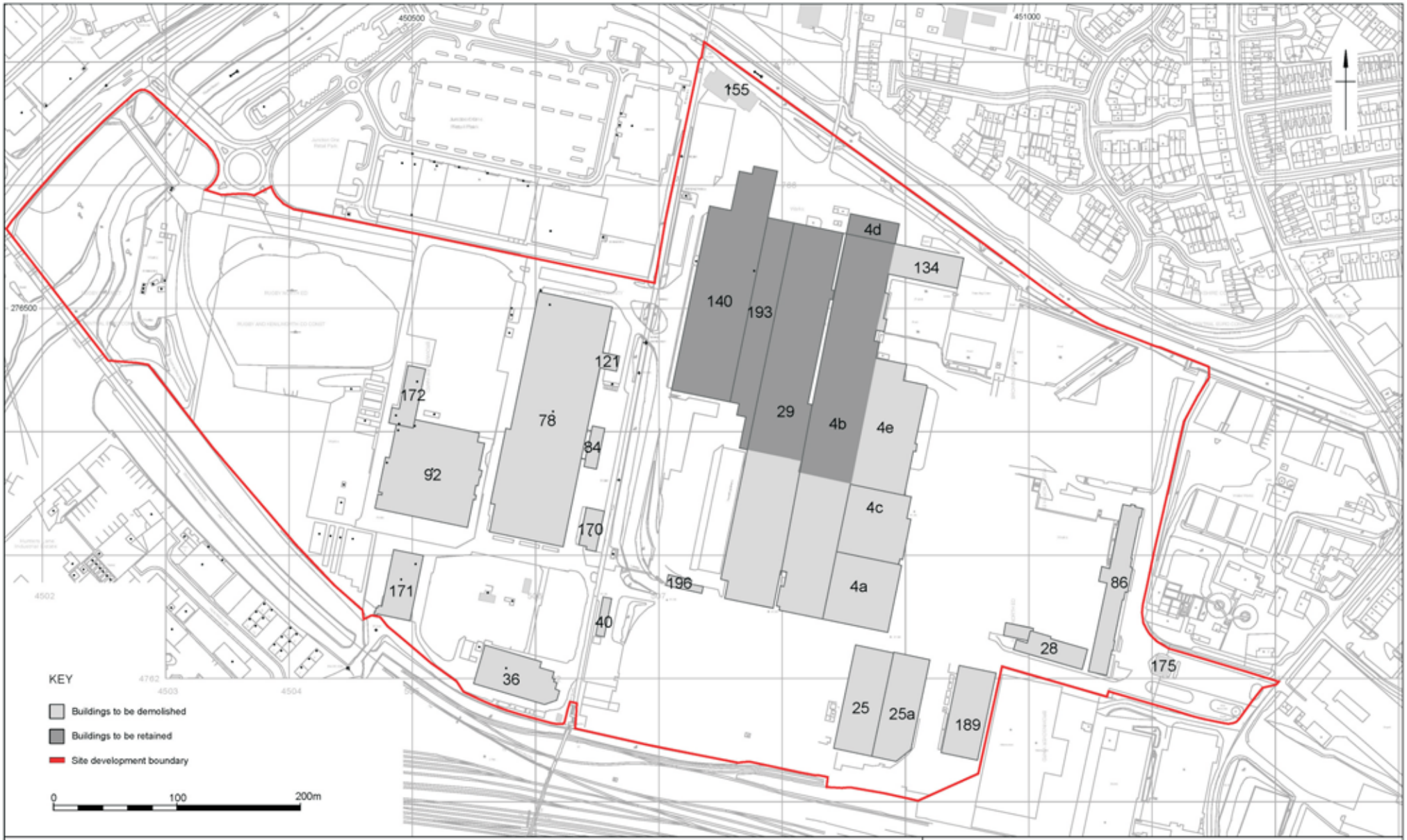
Conservation Management

Wessex Archaeology

Date:	7/04/07	Revision Number:	0
Scale:	1:50000	Illustrator:	SEJ
Path:	Path: X:\PROJ\65700\Drawing Office 07_05\Bdg Assessment\LeicsRd\A4fig1.dwg		

Site location map

Figure 1



Conservation Management
Wessex Archaeology

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Development proposals

Figure 2

1905 OS 25" map

1914 OS 25" map

1924 OS 25" map

1939 OS 25" map

Conservation Management

Wessex Archaeology

Date:	27/04/07	Revision Number:	0
Scale:	1:10,000	Illustrator:	MJR
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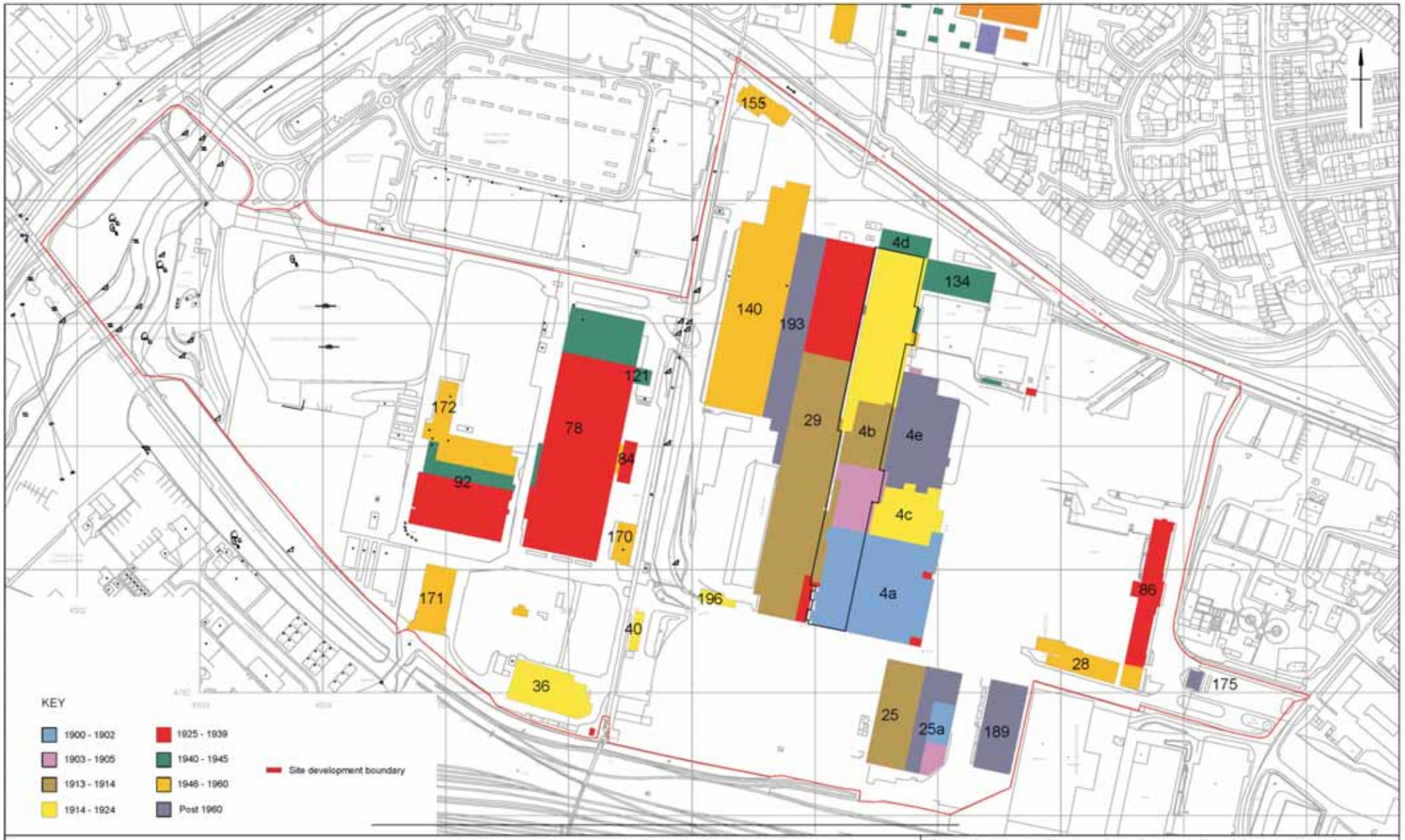
Historic map regression: 1905, 1914, 1924 and 1939

Figure 4



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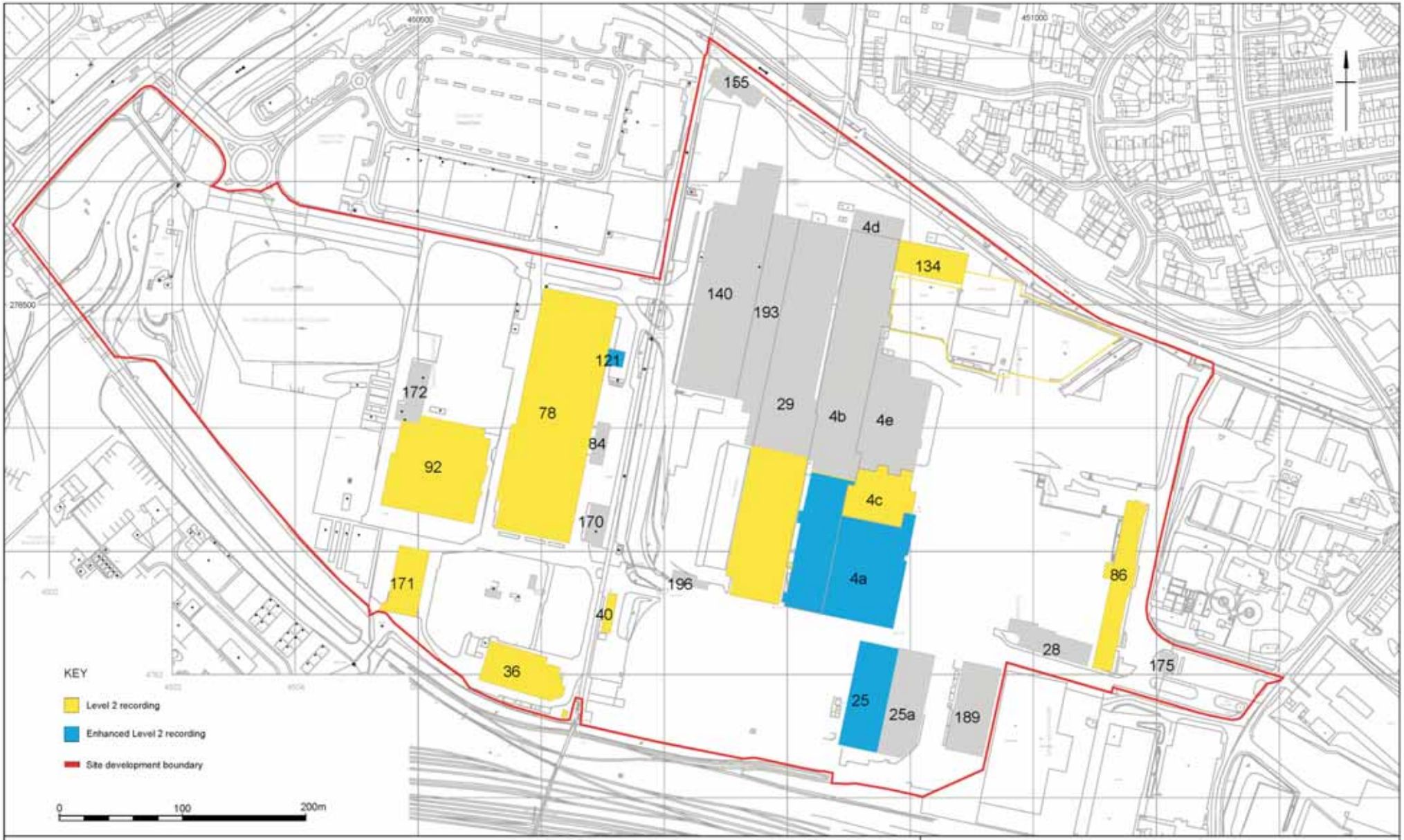
Phased site development plan

Figure 6



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Appendix One:

Individual Building Data Sheets

BUILDING		4a

Building Name	Machine Works	*Built*	1901

HISTORY

Approximately 25 acres of land, known as Glebe Farm, situated between the main railway station and River Avon was acquired for £10,000, from Thomas Hunter & Co. (railway wagon builders) in January 1900, as a site for the new works. Levelling began on January 11th 1900 and building operations commenced a few months later. Manufacturing commenced on March 14th 1902.

This building is shown on the 1902 plan as a 'Machine Shop' and is not distinguished from building 4b. It is labelled MOTORS on the 1946 plan of the B.T.H Rugby works, indicating that it has become functionally separated from building 4b by this time. It continues in use by a tenant.

DESCRIPTION

A photograph dating to 1901 shows this building, together with building 4b to its west, under construction. The photo shows the roof trusses in place, and the construction of the south brick elevation, with its long arched windows underway.
The main body of the building comprises six tall, single storey bays aligned north-south, with brick external elevations, and simple gabled roofs. The internal structure is of steel I-columns supporting the roof trusses, with pairs of colums to either side and connected by small lattice components, supporting travelling crane rails. Each roof slope has continuous glazing along it.
The south elevation of the original machine shop has had a new facing of brickwork attached to it, obscuring all but the tops of the brick window arches, and the original gable brickwork, though the original articulation of the wall largely survives internally. The new brickwork has small modern windows in it.
The westernmost bay, which forms a gallery to the turbine factory (4b) was extended northwards in phase with the incremental extension of 4b.
A seventh bay, of similar proportions but of two-storeys, attaches along the east side of the building. The majority of this building is of the original phase of construction, though it has been extended at the southern end to align with the south wall of the six bay machine shop. A second smaller, single-storey building, again of the original date of construction, also abutts the east wall of the six-bay shop.

ASSESSMENT

This structure forms a major component of the only building which survives from the initial phase of development of the B.T.H. Rugby Works.

While the interior of the building survives well, its main (south) elevation has been very seriously, and detrimentally altered. This has not only reduced the architectural significance of building 4a, but has seriously affected the context of the better preserved elevation of building 4b.

Unlike building 4b, the northern extensions of building 4a are clearly discernible from the original, allowing a clear appreciation of the extent and form of the original building.

Recommendations for Archaeological Recording Level 2 Recording

BUILDING		4a

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BUILDING		4b

Building Name	Turbine Factory	*Built*	1901

HISTORY

Approximately 25 acres of land, known as Glebe Farm, situated between the main railway station and River Avon was acquired for £10,000, from Thomas Hunter & Co. (railway wagon builders) in January 1900, as a site for the new works. Levelling began on January 11th 1900 and building operations commenced a few months later. Manufacturing commenced on March 14th 1902.Building 4b appears as a northern extension to the turbine shed (Building 4a) which occurred by 1914 (OS 25" map).
The BTH Company acquired the 'Curtis' steam turbine rights in 1902 and their first contract was in 1903 to the Cork Tramways. In 1903 F. Samuelson was sent to the US to study the General Electric 'Curtis' design turbine. On his return to England the manufacture of these machines began at Rugby. Building 4b was apparently deployed as the turbine factory and was one of the first buildings to use electric travelling cranes in the country.
The building was extended to the north in three successive phases between 1903 and c.1920. The first phase, which extended the building by 154 ft took place in 1904, with additions of 20, 000sq ft between 1913 and 1918, and a further 60,000sq ft added soon after. took place very soon after its initial construction
The 1946 plan of the site shows that the building was still used for turbine manufacture at this time, and the northern half of the building continues in use by ALSTOM at present, and will be retained following the redevelopment of the rest of the site.

DESCRIPTION

The building as viewed from the south appears to have a tall ground floor containing two levels of fenestration (now blocked) with tall clerestorey above (surviving). Internally, the building comprises a single volume, and extends to a lower floor level beneath external ground level. It is assumed that it connected to the (now lost) foundry to its south, at this lower level. Building 4a to its east does not extend down to this lower level. The side walls of the main original building were also of the same warm red-brown brick as the front elevation, and had tall round-headed windows, with wide rectangular clerestorey windows above. The majority of these window openings, where they survive in the external envelope of the building, have been blocked. Where they survive internally, through the extension of the building beyond its original envelope, they tend to remain open, and in some locations, glazed.
The internal structure is of Frodingham steel, with composite steel stanchions comprising columns supporting the roof structure and internal travelling cranes and hoists. The brickwork of the upper levels of the wall along the east side, where it abuts building 4a is also supported on steel columns, allowing open access between the two structures. The ground level of the westernmost bay of building 4a effectively forms a gallery along the east side of building 4b. This single bay was also extended northwards in parallel with the extension of 4b.
The extension northwards of this structure has created a vast building c.300m long, with a continuous central volume. The northern limit of the former brick external west wall survives within the interior of the building, though its structural function is continued northwards by steelwork. The building steps down slightly at this juncture, though the simplified structure still retains the articulation of a clerestorey. The step in the roof is clearly visibly on aerial photographs, as the roof articulation and materials changes at this point. Two separate travelling cranes operate in the north and south ends of this central volume, to either side of this step in the building.
Everything in the building bears witness to its heavy engineering function. The structural components are all extremely robust, and the original crane in the southern half of the building, manufactured by Joseph Adamson of Hyde, Cheshire, is a massive 40 tons. The weight of some of the components being assembled in this building is attested to by the internal rail network, with hugely robust bogeys used to carry them.

ASSESSMENT

This comprises, along with the original part of 4a, the only surviving building from the initial development of the B.T.H Rugby works. As such, it has considerable significance within the local context, and as the functional core of the original works. The structure and materials of the building are, however, of a standard palette for a large industrial building of this date. Although the lower level openings in the south elevation have now been infilled with brick, their form and detail survives, and the windows at clerestorey level survive complete with glazing. The architectural treatment of this building is of a much higher level than the majority of others surviving on the site. The date of the building sets it closer to the Victorian tradition of well-detailed industrial buildings, given considered architectural treatment, and designed as a symbol of the status of the company which built it, and the noble cause of industry itself. The terracotta detailing around structural openings, and forming string courses and other architectural features was not confined to the main elevation. Even the small lean-to wc block along the west side of the building

is subject to the same architectural treatment, with faux keystones set into the eaves cornice.
Despite this elevated status, it is not considered that a drawn survey of this building would be appropriate in mitigation of its demolition. It is hoped that further research of private archives might produce some drawings of the building. If not, it is proposed that a simple layout plan will suffice and that a detailed photographic record cross-referenced with this plan will suffice.

Recommendations for Archaeological Recording Level 2 Recording


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BUILDING		4c

Building Name	extension to machine shop	*Built*	Between 1914 - 1924

HISTORY

The area currently occupied by Building 4c began as a collection of approximately 5 separate smaller buildings first seen in 1905 (OS map). These buildings were gradually absorbed into the northern expansion of Building 4a by 1927.

The 1946 plan of the site shows that the building was used for the manufacture of motors, together with building 4a.

DESCRIPTION

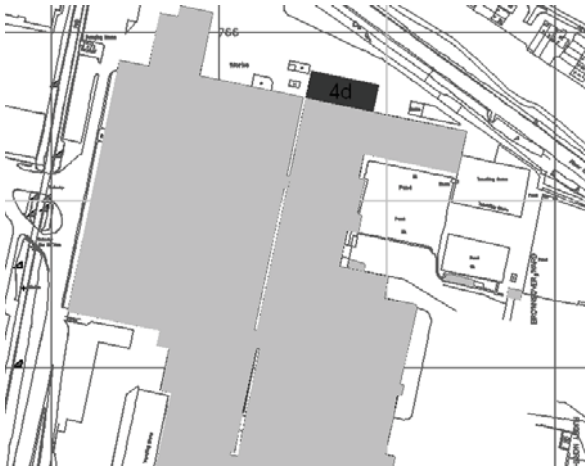
The central three bays of this extension to building 4a, continue the earlier buildings form, structure and roofscape. To either side, bays of different construction occur. On the east side of the building this brick extension to the machine shop 4a has no external window openings, and the elevation is articulated only by recessed brick panels between piers. The internal structure is similar to 4a to the south.

ASSESSMENT

This building is of little intrinsic interest, other than in association with the original machine shop 4a to the south.

Recommendations for Archaeological Recording Level 2 Recording

BUILDING		4d



Building Name

Built Between 1940-45

HISTORY

This final section, was added to the northern end of the extensive turbine factory, building 4b, during the 1940's. The exact use of this single volume is not known.

DESCRIPTION

This northernmost element of the 300m long building 4b is of different construction and fenestration. A single tall volume, the floor level of this structure is raised above that of the gallery formed by the westernmost bay of building 4a, and far above the lower floor level of the volume 4b to its south. The south wall of this volume is almost entirely glazed, allowing borrowed light into the north end of 4b, while the north and east elevations are of thin brick panels between the structural steelwork, with moderately tall steel windows inset into each bay. The roof structure is of flat steel trussses, and the building has a profiled steel roof covering.

ASSESSMENT

This building is to be retained in the redevelopment, and no recording will therefore be necessary.

Recommendations for Archaeological Recording NONE

007

BUILDING		4e

Building Name		*Built* post 1960

HISTORY

A further collection of small separate buildings on the site of Building 4e appear in 1939 (OS map) and the footprint of these buildings appears unaltered until 1983 (OS map). Post-1983 a new building has been erected on the site of the demolished buildings. Building 4c had appeared as a northern extension to the machine shop (Building 4a) between 1915 and 1927 (OS 25" mapping), and Building 4e appears as a second extension to the machine shop (Building 4a) which occurred after 1960.

DESCRIPTION

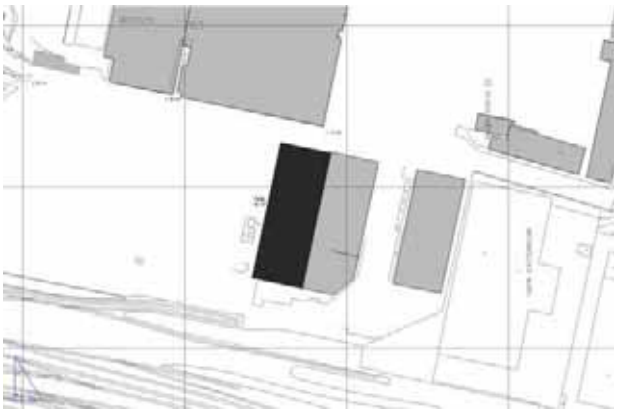
This building has a steel framework, clad in corrugated sheet set above low brick plinth walls.

ASSESSMENT

This building is of very modern construction, and is of little architectural or historic interest.

Recommendations for Archaeological Recording NONE

BUILDING		25



Building Name | *Built* Between 1906 - 1914

HISTORY

Building 25 appears in the cartographic record for the first time on the 1914 OS 25" map.

The building was initially used for the manufacture of traction plant, controllers and tinsmithing work, but is shown as the 'Control Gear Factory' on the 1946 plan of the site. More recently it has been the coil department, where the winding of field coils for motors took place, using a largely female workforce.

Since 1983 the building has been made contiguous with Building 25a to the east, by the extension that building.

DESCRIPTION

This long rectangular building has a very tall ground floor, with three floor levels above. The building comprises 26 bays with asymmetrical north-light roofs, with oculus openings in alternate gables, now bricked-up. Constructed of a warm red brown brick, with concrete slab floors, and concrete lintels and cills to openings, the building is extremely well-lit by large metal framed windows in each bay.

The west elevation survives in good condition, the only visible alteration being the removal of the former aerial walkway towards the southern end of the second floor. The east elevation has been more substantially altered. Later stair towers have been added at NE and SE corners of the buildings, top-lit by means of glazed lanterns. Lift towers have been added, and fenestration of the original stair towers has been altered.

The internal spaces at each floor level were predominantly large open machine shops, with two lines of steel columns dividing the spaces into three bays.

ASSESSMENT

The building survives relatively well, though is of a very standard design and construction for a multi-storey manufacturing building of its date. It has little architectural, historic or technological interest, but contributes to the group value of the surviving works buildings.

Recommendations for Archaeological Recording Level 2 Recording

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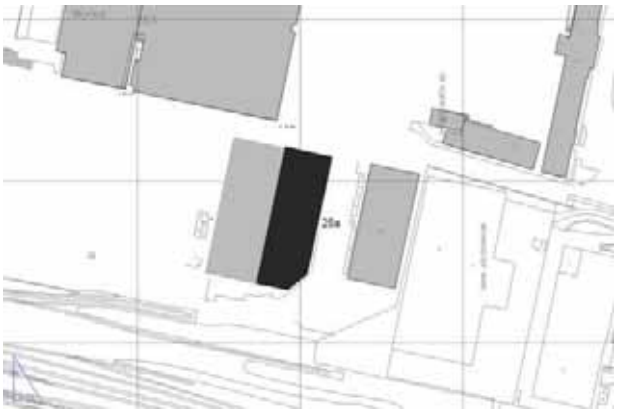
BUILDING		25A



Building Name		*Built* 1900 - 1902

HISTORY

The earliest element on the site appears to be a small building constructed 1900 – 1902 and labelled as' Incandescent Lamp Dept' in a 1902 plan of the site. By 1905 (OS 25" map) this building had doubled in size by an extension to the south (with the SE corner chamfered due to the railway line). A photo of the site taken in September 1925 shows a three storey brick building in very poor, almost semi-derelict condition. However, the building remained associated with lamp production and is labelled 'Lamps' on the 1946 plan of the site, so it must have been refurbished or rebuilt by this date.

The footprint of Building 25a remained unaltered until 1983 when it was incorporated into a larger building joining it to Building 25 to the west. The date at which the building seen in 1925 was reduced or removed is unclear, but it is possible that remnants of the fabric of the earlier building survive in the eastern perimeter of the surviving building.

DESCRIPTION

The building as it survives today is a large, three-bay structure with brick lower walls, surmounted by corrugated asbestos sheet supported on a steel frame. The eastern two bays reflect the earlier building located here, with the western bay being a later build, infilling the gap between the earlier building and building 25 to the west. The north end of the building is a completely modern brick-built structure of three equal bays, with loading bays central to the north wall, and at the north end of the east wall.

ASSESSMENT

Although this building may contain fabric belonging to the original small lamp department constructed here in 1901-2, the form of this early building no longer survives, and any surviving fabric has been subsumed into the later large warehouse. The building which survives today is of little interest.

Recommendations for Archaeological Recording NONE

040

BUILDING		28

Building Name		*Built* Between 1946 - 1959

HISTORY

This building is first shown on the 1939 OS edition, and on the 1946 plan of the works it is shown as a garage. It appears to have been reduced in length by 1959, to allow the extension of the office building (86) with a new education building at its southern end.

The location of Building 28 is shown originally as 'Garages' in the 1946 plan of the site, but more recently it became the fire service building, with part of it being the medical centre.

A small building offset from the north-west corner of building 28 functioned as the telephone exchange for the works, and still retains the exchange equipment.

DESCRIPTION

A long low, single storey building comprising two parallel east-west ranges. The building has been substantially altered. The segmental arched windows do survive in the western half of the building, but have been replaced by concrete lintels in the eastern half. The eastern end has been largely rebuilt following its reduction in length to allow the extension of the office building (86). The new structure is of modern dark brown brick. The framework support for an eaves fascia survives, but the fascia is lost. The roofs remain slate covered.

ASSESSMENT

This building was never part of the important manufacturing function of the BTH works, nor is it of any architectural or historic signficance.

Recommendations for Archaeological Recording	NONE

BUILDING		29

Building Name | *Built* 1914

HISTORY

Building 29 is recorded as being approved in 1912 and completed by 1914 although it does not appear on the 1914 OS map. This building, when completed, had a floor area of 60,000 sq, ft. About 20,000 sq. ft. of floor space is reported as having been added between 1913 and 1918, followed later by an additional 60,000 sq. ft.
The 1946 plan of the site shows that the building was divided roughly in half with the manufacture of 'Large Machines' taking place in the southern half and 'Transformers' in the north.
A study of the available historic mapping shows that the footprint of Building 29 does not appear to have changed substantially since 1939.
It is intended to retain the northern half of this building in use while demolishing the southern half.

DESCRIPTION

The original 28 bays, dating to 1912-4, have robust concrete framing, with alternate diagonal bracing in all bays other than the end bays, which has cross-bracing for additional strength. The panels between the columns and braces are infilled with brick. The building has a north-light roof, with concrete gables, each pierced by an oculus. A historic photograph thought to be within the north end of this building indicates, that the extension to the building was constructed using steelwork rather than concrete, but echoed the cross-bracing of the original build. The roof is covered with corrugated sheet.

ASSESSMENT

It would appear that this building is an early example of the use of pre-cast concrete framing for such a large industrial building. This type of construction did not enjoy a long or extensive period of use in this context, and this could result in building 29 being a relatively rare example of this particular structural building type. It is proposed that further research into this form of construction and date is carried out within the phase 2 archaeological work.

Recommendations for Archaeological Recording Level 2 Recording

072

110

BUILDING		36

Building Name | *Built* Between 1914 - 1927

HISTORY

Building 36 is first shown on the OS 1927 25" map. It appears to have been extended slightly by 1946, when it is labelled as 'Canteen' on the plan of the site, with further very minor additions made by 1959. The footprint of the building does not appear to have changed since that date, and it continued in the same use throughout its life.

DESCRIPTION

This building comprises two pairs of single storey brick ranges, with shallow vaulted roofs, extending from a roughly square, two-storey, fat-roofed central volume. The majority of structural openings have concrete lintels, however, elements of the original brick detailing survive on the southern elevation of the building, comprising a dentilled feature under an offset moulding over half-round door heads. Tthe roofs are covered with profiled metal sheet.

The building has been much altered with small-scale extensions and blockings.

(Access to the interior was not possible).

ASSESSMENT

This building did not have a manufacturing function, and is therefore of lesser significance within the site. However, it does contribute to the range of building functions which survive of the site, and which demonstrate the former comprehensive works premises.

Recommendations for Archaeological Recording Level 2 Recording

018

067

BUILDING		78

Building Name | *Built* 1935 - 1936

HISTORY

Technological advances in lamp and bulb production led to rapid expansion in the lamp business in the early 1930s leading to the construction of an additional Lamp Factory on the west side of the works in 1935. This was a single storey building covering 100,000 sq. ft. and was completed for lamp manufacture by Easter 1936. Between 1940 and 1946 the building was extended to the north by 30,000 sq. ft. for additional space for lamp manufacture. In more recent years it has functioned as a light machine shop.

Other smaller buildings have appeared to the immediate east during this period including Building 121 and Building 84 which have become joined to Building 78 by 1959 (OS 1:2500 map). A study of the historic mapping appears to show that since 1959 the building footprint does not appear to have changed.

DESCRIPTION

This extensive brick manufacturing shed roof now comprises 26 bays, having been extended from 20. The brick external envelope is generally in 9" brickwork set between shallow offset piers, capped with blue plinth brick. On the north end elevation, the brickwork is set in recessed panels, with blue plinth bricks below, and a thicker corbelled eaves detail above. It has a saw-tooth, north-light roof, covered with corrugated sheet. A narrow lower lean-to range runs along the southern half of the western side of the building, apparently having been extended northwards at the time of extension of the machine shop.
The interior now comprises two major spaces. The central divide was originally not a solid partition, but housed heating fans at mezzanine level. Later fibreboard partitions now sub-divide areas of the major manufacturing and assembly spaces.

ASSESSMENT

This building is a typical example of a pre-war industrial shed, with little in the way of architectural detailing, and little historic interest, other than as part of a significant group of manufacturing buildings belonging to a single works.

Recommendations for Archaeological Recording Level 2 Recording

030

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BUILDING		84

Building Name		*Built*	Between 1940 - 1946

HISTORY

Shown on the 1946 plan of the site, but of too insignificant a scale for its function to be identified. A study of the available historic mapping shows that Building 84 appears to have been joined to Building 78 (to the immediate W) sometime after 1983.

DESCRIPTION

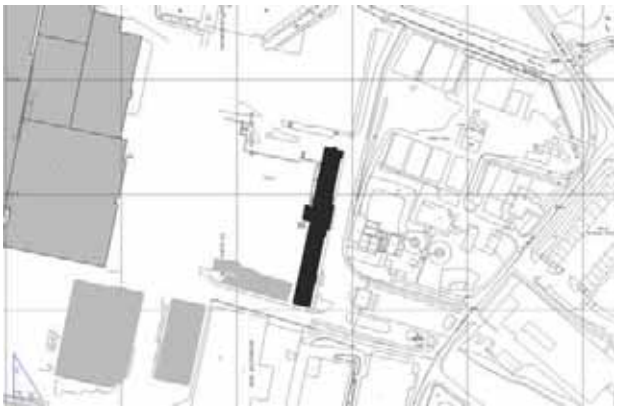
This relatively small, rectangular brick building has been significantly altered. The windows are now aluminium replacements, and it has a relatively new profiled sheet roof.

ASSESSMENT

This building is of little significance.

Recommendations for Archaeological Recording NONE

BUILDING		86



Building Name | *Built* 1937 - 1938

HISTORY

In April 1937, work commenced on a new office block at Rugby, the building having an imposing frontage to the east and containing a total floor area of 74,600 sq. ft. It was designed to house the engineering and commercial offices, and was constructed in reinforced concrete with a brick facing. This new building enabled 27,000 sq. ft. to be released for manufacturing space in other parts of the BTH complex. The new office building was completed in 1938.

The building was originally 'T' shaped in plan with the western spur of the building disappearing after 1983 (OS mapping) when a number of buildings in this part of the site were also demolished. Between 1946 and 1959 (OS map) the southern spur of the building was extended by approximately 21m to provide an Education Building.

DESCRIPTION

The building is designed in modernist 1930's style, with both strong horizontal and vertical emphases, created by the uniformity of its articulation on both front and rear elevations. The building is constructed of reinforced concrete with light brown brick facing on the front and end elevations only. Stone is used for the main entrance, a deep string between ground and first floors, and for fluted vertical detail to either side of the windows in the projecting end bays. The words BRITISH THOMPSON HOUSTON have been carved in modernist script in the three bays of the entrance screen.

The interior of the main entrance reception continues the modernist detailing, with clean lines and sleek marble wall and column finishes, and modernist grilles concealing the radiators. All original windows have now been replaced with upvc, though the pattern of small panes has been retained.

ASSESSMENT

Although not one of the more functionally significant buildings on the site, this is one of the most architecturally interesting. However, the interest lies primarily in the front elevation, with its overtly modernist detailing, and this has been significantly compromised by the use of upvc replacement windows.

Recommendations for Archaeological Recording Level 2 Recording

074

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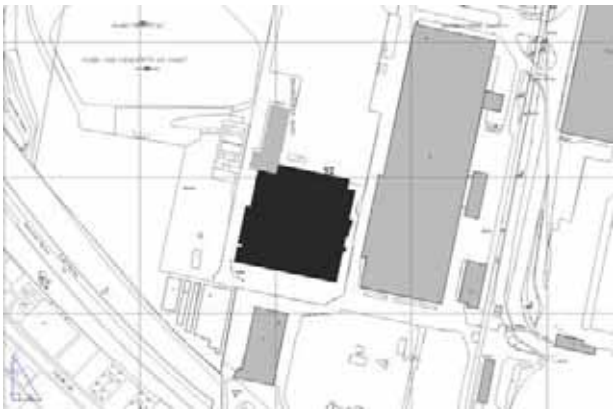
BUILDING		92



Building Name | *Built* Between 1927 - 1939

HISTORY

The southern section of Building 92 first appears in the cartographic record on the 1939 OS 25" map of the site, although it is possible that it was built at a similar time to its stylistically similar neighbour to the east (Building 78) which was constructed between 1935 - 36. It would therefore comprise an element of the major expansion westwards of the Leicester Road Works.

The building is recorded as being constructed specifically for the production of predictors in relation to war work (predictors were manufactured until 1943 and used particularly in anti-aircraft guns). It is likely that the building was expanded to the north by 1946 when it is shown as Small Gear Assembly on the plan of the works.

The 1959 OS 1:2500 map shows that the building expanded further to the north between 1946 - 1959 with Building 172 constructed as a separate small block on the NW corner.

DESCRIPTION

This brick manufacturing shed is of similar basic design to the larger shop (78) to its east. A tall single storey manufacturing shed with brick curtain walls with metal windows with concrete lintels. Steel framed interior, providing large open assembly areas, well-lit by north-light roof. Each bay has its own travelling crane, resulting in additional columns to either side of the main roof support, giving a tri-partite structure at each column position, unlike its neighbour to the east, which was used for lighter manufacturing. The building now has a modern rubberised floor surface.

ASSESSMENT

The origins of this building are immediately pre-war, and it is of a typical style and construction for a manufacturing shop of this period. It is little intrinsic interest, but contributes to the group value indicating further expansion of the works, and diversification into different products.

Recommendations for Archaeological Recording Level 2 Recording

060

061

BUILDING		121

Building Name	former engine shed	*Built*	Between 1940 - 1946

HISTORY

Building 121 first appears in the cartographic record on the 1946 plan of the B.T.H works. It appears to have replaced a smaller earlier building at the same location, but was presumably re-buit when building 78 was extended to the north. It appears that it also replaced the function of the earlier building, that is of an engine shed for the internal rail trucks which transported products around the works. The railway to the earlier shed ran across the top of shed 78, but following the extension of that building, it was necessary to modify the rail tracks in this area of the site.

A study of the historic mapping appears to show that since 1959 the building footprint does not appear to have changed.

DESCRIPTION

This small brick bulding comprises two short north-lit bays. Copings are of concrete, while lintels over openings vary between steel and concrete. The roof structure has complex composite trusses with horizontal bracing, and is supported on steel beams and stanchions, and covered with corrugated asbestos sheet. Tall timber doors survive in the north end of the building, and railway tracks survive within the entrance to the building. Huge inspection pits are situated at lower level, beneath the tracks, to allow inspection and repair of the engines, and large concrete lined coke hoppers are situated at low level along the west side of the structure.

ASSESSMENT

This is one of relatively few buildings within the works which retains a good degree of evidence of its very particular original function. Although this was merely an ancillary function to the main manufacturing function of the B.T.H works, this building adds to the picture of the

Recommendations for Archaeological Recording Level 2 Recording

069

070

071

BUILDING		134

Building Name		*Built* Between 1940 - 1946

HISTORY

Building 134 appears as an extension on the NE corner of the Turbine factory. It first appears in the 1946 plan of the site and is shown as a 'Gear Cutting' factory. The building does not appear on the 1939 OS 25" map.

After the outbreak of war many different manufacturing sections at BTH were hastily converted or established to cater for the different manufacturing sections associated with the production of munitions or other materiel of war.

A study of the available historic mapping shows that the footprint of Building 134 has not changed since 1946.

DESCRIPTION

The exterior of this building now gives the appearance of a relatively modern portal framed shed, with walls clad in alternating panels of profiled metal sheet and translucent glass fibre, under a profiled metal sheet roof. However, the original structure and fabric of the building survives within this later casing, and shows the building to be of very similar construction to building 4, which it abutts at its western end. A large travelling crane remains surmounted on robust tri-partite steel columns, relfecting its relatively heavy engineering function.

ASSESSMENT

This building is of little intrinsic interest, but contributes to the group value as an extension of the significant building 4 to its west.

Recommendations for Archaeological Recording Level 2 Recording

024

026

BUILDING		140

Building Name | *Built* Between 1946 - 1959

HISTORY

A collection of smaller buildings appear on the location of Building 140 for the first time in 1939 (OS 25" map). These buildings are attributed to 'Patterns' and 'Carpenters' in a 1946 plan of the site. This building may have been retained within the extensive enlargement of the building to the south, and limited extension to the north, which took place between 1946 and 1959 as it appears on the OS 25" map of 1959.

Post-1959 the footprint of the building does not appear to have altered significantly though, to the east, Building 193 has been constructed at some point after the 1983 mapping to infill the gap which originally stood between Building 140 and Building 29.

This building has been modernised and remains in use by Alstom.

DESCRIPTION

It is impossible to see if the original building on this site survives within the extended structure. The north end of the building, which was constructed during the 1950's, has been recently clad with profiled sheet, though the tall panels of glass block in the east elevation remain exposed, and it is likely that the original structure of the building survives within the later cladding.

The large-scale southern expansion of the building during the 1950's comprises a tall, multi-storey buildingwith north-light roofs. This has recently been extended to a lesser height along the western side, and the whole, up to the level of the roof gables, has recently been clad in profiled metal sheet.

ASSESSMENT

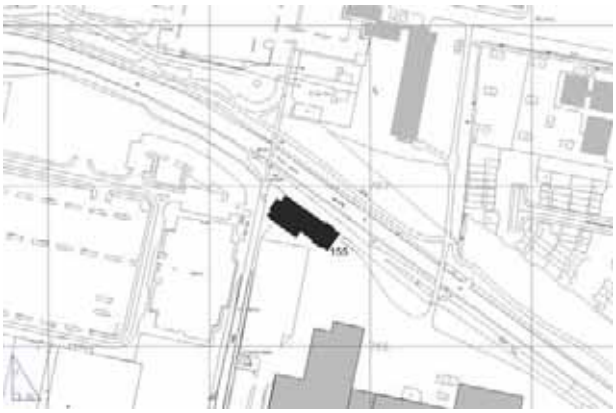
This building is to be retained in the current development programme and is therefore not considered for archaeological recording.

Recommendations for Archaeological Recording NONE

021

022

BUILDING		155



Building Name		*Built* Between 1946 - 1959

HISTORY

The building does not appear on the 1946 plan of the works, but appears for the first time in 1959 (OS 1:2500 map).

It remains in use by Alstom, and will not be affected by the re-development of the Leicester Road site.

DESCRIPTION

This building will be retained in situ, and it is therefore not described.

ASSESSMENT

This building will not be affected by the redevelopment proposals, and is therefore not considered for archaeological recording.

Recommendations for Archaeological Recording NONE

BUILDING		170

Building Name		*Built* Between 1946 - 1959

HISTORY

This building appears for the first time on the 1959 OS 1:2500 map.

DESCRIPTION

A flat-roofed, two-storey brick building, with large panels of glazing separated by bands of cladding through some elevations. No internal access was made.

ASSESSMENT

This building is of relatively late date, and was not of a manufacturing function. It is architecturally and functionally undistinguished.

Recommendations for Archaeological Recording NONE

BUILDING		171

Building Name		*Built* Between 1946 - 1959

HISTORY

Not shown on the 1946 plan of the BTH works, Building 171 appears in the cartographic record for the first time on the 1959 OS map. It was apparently purpose-built as the works garage, for the servicing and repair of works vehicles, presumably replacing the function of Building 28 near the entrance to the site. It is possible, from the evidence of the form of the building, that the southernmost bay of the building, and the low extension to its south were added after its initial construction.
When the BTH works closed on this site, and this building became redundant, a group of former employees set up their own business here, which continues in operation.

DESCRIPTION

The building as it survives today is of four wide bays, aligned east west, forming a rectangular buliding aligned north-south. The northernmost bay is of two storeys, providing staff facilities and offices, while the three bays to the south compris large open workshop spaces. The original two workshop bays have huge half-glazed timber doors to eaves level, and across the full width of the bay. The doors in the southern bay are slightly less tall. The interiors of the workshop bays all interconnect to form a single workspace. A small flat-roofed structure at the south end of the building is still in use as the workshop offices.

ASSESSMENT

This building is relatively late, and of ancillary function to the manufacturing works. However, it is of some group value within the works as a whole.

Recommendations for Archaeological Recording	Level 2 Recording

057

BUILDING		172

Building Name		*Built* Between 1946 - 1959

HISTORY

Building 172 appears for the first time on the 1959 OS 1:2500 map bus does not appear on the site plan shown in 1946. Building 172 appears as an extension to Building 92 to the immediate south which is shown in the 1946 plan of the site as 'Small Gear Assembly'. Originally a rectangular building, a small extension has been made at the south-west corner of the building making it L-shaped.

DESCRIPTION

This three-storey building with shallow pitched roof is probably of brick construction, though this is now concealed beneath grey horizontal profiled metal sheet. A small extension at the south-west corner is single storey brick with profiled sheet roof.

ASSESSMENT

This relatively late building is of unknown original function, and its appearance has been seriously compromised by its modern metal sheet cladding. It is considered to be of little interest.

Recommendations for Archaeological Recording NONE

BUILDING		175

Building Name	security gate lodge	*Built*	post 1959

HISTORY

This building post-dates available mapping, and is thought to date to the 1960's. It remains in use as the security control at the entrance into the Leicester Road site.

DESCRIPTION

Two-storey light brown brick structure with 'pebble-dash' wall finish at first floor. Continuous glazing at ground floor level on the east side of the building provides good visual contact with the entrance to the site.

ASSESSMENT

This building is of relatively modern construction and is of little architectural or historic interest.

Recommendations for Archaeological Recording NONE

BUILDING		189

Building Name		*Built* Post 1983

HISTORY

Building 189 is of recent construction and does not appear in any of the available historic mapping.

DESCRIPTION

This building is a large modern industrial/warehousing shed, clad in vertical profiled metal sheet with a pair of large roller shutters in the north elevation.

ASSESSMENT

This building is of no architectural or historic interest.

Recommendations for Archaeological Recording NONE

Appendix Two:

Extracts from *Understanding Historic Buildings: A guide to good recording practice*

LEVELS OF RECORD

Level 1

Level 1 is essentially a **basic visual record**, supplemented by the minimum of information needed to identify the building's location, age and type. This is the simplest record, not normally an end in itself but contributing to a wider aim. Typically it will be undertaken when the objective is to gather basic information about a large number of buildings – for statistical sampling, for area assessments or historic landscape characterisation, for a pilot project, to identify buildings for planning purposes, or whatever resources are limited and much ground has to be covered in a short time. It may also serve to identify buildings requiring more detailed attention at a later date.

Level 1 surveys will generally be of exteriors only, although they may include superficial interior inspection for significant features. Only if circumstances and objectives allow will any drawings be produced, and these are likely to take the form of sketches.

A Level 1 record will typically consist of:

drawings	sometimes 1
photography	1, sometimes 2
written account	1-4

Level 2

This is a **descriptive record**, made in circumstances similar to those of level 1 but when more information is needed. It may be made of a building which is judged not to require any fuller record, or it may serve to gather data for wider project. Both the exterior and the interior will be viewed, described and photographed. The record will present conclusions regarding the building's development and use, but will not discuss in detail the evidence on which these conclusions are based. A plan and sometimes other drawings may be made but he drawn record will normally not be comprehensive and may be tailored to the scope of a wider project.

A Level 2 record will typically consist of:

drawings	sometimes 1, Sometimes one or more of 2-7
photography	1, 2, 4
written record	1-3, 6

Level 3

Level 3 is an **analytical record**, and will comprise an introductory description followed by a systematic account of the building's origins, development and use. The record will include an account of the evidence on which the analysis has been based, allowing the validity of the record to be re-examined in detail. It will also include all drawn and photographic records that may be required to illustrate the building's appearance and structure and to support an historical analysis.

The information contained in the record will for the most part have been obtained through an examination of the building itself. If documentary sources are used they are likely to be those which are most readily accessible, such as historic Ordnance Survey maps, trade directories and other published sources. The record will not normally discuss the building's broader stylistic or historical context and importance at any length. It may, however, form part of a wider survey – thematic or regional, for example – of a group of buildings, in which additional synthesis. A Level 3 record may also be appropriate when the fabric of a building is under

threat but time or resources are insufficient for detailed documentary research, or where the scope for such research is limited.

A level 3 record will typically consist of:

drawings	normally 2; sometimes one or more of 3-12
photography	1-9
written account	1-3, 6-9, 11-13, 22; sometimes 5, 14-16, 18-20, 23

Level 4

Level 4 provides a **comprehensive analytical record** and is appropriate for buildings of special importance. Whereas Level 3 analysis and interpretation will clarify the building's history in so far as it may be deduced from the structure itself, the record at Level 4 will draw on the full range of available resources and discuss the building's significance in terms of architectural, social, regional or economic history. The range of drawings may also be greater than at other levels.

A level 4 record will typically consist of:

Drawings	2; sometimes one or More of 3-12
photography	1-9
written account	1-3, 5-8, 10-22; Sometimes 23

Drawings

1. Sketched plan, section, elevation or detail drawings (if a more thorough drawn record is not made). Sketches may be roughly dimensioned.
2. Measured plans (to scale or fully dimensioned) as existing. These may extend to all floors, or may be limited to one or a few. The latter option may be appropriate, for example, in a town centre building where upper floors have been little altered but modern retail use has obscured evidence of an earlier form of the ground floor. Buildings with a repetitive structure (such as some industrial buildings) may also be planned on one floor only, but a note or sketch plan should indicate the arrangement of other floors. Plans should show the form and location of any structural features of historic significance, such as blocked doors, windows and fireplaces, masonry joints, ceiling beams and other changes in floor and ceiling levels, and any evidence for fixtures of significance, including former machinery.
3. Measured drawings recording the form or location of other significant structural detail, such as timber or metal framing.
4. Measured cross-sections, long-sections or elevation sections illustrating the vertical relationship within a building (floor and ceiling heights or the form of any architectural decoration (the moulding profiles of door surrounds, beams, mullions and cornices, for example)
5. Measured drawings showing the form of any architectural decoration (the moulding profiles of door surrounds, beams, mullions and cornices, for example) or small-scale functional detail not more readily captured by photography. A measured detail drawing is particularly valuable when the feature in question is an aid to dating.
6. Measured elevations, where these are necessary to an understanding of the building's design, development or function and not more readily obtained by photography.
7. A site plan, typically at 1:500 or 1:1250, relating the building to other structures and to related topographical and landscape features.
8. A plan or plans identifying the location and direction of accompanying photographs.
9. Copies of earlier drawings throwing light on the building's history.
10. Three-dimensional projections when these are of value in understating the building. If these are to be considered as components of the record they must always be supported by measured plans, sections and elevational details.
11. Reconstruction drawings and phased drawings, when these are of value. Since these are by their nature interpretive, the evidence on which any reconstruction or phasing is based must always be given. Successive phases of a building's development may be shown by graded tone (dark to light, with darker being the earlier), by colour, by sequential diagrams or by annotation. Whenever phased drawings are included in a record, they must be accompanied by the unmarked drawings on which they are based.
12. Diagrams interpreting the movement of materials (process flow) or people (circulation), or the segregation of people or activities (eg permeability diagrams), where these are warranted by the complexity of the subject. As with items 10 and 11, the evidence supporting the interpretations must be provided.

Photography

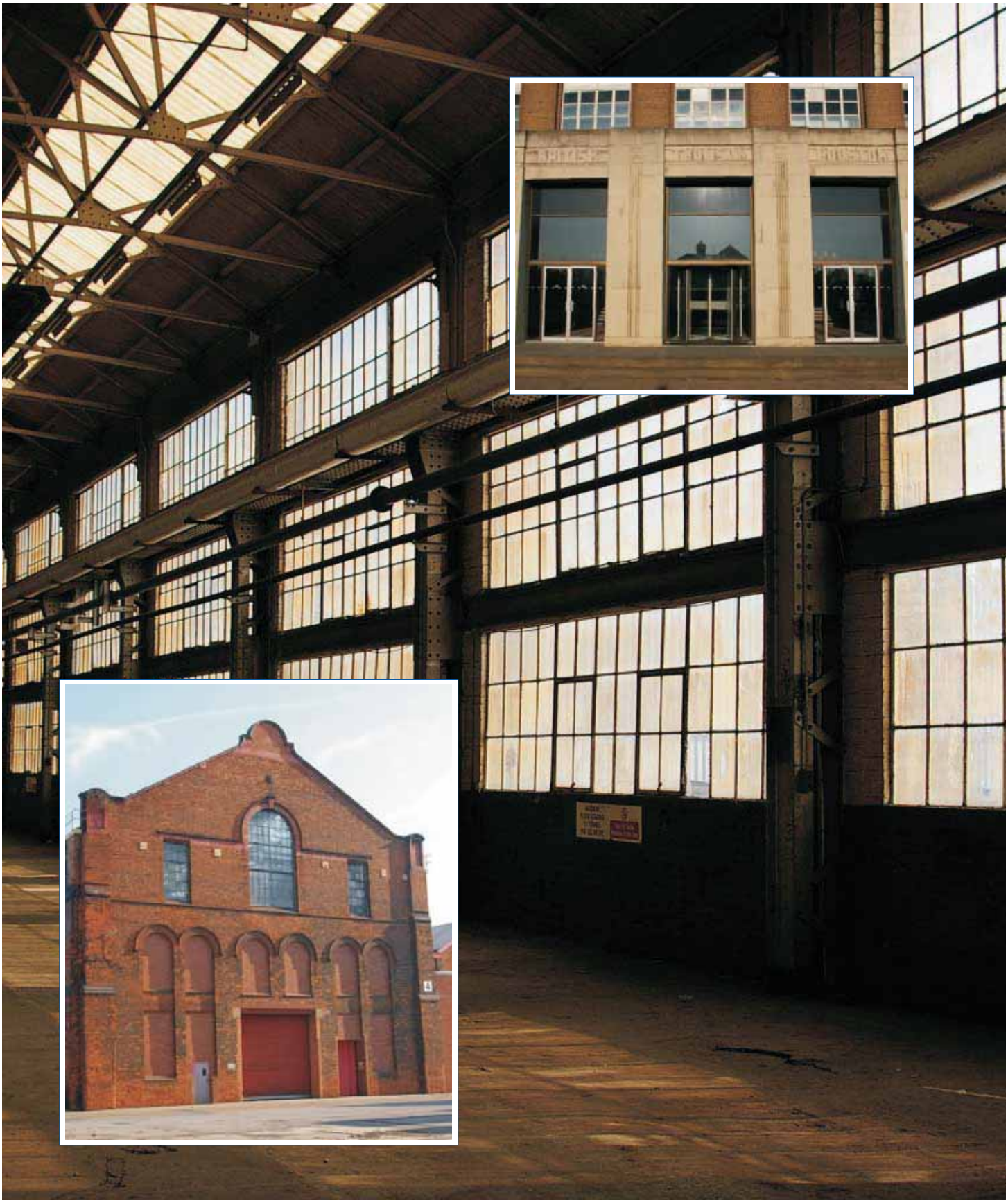
1. A general view or views of the building (in its wider setting or landscape, if the views noted in 2 below are also adopted.
2. The building's external appearance. Typically a series of oblique views will show all external elevations of the building, and give an overall impression of its size and shape. Where an individual elevation embodies complex historical information, views at right angles to the plane of the elevation may also be appropriate.

3. Further views may be desirable to indicate the original design intentions of the builder or architect, where these are known from documentary sources or can be inferred from the building or its setting. In the case of building elevations which have been conceived as formal compositions, views at right angles to the plane of the elevation may again be appropriate.
4. The overall appearance of the principle rooms and circulation areas. The approach will be similar to that outlined in 2 above.
5. Any external or internal detail, structural or decorative, which is relevant to the building's design, development or use and which does not show adequately on general photographs. When photographing details it can be helpful to include a clearly marked and suitably sized scale next to the subject and parallel to one edge of the photograph.
6. Any machinery or other plant, or evidence for its former existence.
7. Any dates or other inscriptions, any signage, makers' plates or graffiti which contribute to an understanding of the building or its fixtures or machinery, if not adequately captured by transcription. A contemporaneous transcription should be made wherever characters are difficult to interpret.
8. Any building contents or ephemera which have a significant bearing on the building's history (for example, a cheese press or a malt shovel), where not sufficiently treated in general photographs.
9. Copies of maps, drawings, views and photographs, present in the building and illustrating its development or that of its site. The owner's consent may be required.

The written account

1. The building's precise location. As a National Grid reference and in address form.
2. A note of any statutory designation (listing, scheduling or conservation area). Non-statutory designations (historical parks and gardens registers, local lists etc) may be added.
3. The date of the record, the name(s) of the recorder(s) and, if an archive has been created, its location.
4. A summary (if not further details are called for) of the building's type or purpose, historically and at present, its materials and possible date(s), in so far as these are apparent from a superficial inspection.
5. A table of contents and a list of illustrations or figures.
6. An expansion of 4, if appropriate, summarising the building's form, function, date and sequence of development. The names of architects, builders, patrons and owners should be given if known. The purpose of such an expansion is to describe the building when no fuller record is necessary, to serve as an introduction to the more detailed body of the record that may follow, and to satisfy those users who may need no more than a summary of the report's findings.
7. An introduction, setting out the circumstances in which the record was made, its objectives, methods, scope and limitations, and any constraints which limited the achievement of the objectives. Where appropriate the brief for the work or the project design should be stated or appended.
8. Acknowledgements to all those who made significant contributions – practical, intellectual or financial – to the record or its analysis, or who gave permissions for copyright items to be reproduced.
9. A discussion of published sources relating to the building and its setting, an account of its history as given in published sources, an analysis of historic map evidence (map regression) and a critical evaluation of previous records of the building, where they exist.
10. An expansion of 9, if appropriate, drawing additionally on primary documentary sources.

11. An account of the building's overall form (structure, materials, layout) and its successive phases of development, together with the evidence supporting the analysis.
12. An account of the past and present uses of the building and its parts, with the evidence for these interpretations. An analysis of any circulation pattern or decorative, iconographic or liturgical scheme. An account of any fixtures, fittings, plant or machinery associated with the buildings, and their purposes. For an industrial building. A sequential account of the ways in which materials or processes were handled.
13. Any evidence for the former existence of demolished structures or removed plant associated with the building.
14. A summary of the findings of any specialist reports (dendrochronology or paint analysis, for example).
15. A discussion of the building's past and present relationship to its setting: for example its relationship to local settlement patterns, to a field system, to a park, garden, moat, graveyard or other artificial landscape; its part in any larger architectural or functional group of buildings; its visual importance as a landmark.
16. An assessment of the potential for further investigative or documentary work, and of the potential survival of below-ground evidence for the history of the building and its site.
17. A discussion of the architectural or historical context or significance of the building locally, regionally or nationally, in terms of its origin, purpose, form, construction, design, materials, status or historical associations.
18. Copies of historic maps, drawings, views or photographs illustrating the development of the building or its site (the permission of the owners or copyright holders may be required).
19. Copies of other records of the building, including specialist reports (again with any necessary permissions), or a note of their existence and location.
20. Any further information form documentary sources, published or unpublished, bearing on the circumstances of its building, designer, craftsmen, ownership, use and occupancy, with a note on the sources of the information.
21. Relevant information from owners, builders, architects or others who may be acquainted with the building, including oral history. The sources of the information must be given and it is important that the particular strengths and weaknesses of oral information are weighed.
22. Full bibliographic and other references, or a list of the sources consulted (in long reports it is preferable to include both). Websites which may prove to be ephemeral should be avoided as references wherever possible; where their use is unavoidable the date on which the site was consulted should be noted.
23. A glossary of architectural or other terms likely to be unfamiliar to readers. If few in number, terms may be explained more economically within the text or in foot or endnotes.



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