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UNIVERSITY OF BIRMINGHAM

Commercial Road Substation

Gloucester
Gloucestershire

Historic Building Record and Appraisal

March 2010

UNIVERSITY OF BIRMINGHAM

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Commercial Road Substation
Gloucester, Gloucestershire

HISTORIC BUILDING RECORD AND APPRAISAL

by

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Commercial Road Substation
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Commercial Road Substation
Gloucester, Gloucestershire

Historic Building Record and Appraisal

SUMMARY

Birmingham Archaeology *was commissioned in February 2010 by Entec UK Ltd, working on behalf of Central Networks, to undertake an Historic Building Record and Appraisal at the Commercial Road Electricity Substation, Gloucester, Gloucestershire (NGR: SO 82884 18466). The record was required by the Historic Environment Manager of Gloucester City Council in advance of the reconfiguration of the substation in order to meet future increases in demand.*

The surviving buildings on the site comprise two discrete blocks. To the west a long, narrow former administration building is located flanking the western side of the entrance driveway to the compound, while to the north-west of the site are located the former switch-room range and adjoining workshop block of the Gloucester Electricity Works of 1899-1900.

The study has established that the administration block dates most probably to the first half of the 1830s and was related to a building formerly lying to the west, used from 1834 by the 'Commercial Rooms Society of Merchants for the Promotion of Trade of the Port of Gloucester'. Whatever its origin, it was certainly in place by 1843 when it is indicated on Causton's Map of the City and Borough of Gloucester. It would appear to have originally been arranged as four discrete office suites with separate entrances to the east elevation, traceable within the surviving fabric. The building has clearly undergone significant phases of alteration and adaptation over time, perhaps including the full reconstruction of the Commercial Road elevation. It is unclear whether the building formed a part of the Gloucester Electricity Works from its inception, though it was incorporated into the latter by 1923 at the latest when surviving drawings delineate extensive alterations to the structure.

The remainder of the recorded structures on the site form the fragmentary remains of the Gloucester Electricity Works, officially opened 19th July 1900, namely the original switch-room and workshop, though also including the interior elevation of the former turbine hall. Unfortunately, the buildings have been to a great extent removed from their historical and functional context by the demolition of the related Electricity Works buildings, in particular the large boiler and turbine halls formerly lying to the north, and the furnaces and stack to the north-west, thus limiting their evidential value. This limitation is compounded by the lack of survival of any original plant, fitments or fittings related to the primary function of the buildings, though this is hardly surprising given the 67 years that have elapsed since the works ceased to operate as a generating station. The survival of significant archival material related to the establishment and development of the electricity works has, however, allowed for the recorded structures to be set within a more meaningful context than a simple record of the structures alone would have allowed.

The current programme of historic building recording and appraisal has successfully allowed, within the terms of the project brief, for a meaningful visual and interpretive record of the structures to be made in advance of upgrading works at the site.

Commercial Road Substation
Gloucester, Gloucestershire

Historic Building Record and Appraisal

1 INTRODUCTION

1.1 Background to the Project

1.1.1 Birmingham Archaeology was commissioned in February 2010 by Entec UK Ltd, working on behalf of Central Networks, to undertake a programme of Historic Building Recording and Appraisal at the Commercial Road Electricity Substation, Gloucester, Gloucestershire (NGR: SO 82884 18466; see Figure 1) in advance of the reconfiguration of the substation in order to meet future increases in demand.

1.2 Reasons for Work

1.2.1 Gloucester City Council has adjudged that any application in respect of the substation site which involves the alteration to or demolition of extant structures shall require an adequate historic building appraisal and record in order that the planning authority may make an informed decision regarding proposals. The requirement for such historic environment information in support of Planning Application and Conservation Area Consent on development sites where there is a potential for the presence of significant elements of the historic environment accords with Government advice as presented in *Planning Policy Guidance Note 16 (PPG16): Archaeology and Planning* (DoE, 1990) and *Planning Policy Guidance Note 15 (PPG15): Planning and the Historic Environment* (DoE, 1994). It is further in accordance with local guidelines included within Gloucester's Local Plan[1] and the Supplementary Planning Document *Development Affecting Sites of Historic Environment (Archaeological) Interest*.[2]

1.3 Designations

1.3.1 The substation site lies in its entirety within the Barbican Conservation Area (Gloucester City Conservation Area No.6).

1.3.2 Part of the application site is designated as a Scheduled Ancient Monument (22-330? *Glevum Roman Colonia*, GCC, 2006, map 3), the scheduling relating to remains of the Roman settlement of *Glevum Colonia*, although there is undoubtedly contemporary and later archaeology of national importance extending over the Scheduled area.

1.3.3 None of the buildings on the substation site are included on the Statutory List of Buildings of Special Architectural or Historical Interest, nor are they locally listed.

1.4 Scope of Report

1.4.1 The project was undertaken in accordance with a Written Scheme of Investigation (WSI), prepared by Birmingham Archaeology (2010) and approved by the Historic

[1] www.gloucester.gov.uk/CouncilServices/Planning/LDF/SecondStageDepositLocalPlan2002(changesnothighlighted).aspx

[2] www.gloucester.gov.uk/Documents/CouncilServices/Planning/SupplementaryPlanningDocument/DASHEIA0808.pdf

Environment Officer of Gloucester City Council (GCC) in response to a project brief issued by GCC. Copies of the Project Brief and WSI are included below as **Appendices A** and **B** respectively.

1.4.2 This report outlines the results of the programme of building recording and appraisal, which has been undertaken in accordance with English Heritage guidelines as published in *Understanding Historic Buildings: A Guide to Good Recording Practice* (EH, 2006), within the Institute for Archaeologists *Standard and Guidance for the Archaeological Recording of Standing Buildings or Structures* (IfA, 2008) and within the Association of Local Government Archaeological Officers *Analysis and Recording for the Conservation of Works to Historic Buildings* (ALGAO, 1997).

1.4.3 This report has been prepared based upon information current and available as of February 2010.

2 AIMS AND OBJECTIVES

2.1 The principal objective of the Historic Building Record and Appraisal, as stated at section §.2.1 of the project brief, was 'to provide sufficient information to enable the planning authority to make informed decisions on any planning application in regard to the historic environment'.

2..2 The main aim of the Historic Building Record and Appraisal, as stated at section §.4.1 of the project brief, was to carry out a drawn, photographic and written survey of the site's standing structures commensurate with a 'Level 2' record as specified by English Heritage within their guidance document *'Understanding Historic Buildings: A Guide to Good Recording Practice*' (EH 2006).

2.3 Specific research questions identified within the project brief included:

- To evaluate the presence and nature of the original 19th century power station and its subsequent phases of alteration.
- To establish to what extent the form of the surviving structures relate to their Industrial Age usage, how this use changed over time and how this is expressed archaeologically

3 METHODOLOGY

3.1 Historical Research

3.1.1 No detailed desk-based assessment was required or undertaken as part of the current project. However, so as to allow the recorded structures to be evaluated within an established historical context, a rapid evaluation of all relevant and readily available published and unpublished documentary source material was made. Research extended to include historic maps, early photographs and drawings, written descriptions and primary and secondary sources related to the substation site held by the Gloucestershire County Record Office (GCRO), and more general reference materials held by the libraries of the University of Birmingham.

3.2 Historic Building Recording

3.2.1 The Historic Building Record comprised drawn, photographic and written elements as detailed below. All work was undertaken to conform to current best practice and in accordance with guidance as set out at §.1.4.2 above.

Drawn Record

3.2.2 The drawn record comprised the generation of detailed plans illustrating the growth and layout of the building and together with its internal arrangements; elevations showing the principal features of the building, and sections through the building at suitable locations. Due to restricted access to certain areas of the site due to health and safety considerations, the drawn survey was based partly upon existing survey drawings dating to the 1960s which were validated on site for accuracy by reference to readily accessible areas and were annotated to show significant architectural and archaeological detail.

Photographic Record

3.2.4 A full photographic survey was undertaken, comprising high resolution digital photography using a Nikon D50 digital SLR (6 megapixels). The survey extended to include both general and detail shots; contextual views, exterior elevations, interior spaces and relevant architectural details. Where possible, photographs included graded photographic scales. All photographs were recorded on *pro-forma* recording sheets detailing subject, orientation, scales included, photographer and date.

3.2.5 A selection of site photographs is included below as plates.

Written Record

3.2.6 A written description was prepared to supplement the photographic and drawn records, summarising the history, character, date, techniques of construction, phasing and significance of the building. Written records were compiled on *pro-forma* building and room record sheets.

4 SITE LOCATION

4.1 Site Location

4.1.1 The substation site is located on the north side of Commercial Road, centred on NGR SO 82884 18466, *c*.300m west of the city centre as represented by The Cross and *c*.400m to the south-west of Gloucester Cathedral (Figure 1). It lies to the north of the historic docks area and to the east of the County Prison. The site is bounded to the south by Commercial Road, to the east by a vacant building plot fronting Commercial Road, to the west by the offices of the Gloucester Probation Office at Barbican House and to the north by the Barbican Way public car park, accessed off the west side of Ladybellegate Street (Figure 2). The site extends to a maximum area of 0.2ha, it is occupied by the redundant buildings currently under consideration and by an active electricity substation, otherwise the site is laid to hardstanding.

5 GENERAL HISTORICAL CONTEXT

It is beyond the scope of the present report to present a review of the history of the City of Gloucester, for which numerous sources exist (see for eg. VCH, 1988). A brief summary is however included here, with particular reference to the site currently under consideration, to place the substation site within a broad historical context.[3]

5.1 Early History

5.1.1 The Roman settlement at *Glevum*, whose walls were later to provide the basis for the defences of the medieval town, was established near a crossing-point of the river Severn on a low rise of *c*.15 m OD. (VCH 1988, 1), replacing an earlier fortress at Kingsholm. The land is formed by the Lower Lias clay, with a cap of gravel where the central crossroads of the town were established, with a steep slope off westwards towards the Quay area (GCC 2006, 3). The west side of Gloucester and the adjoining meadowland are formed by alluvium (*ibid*.).

5.1.2 Once Gloucester ceased to function as a frontline military station between England and Wales, in around AD81, the settlement evolved into a *Colonia*, where veteran legionaries were settled with grants of land by way of pension (*ibid*., 16). This period saw the establishment of the rectilinear street pattern that survives today within the centre of Gloucester.

5.1.3 Following the final withdrawal of Roman troops from Britain, Gloucester was settled in AD577 by the Hwicce as a sub-kingdom of Mercia, creating a new town within the circuit of the former Roman defences. New streets were laid out in the 9th century, the basic pattern of many of which survives today.

5.2 The Medieval Period

5.2.1 Following the Conquest, a motte and bailey castle was established at the south-west corner of the town. The first castle probably had as its motte the mound called Barbican Hill in the south-west part of the town at the south end of the later Barbican Road (*ibid*. 4), immediately west of the substation site, though archaeological evidence has led to the suggestion that the original construction took the form of a ditched enclosure within the south-west corner of the Roman town and that Barbican Hill represents a later addition, dating to the later 11th century (*ibid*.). Whatever its original form, the castle was renewed with a stone construction on the site of the current prison by Miles of Gloucester in 1110-20 (*ibid*., 16) and reached its maximum extent in the mid-13th century when it covered an area of *c*.12ha. As noted below, however, that area before the castle to the east, known as 'Bare Land', remained undeveloped until a fairly late date.

5.2.2 The Saxon Minster of St. Peter was rebuilt as a Benedictine abbey from the late 11th century and a number of new religious house established; Llanthony Priory (1137), St Oswald's Priory (1152), Greyfriars (1231), Blackfriars, east of the substation site in 1239 and Whitefriars in 1268. Gloucester was granted a charter in 1155 giving rights to hold a market and, while the economy was based predominantly upon iron-working, a sizeable population of traders and merchants played an important role in the development of the town. Gloucester became a city in 1541 and cloth-making led to a revival in its fortunes.

[3] The following brief summary is based for the most part upon that included within the Barbican Conservation Area Appraisal, (GCC 2006, 4-5).

5.3 The Post-medieval Period

5.3.1 A quay had existed from early times, extending along the banks of the Severn between Westgate Bridge and the castle and in 1580, it was designated as the principal landing place in the port of Gloucester, newly formed by a grant of Elizabeth I. It was to become a fundamental part of the City's economy as the settlement prospered, roads improved and river trade increased.

5.3.2 During the 18th century, the city's economy was based upon a number of diverse industries including wire and pin making, metal working, bell founding, wool stapling and banking, though its status as a distribution centre for imported goods also played an important role.

5.3.3 The opening of the Gloucester and Berkeley Canal in 1827 allowed access to the city for ocean going vessels while the coming of the railway in the 1840s encouraged the growth of the city's port, both as a distribution centre for foreign grain and timber and as a local hub for milling, ship-building and the manufacture of railway rolling stock (*ibid*., 17). Increases in population saw the city's boundaries extended in 1835 and again in 1874, with residential suburbs becoming established beyond the historic core. The development of the docks in the south-west of the city attracted both industry and population (VCH 1988, 223) and the area around Barbican Hill was built up from the 1830s on,[4] while orchards belonging to Bearland House were developed commercially from 1870 (*ibid*. 227).

5.3.4 The later development of the substation site and environs is discussed below with reference to surviving cartographic evidence.

6 THE HISTORICAL DEVELOPMENT OF THE SITE

This section of the report describes the known historical development of the substation site and its immediate environs. It is based upon information current and available as of February 2010.

6.1 Map Regression

6.1.1 Historical sources record that Bearland (formerly 'Bare Land'), being that area to the south of Longsmith Street and west of Barbican Hill, represented an open space fronting the castle (VCH 1988, 65), used occasionally for the mustering of troops though traditionally the site of common dunghills (*ibid*., 121-2). This view is supported by Speed's map of Gloucester of 1610 (Figure 3)[5] which shows the area outside of the castle walls to the east, and west of Blackfriars, as open undeveloped land.

6.1.2 A plan of 1805 (Figure 4)[6] engraved by John Roper from a drawing by George Cole to accompany Britton's '*Beauties of England and Wales*' indicates that the substation site remained essentially undeveloped as late as the early-19th century. By this date however, the plot had taken on the appearance of formal gardens and orchards related to Bearland House constructed in 1735-40[7] fronting onto Longsmith Street to the north.

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4 Sale particulars for a number of plots to both the north and south sides of Commercial Road, GCRO D3398.
5 GCRO NX34.16.
6 GCRO NX34.26.
7 Representing the rebuilding of a probable late 17th-century house (Statutory List Entry).

6.1.3 A plan of 1841 (Figure 5),[8] engraved by H Johnson and published by L Bryant, is the first to show significant development on the substation site. A building is indicated on the north side of the future Commercial Road[9] and is identified as the 'Commercial Rooms' in the accompanying table of reference;[10] the plan is however, of too large a scale to draw any specific conclusions as to the form of the building indicated (see below).

6.1.4 Causton's map of Gloucester of 1843 (not illustrated)[11] shows the area in more detail, including the 'Commercial Rooms' and associated 'Commercial Buildings' currently under consideration; the layout is identical to that illustrated in the Board of Health plan of 1851 and will be described below. Of note, the proposed eastern line of Commercial Road (to be laid out in 1847) is indicated, replacing the former Kimbrose Lane which was aligned slightly to the south.

6.1.5 The Gloucester Board of Health map of 1851 (Figure 6)[12] gives a detailed view of the substation site and its environs. The western side of the street block defined by Commercial Road, Barbican Lane, Ladybellegate Street and Longsmith Street, is occupied by an extensive range of buildings, fronting onto Commercial Road and extending along the eastern side of Barbican Lane. Buildings fronting Commercial Road include 'Barbican House', a series of offices with the 'Commercial Rooms' behind and, to the east, a long range annotated 'Commercial Buildings' extending northwards from a narrow street frontage. This latter building is of particular interest as it can clearly be seen to correspond to the extant, former administration building currently under consideration which thus pre-dates the establishment of the electricity works by a considerable period (see below). A stair access is indicated at the western side of the street frontage, suggesting that the facade was formerly furnished with a main entrance door, which ties in with recorded evidence that the street elevation may have been extensively altered (see §.7.2.1).[13] Subsidiary back-buildings are labelled variously as 'Corn Store', 'Shed', 'Store' and 'C.H.' (presumably 'coach house'). East of the building range was located an open area of undeveloped land itself delineated to the east by the curving line of the boundary between North Hamlet and the Parish of St Mary le Crypt. Beyond this boundary, the remainder of the street block constituted undeveloped lands with tree planting (?orchards) belonging to the Bearland Estate.

6.1.6 Comparison of the 'Commercial Buildings' as depicted in Causton's map and the Board of Health plan with the 1841 plan described above is problematic for the reason that the earlier map is too schematic to draw any firm conclusions as to the form of the structures depicted. However, the location of the buildings in each map, opposite the northern entrance to the docks area, corresponds exactly and strongly suggests that they represent the same structure. Indeed, documentary sources indicate that buildings erected 'on Barbican Hill' as early as the 1830s by the merchant Samuel

8 GCRO NX34.31.

9 Commercial Road was first officially laid out in 1847, leading from Southgate Street in the east to the docks, replacing the narrow and twisting route of Kimbrose Lane (VCH 1988, 223) which met Southgate Street somewhat to the south.

10 The 'Gloucester Commercial Rooms Society of Merchants', a society for promoting the trade of the port, was established by a group of local merchants in 1831, going on to maintain a library and reading room (VCH 1988, 155).

11 GCRO D1740/P23.

12 GCRO PC1086/7.

13 In this respect, an elevation drawing of 1923 (Figure 19) is of particular interest showing a radically different façade with a stuccoed ground floor with wide tri-partite window and upper windows flanked to east and west by paired ionic columns; it is unclear, however, whether this drawing represents an earlier arrangement or a proposal that was never realised.

Baker were used for commercial purposes, 'part being occupied from 1835 by the Gloucester Commercial Rooms' (VCH 1988, 223).

6.1.7 A plan accompanying sale particulars pertaining to the auction of Bearland House and associated estate lands, dating to August 1854 (Figure 7),[14] is less detailed than the Board of Health plan and is of only limited use. Lot 2 of the sale comprised an extensive parcel of land extending southwards from the gardens of Bearland House, fronting onto Commercial Road to the south and Ladybellegate Street to the east; to the west, the plot abutted the range of buildings extending along the eastern side of Barbican Lane, previously described. The undeveloped area between this range of buildings and the western boundary of 'Lot 2' is shown as having constituted open land in the ownership of one Alfred Price Esquire. The sale particulars described Lot 2 as a '*very valuable piece of freehold building land extending to 8320 sq. yds., now a luxurious pasture ground together with the coach house and trading premises now standing thereon.*' The southern boundary of Lot 2, fronting onto Commercial Road, is shown as having remained essentially undeveloped.

6.1.8 A further plan (Figure 8) accompanying an indenture of lease of 20th September 1878 between Henry Lloyd of Radnor / Francis Walter de Winton and Henry Mousell (lessee),[15] a general carrier of Gloucester, depicts the area north of Commercial Road extending as far as the junction of Ladybellegate Street and Berkeley Arms Lane (later Blackfriars Lane), north of which the lands remained as the private gardens of Bearland House.[16] The area leased extended to a total of 4118 sq yds., accessed from Ladybellegate Street, comprising undeveloped land, gardens and, against the western boundary, a range of stables. It was on this land that Mousell was to establish his coach and wheel works (see below). The plan shows that the section of the Commercial Road street frontage included within the sale of 1854 had been developed with the erection of a series of three buildings.

6.1.9 The 1st Edition Ordnance Survey map of 1884-6 (Figure 9) illustrates significant changes within the substation site pursuant to Henry Mousell's lease of Bearland Estate lands in 1878. That area subject to the 1878 lease had been developed for the site of Mousell's carriage and wheel works with a series of structures both free-standing and ranged against the bounding walls of the site, which was accessed via a driveway off the western side of Ladybellegate Street. The Parish boundary was still an extant division to the west at this date. The Commercial Road frontage continued to be occupied by the buildings illustrated in the 1878 map.

6.1.10 A plan of 1891 (Figure 10)[17] adds significant detail to the previous Ordnance Survey map; Mousell's manufactory[18] is shown to have included a large free-standing wheelwright's shop with conjoined body shop within the centre of the site, with smaller structures housing paint shop, saw mill, smithy and offices ranged around the perimeter. To the west, the 'Commercial Buildings' are shown to have housed four discrete office premises with storage and stable ranges to the north (the latter marked 'veterinary'); significantly, the commercial buildings range is annotated '*brick arched*

14 GCRO D3117/3586.
15 GCRO D3117/1525.
16 The 1878 lease is one of a number of related documents related to land and premises of the Bearland Estate (see also GCRO D3117/1521-29), including the lease of Bearland House itself (GCRO D3117/1526) where Mousell is first listed as a private resident in 1879 (Kelly 1879, 663).
17 GCRO DX 34.39(3).
18 Mousell brothers were to sell their concern in the Gloucester Carriage and Wheel Works in 1893 to The Gloucester Wagon Co. Ltd, the largest employer in Gloucester with a workforce exceeding 1,100 by the end of the 19th century (Jurico 1994, text accompanying image 26).

bast – wines' signifying the existence of basement storage vaults. Further west, the buildings towards Barbican Road comprised, variously, offices, exchange and bond houses (over wine vaults), while the Commercial Road frontage comprised predominantly office accommodation with a single stone mason's yard adjacent to the entrance to the Commercial Buildings.

6.1.11 The Ordnance Survey 1st Revision map of 1902 (Figure 11) depicts the site soon after the completion of the Gloucester Electricity Works (see §.6.2) which occupies a plot in the centre of the former carriage works, extending across the line of the former parish boundary which no longer survived as a physical barrier. Hachures on the map suggest that the construction of the new works entailed a significant amount of excavation, levelling and landscaping.[19] Reference to a published plan of the works from 1905 (see below) indicates that the works at this date comprised coal bunkers, boiler house, engine house, switch room, workshop, stores and stack. The associated waste destructor, to be located to the north-west and designed as an integral element of the scheme, had not been erected by this date, apparently due to delays in obtaining possession of the land (Bache 1905, 696). The site would appear to have had entrances both to both Commercial Road to the south and to Ladybellgate Street to the east. It is unclear whether the former commercial buildings, which flanked the western side of the Commercial Road entrance, formed a part of the electricity works at this date.

6.1.12 The Ordnance Survey 2nd Revision map of 1923 (Figure 12) illustrates the form of the works after early phases of extension (see below). The refuse destructor had been erected at the north-west of the complex while both the original boiler house and engine house had been extended eastwards (in 1921). A small annexe had been added at the east end of the south side of the switch room range and a covered corridor had been appended to the east elevation of the former 'commercial buildings' (1923), which were now (if not previously) included within the electricity works complex (see Figure 18).

6.1.13 By the time of the 3rd Revision Ordnance Survey map of 1936, the boiler house and turbine hall had again been extended to the east,[20] while the southern annexe to the switch-room had been extended to the west in 1928 (see Figure 19) and a small free-standing structure introduced within the works yard to the west of the workshop range. To the west of the site, the former 'Commercial Rooms' had been demolished by this date.

6.2 The Gloucester Electricity Works

6.2.1 The first electric lighting act, '*An Act to facilitate and regulate the supply of Electricity for Lighting and other purposes in Great Britain and Ireland*' was passed in 1882 (Gay and Yeaman 1908, 16). Onerous compulsory purchase provisions within the Act stifled private investment, however, and it was not until the passing of the Electric Lighting Amendment Act in 1888 that significant progress was made. Under the terms of the latter Act, any private company or municipal/local authority could apply for a 'provisional order', private companies requiring the consent of the local authority to do so.

[19] An inscribed stone at the site records the discovery of remains related to the Roman fort at a depth of 15 feet.

[20] See various design drawings by Stratton Davis (architects); GCRO DD7942/413.

6.2.2 From 1889 onwards, several private companies had put forward proposals for supplying electricity in Gloucester, principally for street lighting and the electrified tram system, but also for private household supply (VCH 1988, 264). Unlike elsewhere, especially in London where private enterprises were carrying on profitable business, the Corporation had the foresight to reject the various private schemes and opted for a municipal service. A suitable site was acquired and the Gloucester Electricity Works was duly established at the site on Commercial Road under the terms of the Gloucester Corporation Electric Supply Order of 1896. The foundation stone was laid by the Henry RJ Braine, Mayor of Gloucester, on July 26th 1899 (Plate 1),[21] and the works were officially opened just short of one year later on 19th July, 1900 (see Figure 13).[22]

6.2.3 The original *General Conditions and Specification for the Builders Work in the erection of the New Generating Station*[23] was drawn up in August 1898 by Robert Hammond (consulting engineer) together with Harry A. Dancey (architect) of Clarence Street, Gloucester and Richard Read the city engineer, with tenders invited for submission by 17th October 1898. Dancey was appointed the architect in charge, with responsibility for drawing up plans[24] and overseeing site works.

6.2.4 The specification extends to 40 pages, detailing methods of working and materials to be used and is divided into discrete sections covering preparatory groundworks, brickwork, stonework, carpentry and tiling, excavation and cabling. The specification is too exhaustive to be presented in detail here, but pertinent extracts will be alluded to in the following descriptions of the extant structures where deemed relevant

6.2.5 Surviving tender documents[25] indicate that the contract for the building work at the generating station was won by the firm of William and Walter Gurney of Gloucester, who undertook to complete works as stipulated in the specification for the sum of £7,676. Further contracts relate to the provision of boiler and engine house plant, condensing plant, an overhead travelling crane, switch board machinery and accumulators. Contracts and costs are summarised in tabulated form below.

	Contract	**Company**	**Sum**		
			£	**s**	**d**
	Buildings	Gurney and Son, Gloucester	7,676	0	0
A	Boiler House Plant	Messrs Yates and Thom, Blackburn	2,409	10	0
B	Engine House Plant	India Rubber Gutta Percha + Telegraph Works Co., London	5,917	9	0
C	Overhead travelling crane	Messrs. James Spencer and Co., Hollingwood	265	0	0
D	Switchboard	Crompton and Co. Ltd., London	1,111	0	0
E	Accumulators	The Electrical Power Storage Co. Ltd., London	1,350	0	0
F	Mains	Callenders Cable and Construction Co. Ltd., London	13,808	11	11
	Condensing Plant	Blake and Knowles Steam Pump Works, London	567	0	0

Table 1: Awarded contracts and tendered sums re. Gloucester Electricity Works.

21 The date stone in its current location is re-set; close examination of Figure 16a suggests the stone may originally have been located adjacent to the main pedestrian entrance.
22 GCRO N12.539GS.
23 GCRO NF12.228.GS.
24 No drawings accompanying the surviving tender documentation were traced as part of the current project and are not listed in the holdings of the GCRO.
25 GCRO GBR/L/6/7/16.

6.2.6 The success of the venture was readily apparent even before completion of the works, and further contracts were assigned on 10th July 1900[26] (nine days before the official opening) for the extension of the works *'to be completed in good time before the Winter of 1900.'*

6.2.7 In this respect, a photograph of the official opening of the works (Figure 14), depicting a gathering within the turbine hall, is worthy of closer examination in that the form of the south wall can clearly be seen to be at variance with a photograph published only five years later (Figure 16b) and with the fragmentary remains of the hall that survive today. The earlier image depicts a symmetrical elevation of single, brick-arched bays to either side of three open bays (with flat head supported by paired cast-iron columns) opening onto the switch-room to the south; the later photograph shows the extension of both the turbine hall and the switch-room with an additional two open, flat-headed bays appended to the east, replacing the earlier brick arch. Clearly, the extension of the works occurred almost immediately upon completion, reflected in the evidence of historic mapping (see §.6.1 above); the 'temporary' nature of the timber eastern wall construction, evident in both photographs, may indicate that such early extension was considered from the start.

6.2.8 A comprehensive description of the works was given by the Borough electrical engineer, Walter J. Bache, in a paper presented to the Association of Municipal and County Engineers (Western District) at a meeting at Gloucester in 1905.[27] Bache (1905, 696) describes *'buildings of brick with stone dressings'* comprising *'.. two large bays for the boiler house and engine house respectively, a small bay containing the test room and switch room with the battery room over, and a well arranged suite of offices and stores.'* The associated refuse destructor, an original part of the scheme but only completed in 1902, was aligned at right-angles to the boiler house and between the latter and the chimney stack which rose to 150 ft in height. The provision for future extension of the boiler and engine house within the site was remarked on. Bache's article was accompanied by a number of photographs of the site (eg. Figure 16) and by a plan of the entire complex (Figure 17), described below.

6.2.9 The 1905 plan reproduced in Bache's article (Figure 17) illustrates the complex soon after its first phase of extension and is worthy of close examination as it allows the surviving elements of the works to be placed within their historical and functional context. The principal entrance to the complex was off the western side of Ladybellegate Street, where a roadway led westwards (passing over a series of low level coal bunkers) to the refuse destructor located at the north-west corner of the site with its associated, 150ft high brick-built stack (partly visible within Figure 16a). The refuse destructor was furnished with two twin-cells of 'Heenan' type, each with a processing capacity of 25 tons of refuse per day (Bache 1905, 700). To the east of the refuse destructor, and to the south of the coal bunkers/access road, was located the boiler-house, a large rectangular structure, '61ft in length, 48 ft wide and 41ft in height'. The boiler-house contained four Lancashire boilers by Messrs Yates and Thom of Blackburn (a further three boilers shown in pecked line represent expansion capacity, under construction at the time of Bache's article) fed from the pump-house, which was located at the west end of the boiler-house with a 3,500 gallon capacity water tank over (*ibid*., 697). Lying adjacent to the boiler-house to the south was the turbine hall or engine-house, '96ft in length, 37ft wide and 38ft high' containing, at that time, three lighting sets (2 x 300KW, 1 x 150KW; see Figure 15) and two 200 KW

[26] GCRO GBR/L/6/7/16.
[27] Transcribed in *The Surveyor and Municipal and County Engineer*, June 16th, 1905, 696-706.

traction sets,[28] a balancer, a booster and a negative booster. Bache's accompanying account (*ibid*.) describes the glazed and buff brick construction of the walls, a floor of 'Papyrolith' patent jointless paving and the 10-ton overhead travelling crane by James Spencer and Co. of Hollingwood. To the south again of the turbine-hall was located the switch-room, which was open to the former with a floor level raised by some 4ft, thus allowing an uninterrupted view of the machinery for the engineer-in-charge and the switchboard attendant. Access between the two areas was furnished by two short flight stairs to east and west. The eastern walls of both boiler and turbine halls appear to have been of timber stud and panel construction (see also Figure 14) implying an inbuilt capacity for extension. The switch-room contained the lighting and traction switchboards by Crompton and Co. of London, described by Bache as of 'handsome appearance', constructed of slate slabs upon an wrought-iron framework resting on a plinth of glazed brick (*ibid*., 698; see Figures 15/16b). The south-west section of the switch-room was partitioned off to form a test-room, while a cable store was located in a small annexe at the east end of the south elevation. A transverse block at the western end of the switch-room and turbine hall contained a workshop and arc lamp store and incorporated a wide entrance passage from the yard to the turbine hall; further buildings flanking the south side of the refuse destructor range contained cable and engine stores and a pedestrian entrance way (see also Figure 16a).

6.2.10 Bache notes (1905, 700) that '*owing to the rapidly increasing demand for energy, it was decided at the close of the past year* (ie. 1904) *to lay down large extensions to the plant and these are now under construction .... including a new economiser section also the necessary additions to the boiler-house to accommodate the new boilers; and extensions to the refuse destructor buildings, giving a greatly increased storage capacity*.'

6.2.11 The works were subject to further stages of subsequent expansion and development around this central core, reflected in various surviving proposal drawings from 1911, 1921, 1923 (Figure 18) and 1928 (Figure 19). In 1943, a new power station was established at Castle Meads, with access for coal supplies from a branch railway and a jetty on the Severn (VCH 1998, 264), and the Commercial Road works were demoted to the status of a distribution substation. Castle Meads power station continued to supply the National Grid until it was itself closed in 1970 (*ibid*.).

7 BUILDING DESCRIPTION

***NB**: All buildings on the site are aligned with principal axes oriented NE-SW or NW-SE. To avoid overly long orientational descriptions, for the purpose of the following account these axes will be assumed to be aligned with the cardinal points such that the street elevation of the administration block will be assumed to face south while the gabled elevation of the workshop block will be assumed to face west.*

7.1 General Layout

7.1.1 The surviving buildings on the site comprise two discrete blocks. To the west a long, narrow former administration building (**A** on Figure 2) is located flanking the western side of the entrance driveway to the compound, aligned north-south; documentary research has established that this structure dates most probably to the first half of the 19th century, possibly to the 1830s, being incorporated into the electricity works by 1923 at the latest. To the north-west of the site are located the former switch-room

[28] A further 600KW lighting set is shown in pecked line, again representing expansion capacity.

range and adjoining workshop block (**B** and **C** respectively on Figure 2), the core of which date to the original construction of the works in 1899-1900 though both incorporating early extensions of 1902. Adjoining the switch-room range to the south is a narrow rectangular annexe structure (**D** on Figure 2) which incorporates two phases of development, dating from 1928 and post-1938 (?1960) respectively. Each element of the complex will be described in turn.

7.2 The Administration Block (**A** of Figure 2)
(centred on NGR SO 822847 18467)

The Exterior (Figure 20; Plates 2-12)

7.2.1 The **south (street) elevation** of the administration block (Figure 21b; Plates 2/3) is of two storeys, brick-built in hard red brick (9 x 4 x 2¾ in.) laid to plain stretcher bond above a high brick plinth, and rises to a flat parapet at first floor level above a projecting, stone ogee-moulded cornice and shallow plat band. The elevation is rebated to east and west. Ground floor fenestration comprises a triple window of Venetian form (Plate 5) with gauged brick heads, the central, arched-light being furnished with a projecting stone keystone. First floor fenestration comprises symmetrically opposed, tall rectangular openings with flat, gauged brick heads. Cills throughout are of reinforced concrete construction (Plate 6). Details recorded within the eastern elevation together with the evidence of historic mapping suggest that the street elevation may have been extensively rebuilt in the past, most reasonably at the time of its incorporation into the electricity works. A single vent is located at street level within the south elevation, serving the brick vaulted basement level, which is accessed via a manhole in the pavement immediately before the range.

7.2.2 Appended at the eastern side of the elevation is a pedestrian doorway (Plate 4), dating to 1923 (see Figure 18) and giving access to a secondary covered passageway aligned against the east elevation of the building. The doorway, set within a short length of brick walling, has plain stone jambs and flat head surmounted by a moulded cornice and low pediment. The walling has been extended to the east in purple brick, related to the renewal of the extant gate pier.

7.2.3 The **east elevation** of the administration block (Figure 21a) is brick-built in pale-mid orange/red brick (9 x 4¼ x 3 in.) laid to Flemish bond with no plinth, rising to a flat parapet (either secondary or rebuilt) above a plat band of applied render. Towards the south, the roof line steps up in a shouldered step. At ground floor level, all original openings have been blocked in brick or breeze-block, the latter a recent measure affected on security grounds. A regular pattern is evident, however, of coupled doorway and window openings, each presumably serving the discrete office accommodation evident from historic mapping (see §.6.1 above). Primary openings are rectangular with flat, gauged-brick heads with traces of beige/yellow paint adhering to both jambs and heads. Several original openings display evidence of having been adapted in the past, for example of windows being inserted into primary doors (Plate 11), and many of these alterations would appear to date to the phase of reordering undertaken in 1923 (Figure 18), works that served effectively to close off the former independent access to the four office units.

7.2.4 To the south, the ground floor level of the elevation is obscured by a secondary, single-storey covered passageway, again dating to 1923, flanking the range (Plate 9) and accessed originally via a doorway from Commercial Road (Plate 4). The eastern wall of the passageway facing the yard was originally half-glazed (Figure 18), as was

the roof, though the glazed upper section of wall has subsequently been built up in brick, readily distinguishable within the extant fabric, and the roof replaced with flat boards. A projecting string at the level of the passageway roof suggests the line of the latter structure formerly extended to the full length of the range; reference to historic OS mapping (Figures 11-13) shows an extension of the passageway flanking the range, though it is shown in pecked line implying it more likely represented some form of open-sided canopy.

7.2.5 The **north elevation** of the administration block (Plate 12) is brick-built, in pale red/orange brick laid to stretcher bond and retaining extensive surface treatments of whitewash and/or plaster render. Originally constituting an internal partition wall of the range, which formerly extended further to the north, the elevation displays blocked doorway openings to the west at both ground and first floor levels together with stubs of external in internal walls. A low chimney rises centrally above the elevation formerly serving fireplaces within rooms **[GF11]** and **[1F08]** internally.

The Interior (Figures 22-5; Plates 13-42)

7.2.6 The **basement** level (Figure 22) of the range is accessed via a manhole cover in the pavement immediately before the Commercial Road elevation, the floor level being 2.05m below street level (Figure 25). The basement comprises a single unencumbered space **[B01]**, barrel vaulted and running the full length of the extant range (Plates 13/14); walls and vault are in red brick (9 x 4½ x 3¼ in.) laid to English bond, the wall standing vertical to a height of 1.28m and the crown of the vault at +2.40m above floor level. The floor is again in brick with a central access pathway, defined by the use of harder grey brick laid on edge, flanked by former storage areas in red brick. The southern access door has been reduced, areas of red brick patching in the surrounding wall indicating the width of the former, wider opening (Figure 22c; Plate 15). Adjacent to the access door, a vent is encased in vertically set tongue and groove boarding. A doorway at the east end of the north wall, blocked with rubble fill (Figure 22b; Plate 17) indicates that the basement originally extended beneath the buildings formerly lying to the north while a brick-built secure store **[B02]**, in grey engineering brick and furnished with a steel door, has been inserted at the north-west corner (Plate 16). It is unclear when the basement went out of commission, though the presence of electric strip lighting along the crown of the vault suggests that it remained in use until relatively recently.

7.2.7 At **ground floor** level (Figure 23), the administration block range is accessed via the covered passageway flanking the east side of the range (Plates 18/9), from Commercial Street via an entrance lobby **[GF01]** or via a secondary doorway in the east wall giving onto **[GF02]**. The floor of the passageway is laid partly to 4 in. red quarry tile and partly to herringbone woodblock; it currently has a flat, boarded ceiling but was originally furnished with a glazed skylight (Figure 18). Likewise the eastern wall was formerly glazed but has been built up in brick, most clearly visible externally; the rebuilt wall including a single window opening, blocked in breeze-block. The west wall of the passage, representing the former exterior elevation of the range includes a blocked doorway to the south and window to the north with an open pedestrian door at the far north of **[GF02]**, giving onto entrance lobby / waiting room **[GF03]** (Plate 20) within the main range.

7.2.8 Opening off the south side of **[GF03]**, an inserted doorway gives onto the principal ground floor office space, **[GF04]**. The room is of generous proportions, (Plate 22) formerly lit by the Venetian windows of the Commercial Street elevation (Plate 21)

with a further window (Plate 23) and primary doorway (both blocked) within the east wall; a projecting stack is located centrally within the west wall. Flooring is of herringbone set woodblocks throughout and the walls are treated with a simple 7 in. torus-moulded skirting.

7.2.9 A further doorway opens off the west side of lobby **[GF03]** onto a lateral corridor **[GF05]** with woodblock floor which runs the full length of the range against the western wall (Plate 24). A series of three rooms (**[GF06]**, **[GF09]** and **[GF11]**) are formed by secondary timber ½-glazed partitions (Plate 25), while a stair rises midway along the range to first floor level (Plate 28/9). Room **[GF09]** was formerly divided forming male and female toilet facilities, evidenced by a variation of floor treatment (Plate 26). Historic drawings (Figure 18) show that the current arrangements date predominantly to the 1923 reordering of the range, however, and that the original arrangement comprised four independent office suites, each furnished with a fireplace within the transverse walls (Plate 27), and accessed from the exterior via doorways within the east elevation. The stair at mid-range would also appear to date from the 1923 reordering and primary access between ground and first floors has not been identified by the current, non-intrusive survey. Room **[GF11]** at the north end of the range is closed by a tertiary, metal ½-glazed wall to the west (Plate 34) and includes two safes within the south wall, with cupboards over (Plate 30), one of which displays an ogee arch motif to its door (Plate 31).

7.2.10 The arrangements at **first floor** level (Figure 24) reflect closely those of the ground floor, with a lateral corridor (**[1F05]**; Plates 33/4) to the west serving two office rooms (**[1F07]** and **[1F06]**; Plates 38/9) formed by timber, ½-glazed partitions (Plate 40), toilet facilities (**[1F02]**-**[1F04]**) and a single principal office (**[1F01]**) to the south (Plates 35/7) reached by a single step up at the south end of **[1F05]**. Rooms are lit by unhorned sash windows in the exterior walls, variously of 8/8 or 6/6 pattern (see Figures 21/25), with panelled recesses below cill level (Plate 37). The northern room of the first floor (**[1F08]**) was not accessible at the time of survey. Joinery matched that at ground floor level with 7 in., torus-moulded skirtings (Plate 41), displaying curved details at the rounded angles adjacent to the stairwell (Plate 42), and with moulded picture rails to several of the rooms. Reference to historic plans again indicates significant alteration at first floor level during the reordering of the range in 1923.

7.3 The Switch Room / Relay Room Range (**B** of Figure 2)
(centred on NGR SO 82885 18463)

The Exterior (Figures 26/7; Plates 43-61)

7.3.1 The **west elevation** of the switch-room / relay room range (Figure 26b; Plate 43) comprises a workshop block (**C** on Figure 2) appended at the west end of the switch-room (**B**) and presents a gabled elevation, brick built in pale orange/red brick (9 x 4¼ x 3 in.) laid to English bond, rising to two-storeys above a low, chamfered plinth of Staffordshire blue brick. Ground floor fenestration comprises symmetrically opposed window openings with semi-circular arched heads (blocked in breeze-block) displaying a shallow, projecting oversail detail and sunk and splayed stone cills (Plate 45).[29] An area of brick patching adjacent to the north window opening may represent the original location of the dated foundation stone (see Figure 16a), presently located in the flanking wall of the western site entrance. First floor fenestration is of plain

[29] The original Stone Masons Bill of Quantities documentation (GCRO NF.12.232(6)) stipulates Bisley stone to be used for all chamfered window heads and cills.

rectangular openings with matching cills and chamfered stone lintels, cill and head level being extended across the width of the elevation by projecting, moulded brick strings. The northern of the first floor windows has been converted to form a doorway, narrowed slightly to the south, and accessed via an external, steel fire-escape stair which rises south to north in two stages across the face of the elevation. A narrow rectangular vent is located centrally within the gable which is furnished with plain timber bargeboards.

7.3.2 To the left, the range formerly continued northwards as a two-storey block with a wide passageway at ground floor level giving access to the turbine hall to the east; the southern stone corbel and brick springing of the relieving arch of the passageway survive (Plate 46). The upper floor of the northern extension originally housed offices (see Figure 16a), overlooking the turbine hall and lit by paired windows within the west elevation; the southern jamb of the southern opening remains visible within the surviving stub wall.

7.3.3 The **south elevation** (Figure 26a; Plates 44/5, 47-49) comprises the southern return of the workshop block (**C** on Figure 2) described above and the southern elevation of the switch room itself (**B** on Figure 2), the latter partly obscured at ground floor level by the switch-room annexe (**D** on Figure 2; see §.7.4). The return of the workshop block (Plate 44) reflects the detailing of the west elevation and includes a single window opening at ground and first floor levels; it has a pitched roof, gabled to the west. To the east, the switch room range forms a long two-storey block (Plate 49) with a transverse gabled section to the west (Plate 47), the eastern section having a pitched roof, shallow-hipped to the east and clad in grey roofing slate. Fenestration at first floor level has been much altered, the westernmost windows alone representing original locations though, even here, areas of brick patching above and below indicate that the form of the openings has been changed. In particular, the westernmost window would appear to have originally constituted a door, with brick blocking extending down to the roof level of the switch-room annexe; this supposition is supported by the evidence of historic photographs (Figure 16a). Further east, original windows have been blocked and wide openings introduced, set within areas of patching. Again, the evidence of historic photographs and archive drawings can be used to ascertain the original pattern of fenestration; originally the main block was furnished with three rectangular windows at first floor level (Figure 16a), though this was soon altered when the switch-room was extended and a further window introduced to the east (Figure 19b). An interesting feature of the elevation at first floor level is a series of five surviving vents (blocked in brick) with brick 'keys' (Plate 48). At the far east end, a narrow pedestrian doorway (inserted) gives access to Room **[1F01]**. The original fenestration at ground floor level has again been much altered at the time of the construction of the switch-room annexe; a total of six windows are discernible, the eastern four examples being within the annexe building and having been converted to doors in 1928 (Figure 19b) and subsequently blocked or partially blocked (Figure 26a); the eastern and western openings currently include reduced doorways, that to the east being furnished with a fire-door with a makers plate dated June 1937 (Plate 78a).

7.3.4 The exposed **north elevation** (Figure 27; Plates 50-52) is of special interest, constituting the surviving section of the south wall of the former turbine hall and warrants description in some detail. The elevation survives to a maximum length of 24.5m, being truncated to the east, and stands 8.5m tall to eaves level. The surviving section comprises seven full structural bays (here numbered Bays 1-7 from west to east) with a further partially surviving bay (Bay 8) to the east. It is brick-built

throughout, laid to Flemish bond,[30] with a dado level of brown salt-glazed brick, below a moulded dado rail (two profiles; see Plates 60/61), above which brickwork rises in hard, pressed buff facing brick.

7.3.5 The eastern and western bays of the surviving elevation (Bays 1 and 7) comprise arcaded bays (Plate 53), their semi-circular brick arches (capped with projecting, chamfered salt-glazed brick) being supported on projecting brick piers. The westernmost bay (Bay 1) includes a doorway with low segmental arch (blocked in breeze-block) giving onto a stair, which descends to the basement level below the switch room (not accessed). Bay 7 is blind while Bay 8 retains the western jamb of a former high level window.

7.3.6 Bays 2-4 were formerly open to the switch room to the south (see Figure 14), comprising three bays with a continuous flat head comprising four longitudinal steel joists. The joists are supported at bay divisions by paired cast-iron columns (7 in. diam. at the bottom narrowing to 6 in. at the top) by J M Butt and Co. of Gloucester[31] (Plate 55) carried on piers of salt-glazed brick, capped by chamfered pads of red Forest of Dean stone (Plate 56).[32] The bay division at 4/5 is formed by a brick-built pier similar to those flanking Bay 1, but not here supporting a brick arch. The level of the switch room floor is set some 1.2m above that of the adjacent turbine hall, the low flanking wall between the two being constructed of brown, salt-glazed brick, again capped by chamfered kerbs of red Forest stone; the low wall includes a number of voids of unknown function. The arrangements of Bays 2-4 are reflected closely within the two bay opening at Bays 5/6. The formerly open bays at Bays 2-4 and 5/6 have been infilled with stretcher bond brickwork incorporating a number of glass block windows.

7.3.7 Reference to historic photographs (specifically Figure 14) indicates that the turbine hall as built in 1899-1900 comprised only Bays 1-5 as described above, Bay 5 originally having been open but capped by a semi-circular brick arch reflecting that within Bay 1 to the west. Access between turbine hall and switch room was via a single, short stair located at the western side of Bay 2, while the open bays were protected by a waist-high security handrail. The eastern end of the range was closed by a timber and corrugated iron screen wall of a temporary nature. This arrangement was altered at an early stage however, and by 1905 the surviving arrangement of open bays at Bays 2-4 and 5-6 had been established (Figure 16b). The brick pier support at Bay 4/5 was adapted at this stage to allow for the introduction of horizontal steel joists to Bays 4 and 5, though an angled joint within the upper, red Forest stone pad (Plate 57) physically evidences the former existence of a brick arch at this location.

7.3.8 Both phases of former opening onto the switch-room (ie. Bays 2-6 incl.) are capped by a string of three courses of projecting red-brown brick, the upper course chamfered, with consoles at Bay 1/2, 4/5 and 6/7. At high level, an offset within the brick facing of the wall runs the full length of the surviving elevation, carrying a substantial timber beam which supports an iron rail formerly serving to carry the 10-ton overhead travelling crane that originally spanned the turbine hall (see Figures 14/15).[33] A high level tubular section handrail is also related to the former travelling crane.

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30 **NB**: the original specification (GCRO NF.12.228.GS, p.16) stipulated the use of English Bond.

31 Identified in original specification (GCRO NF.12.228.GS, p.34) and by surviving manufacturer's mark on columns.

32 Stipulated in original Stone Masons Bill of Quantities documentation (GCRO NF.12.232(6))

33 The overhead travelling crane was installed by James Spencer and Co. of Hollingwood.

7.3.9 The southern fragments of a total of eight original steel roof trusses are embedded into the brickwork of the elevation, supported upon grey stone pads. Reference to historic drawings indicates an original roof of double Howe truss configuration, furnished with ridge vents (see Figures 31 and 16a); it was erected by John Lysaght and co. of Bristol.[34]

7.3.10 At the western end of the elevation, beyond Bay 1 of the turbine hall, demolitions have served to create an effective 'cross-section' through the former workshop range (Plates 50/58). At ground floor level this forms the south side of a former entrance passage, leading from the exterior forecourt into the turbine hall, originally with wide gateway openings to east and west (Figure 16a), the stone corbels and springing for relieving arches of which survive (eg. Plate 46).[35] At first floor level, the interior elevation of room **[1F10]** is exposed; being situated above the entrance passage with windows overlooking the turbine hall, this room may represent the original chief engineer's or chief assistant's office described in this location by Bache (1905, 697) and originally accessed via an iron stair at the north-west corner of the turbine hall (Figure 15).

7.3.11 An interesting feature of the workshop 'section' is the exposed detail of lightweight fireproof (or fire-retarding) floor construction (Plate 59) comprising two levels of ceramic tile (the upper layer of semi-circular profile) supporting a layer of course, poured concrete, with a thin screed and woodblock floor to room **[1F10]**. Soffit details of this floor construction were recorded within room **[GF01]**, where the layers of tile (ribbed for the keying of plaster) were noted to be laid diagonally (Plate 66). A wide range of such fire-retarding floor structures were developed and patented in the years around the turn of the 20th century (Yeomans 1997, 66), many of which included the use of hollow ceramic profiles thus reducing the 'self-weight' of the floor. The form employed here is an interesting variation on this type of hollow clay system and it is of note that the floor does not extend vertically to clasp the lower flanges of the transverse steel girders as was the norm, to afford complete protection and provide a flat soffit (*ibid*.). Fireproof flooring was installed in all upper rooms and the engine house by Messrs. Mark Fawcett and Co. of London.[36]

7.3.12 The **east elevation** of the switch-room range (not illustrated) presents a tall, gabled elevation, brick-built of two storeys with shallow hipped, slated roof. Ground floor level includes three windows (blocked in brick) formerly lighting the ground floor switch-room,[37] with a small doorway inserted into the central opening, while the upper storey includes a single, central opening, again blocked in brick. Access to the elevation was severely restricted due to the raised level of the adjacent car park area.

The Interior (Figure 28-31; Plates 62-73)

7.3.13 The basement level of the switch room range was not accessed due to health and safety considerations related to means of safe access and the presence of asbestos in considerable quantities. The following description is based upon a review of historic

34 GCRO NF.12.228.GS, p.35.

35 The openings were originally spanned by horizontal timber lintels with infill brick below the relieving arch (see Figure 15).

36 GCRO NF.12.228.GS, p.19.

37 The windows can be seen open in the historic photograph reproduced as Figure 16b.

survey drawings of the range,[38] which have been validated elsewhere and have been shown to be accurate.

7.3.14 The **basement** (Figure 28) covers the full area of the switch room and switch-room annexe to the south, though it does not extend below the workshop block to the west. Reference to historic survey drawings indicates a basement depth of 2.4m from the floor to the underside of a concrete slab floor(Figure 31), supported on a total of six transverse RSJs carried on projecting piers of brickwork to north and south; two of the RSJs being supported mid-span by circular section steel columns. The basement level is accessed via a stair which descends from the ground floor of the former turbine hall to a small vestibule **[B02]** at the north-west corner; the door access to this stair survives within the north elevation (see §.7.3.5 above), while the top of the stairwell is boxed in at the ground floor level of the range, visible within **[GF01]** (Plate 68). Vestibule **[B02]** opens to the east onto the main body of the range, Room **[B01]** and, to the south, onto Room **[B03]** via which access is gained to the basement level of the switch-room annexe **[B04]**. Room **[B01]** forms a single open space of seven unequal bays with a further stair descending at the western end of the north wall serving a lower basement level beneath the former turbine hall. Plans of 1965 indicate the basement housing 11kv switch gear and AC distribution boards while the basement level below the south annexe is 'cable tunnel'. Bache (1905, 699) describes the basement of the switch-room as the 'resistance cellar' containing 'shunt-regulating resistances, feeder meters etc.'

7.3.15 The **ground floor** of the range comprises a single open space (**[GF01]**), the former switch-room, with access to the switch room annexe to the south. A stair access off the western end of the room serves the first floor of the workshop block and the upper Relay Room.

7.3.16 Room **[GF01]** forms a single uninterrupted space (Plates 62/3) standing 4m tall from the concrete slab floor to the underside of the ceiling, which was noted to be formed in the same fashion as the fireproof floor recorded externally within the north elevation (Plate 66; see §.7.3.11). Original woodblock flooring survives at the south-east corner of the room only (Plate 65), otherwise the floor has been stripped down to its underlying concrete; a longitudinal void is located towards the southern side of the room (Plate 64), communicating with the basement below and presumably originally functioning to channel cabling between the two levels. **[GF01]** is lit from the north by a series of glass block windows set within the brickwork blocking of the former openings onto the turbine hall, which occupies the best part of the wall surface, separated by narrow piers of primary brickwork. The south elevation includes two doorways, to east and west, giving access to rooms **[GF03]** and **[GF07]** respectively within the south annexe; a fire-door to the eastern door retains a makers plate of Haywards Ltd. of London, dated June 1937 (Plate 78a). A further four blocked windows occupy the central section of the wall, though these are not immediately apparent from within **[GF01]** due to successive applications of paint and are more obviously expressed within the south annexe (see below).

7.3.17 At the north-west corner of the **[GF01]**, the upper part of the stair descending from the turbine hall to the basement level is encased in vertically set tongue and groove boarding (Plate 68). South of this within the west wall, a straight flight stair (Plate 69) rises to first floor level of the workshop block; a break in the panelling flanking the south side of the stair affords a view of the ground floor of the workshop block

[38] MEB (Southern Area) Drawing No. CG 6598/B, dated 15.11.1965, updated 19.10.1972, supplied by client.

(**[GF02]**; Plate 71), otherwise inaccessible. Immediately south of this doorway, a scar in the floor and wall is suggestive of a former longitudinal partition wall, corresponding to that enclosing the test-room on Bache's plan of 1905 (Figure 17).

7.3.18 The former switch-room retains no trace of its original switchboards, nor any fixtures or fittings related to its primary function.

7.3.19 The **first floor** level of the workshop block (Figure 30) comprises a mess room **[1F07]** and toilet **[1F09]**, opening off a small landing **[1F05]** and lobby **[1F06]**. Doorways opening off the west and south of landing **[1F05]**, the former adapted from a primary window, open onto an exterior fire-escape stair and a former office suite respectively; a continuation of the main stair (dilapidated) rises against the south wall to serve the upper level of the switch room range.

7.3.20 At **first floor** level, the main range comprises a single, large space to the east (**[1F01]**), formerly functioning as the relay room, with a series of two smaller rooms and associated access corridor (**[1F02]**/**[1F03]** and **[1F04]** respectively) at the west end; the latter spaces were not inspected due to health and safety considerations related to an unstable roof structure and to the presence of asbestos.

7.3.21 Room **[1F01]** (Plates 72/3), the former relay room, forms a large uninterrupted space occupying the pitched-roof section of the range, butting up against the gabled cross-range to the west. The brickwork walls were formerly lined, studwork for which survives, though this is clearly represents a secondary feature as the lining would have obscured various blockings of primary windows, more clearly visible externally and described above. A pedestrian door to the south of the west wall opens onto Room **[1F02]** side, while a further doorway (blocked in breeze-block) formerly opened onto corridor **[1F04]**.

7.4 The Switch Room Annexe (**D** of Figure 2)
(centred on NGR SO 82889 18454)

7.4.1 The switch-room annexe occupies a narrow plot flanking the southern side of the switch-room proper, measuring 20.7m (E/W) x 4.8m wide (N/S), of a single storey with flat roof (including a former skylight), standing *c.*5m tall to the head of a low parapet wall. It shares a ground floor level with the adjacent switch room. The structure is strictly utilitarian in nature and is no architectural merit and limited historical interest. The building is of six structural bays, expressed externally by projecting piers of brickwork and represents two distinct phases of development dating to 1928 and post-1936/8.

The Exterior (Figure 26; Plates 74/5)

7.4.2 The **west elevation** (Plate 74) is plain, brick-built in variable pale red / yellow brick (9 x 4 x 2¾ in.) laid to Flemish garden wall bond rising to a flat parapet wall with concrete coping and iron handrail. The elevation includes a narrow pedestrian doorway to the north (blocked in breeze-block) and a wider, former double door to the south (blocked in brick), both of which serve room **[GF07]** internally and which share a common concrete lintel which spans much of the width of the range. The northern pedestrian doorway is served by a short flight of concrete steps with iron handrail to the south. Reference to historic drawings indicates that the arrangement of the west elevation matches that as originally built, two bays to the east, in 1928 (Figure 19a).

7.4.3 The **south elevation** is again brick-built in variable pale red / yellow brick (9 x 4 x 2¾ in.) laid approximately to Flemish garden wall bond and rising to a flat parapet wall with concrete coping and iron handrail. Midway along the range, a steel fire-escape access ladder rises to access the flat roof. The interior bays are expressed externally as projecting piers of brickwork. The four eastern bays were erected in 1928 (Figure 20),[39] and are distinct from the western two bays in that the recessed panels between brick piers each include two window openings (blocked in brick) sharing long concrete lintels (Figure 20b; Plate 75). The two western bays represent a later addition post-dating the Ordnance Survey edition of 1936-8 (Figure 13), possibly dating to the late 1950s/early 1960s (see below); the similarity of brickwork used in the western extension, the blocking of the windows to the east and the reorganisation of fenestration at first floor level of the switch room is consistent with representing a single phase of work.

The Interior (Figures 28-31; Plates 76-78)

7.4.4 Internally, the annexe range originally constituted a single unencumbered space though, in its present form, it is partitioned into three principal rooms (**[GF03]**, **[GF05]** and **[GF07]**; see Plates 76/7) separated by narrow transverse corridors (**[GF04** and **[GF06]**) which were formerly accessed via doorways in the south elevation. All interior spaces are interconnected by openings within the transverse walls, all of which are furnished with sliding metal fire doors retaining makers plates of Gardiner Sons and Co. Ltd. of Bristol, dated to either 1958 or 1960 (Plate 78b) which may be argued as an approximate date for the westwards extension and internal subdivision of the annexe. The north wall of the annexe includes a number of high recesses, representing original window locations, extended to form doors in the 1928 reordering and subsequently blocked in brick (Figure 29).

8 DISCUSSION AND CONCLUSION

8.1 Discussion

The Administration Block

8.1.1 The exterior appearance and detailing of the administration block immediately suggest an origin pre-dating the construction of the electricity works buildings, and this has been supported by the evidence of historic cartographic sources which has established that the buildings in their current form date to at least 1843, when they are shown on the Causton's Map of the City and Borough of Gloucester, and possibly as early as the early 1830s. The '*Commercial Rooms Society of Merchants for the Promotion of Trade of the Port of Gloucester*' was established in June 1831, and were based from 1834 within the 'Commercial Rooms' building immediately west of the range currently under consideration. Surviving minute books[40] record that the society was offered, by one Mr Bird, 'a large room on the first floor of the house *recently erected* at the docks, opposite the Canal Office' (author's italics) at the rent of £20 p.a. An accompanying plan clearly illustrates the premises as those adjacent to the administration range and, although the latter range is not included in the survey, it may be reasonably assumed that they formed a part of the same development; both were certainly in place by 1843 when they are accurately depicted on Causton's map of the City and Borough of

[39] Bache's 1905 plan shows that an annexe existed here from an early date on a shorter plan (Figure 17) though it did not form part of the original works as opened in 1900 (see OS plan of 1902; Figure 11).

[40] GCRO GBR 1892/3 Acc. No. 9.161.3

Gloucester. The link between the buildings and the port is reflected in their physical location and the clear vista of the building afforded from the Gloucester docks to the south.

8.1.2 The buildings have clearly undergone significant phases of alteration and adaptation, perhaps including the full reconstruction of the Commercial Road elevation, though a ground plan of four discrete office units depicted in historic plans can still be discerned within the surviving fabric. It is unclear whether the building formed a part of the electricity works from its inception, though it was incorporated into the latter by 1923 at the latest when surviving drawings by Stratton Davis (architect) delineate extensive alterations to the structure, including internal reordering and the erection of the surviving covered passage against the east elevation. The street elevation included with these designs is somewhat enigmatic, illustrating a significantly different façade (Figure 19) to that which exists today though, as noted above (fn. 13), it is unclear whether this represents an earlier arrangement or a proposal that was never realised.

The Electricity Works

8.1.3 The remainder of the recorded structures on the site form an interesting, if fragmentary, survival of an early 20th-century electricity generating station. Unfortunately, the buildings have been essentially removed from their historical and functional context by the demolition of the related buildings, in particular the large boiler and turbine halls formerly lying to the north, and the furnaces and stack to the north-west, thus limiting their evidential value. This limitation is compounded by the lack of survival of any original plant, fitments or fittings related to the primary function of the buildings, though this is hardly surprising given the 67 years that have elapsed since the works ceased to operate as a generating station.

8.1.4 The survival of significant archival material related to the establishment and development of the electricity works has, however, allowed for the recorded structures to be set within a more meaningful context than a simple record of the structures alone would have allowed. As such, it is the context of the buildings that is of interest more than the physical remains of the buildings themselves, which are of no special architectural merit, though the detailing of the partially surviving turbine hall in particular reflect a degree of civic pride in municipal architecture above and beyond the requirements of pure functional necessity.

8.2 Conclusion

8.2.1 The current programme of historic building recording and appraisal has successfully allowed, within the terms of the project brief, for a meaningful visual and interpretive record of the structures to be made in advance of upgrading works at the site.

8.2.2 Given the age of the administration range and the apparent historical associations with the development of the historic Gloucester Docks, it is to be welcomed that the building is to be refurbished and, at least partially, retained within the current programme of upgrading.

9 ACKNOWLEDGEMENTS

9.1 The project was commissioned by Entec UK Ltd; thanks are due to Dr Steven Townend and Mr Graham Morgan for help and co-operation throughout the course of the project. Thanks also to Mr Mark Leadbetter (Project Manager) and Mr Ian Longfield of

Central Networks, to Mr Greg Price of Sterling Power Utilities and to Mr Ian Paton and Ms Katie Lawfull of Cluttons, Styles and Whitlock (Oxford). Special thanks go to Mr Phil Davies of Hallmark-Electra for arranging safe access to the premises for the purposes of recording.

9.2 The help and co-operation of the staff at the Gloucestershire County Record Office, is gratefully acknowledged. Thanks are also extended to Mr Jonathan Smith of Gloucester City Council, Historic Environment Team.

9.3 Initial project set up was undertaken by Shane Kelleher AIfA and the project managed in the field by Ric Tyler AIfA, both of Birmingham Archaeology. Documentary research and site recording were undertaken by Ric Tyler who also prepared and illustrated the present report. The report was reviewed and edited by Dr. Malcolm Hislop, MIFA (Research Fellow) of Birmingham Archaeology.

10 SOURCES

(a) Cartographic Sources (in chronological order)

- 1610 Speed's map of Gloucester, GCRO NX34.16.
- 1805 Roper and Cole's map of Gloucester from Britton's *Beauties of England and Wales,* GCRO NX34.26
- 1841 H Johnson's map of Gloucester, GCRO NX34.31.
- 1843 Causton's map of Gloucester, GCRO D1740/P23.
- 1851 Gloucester Board of Health plan, GCRO PC1086/7.
- 1854 Plan accompanying sales particulars for Bear Land estate, GCRO D3117/3586.
- 1878 Plan accompanying lease of Bear Land estate, GCRO D3117/1525.
- 1886 Ordnance Survey County Series 1:2500 map, 1st Edition.
- 1891 Plan of Gloucester, GCRO NX34.39(3).
- 1902 Ordnance Survey County Series 1:2500 map, 1st Revision.
- 1923 Ordnance Survey County Series 1:2500 map, 2nd Revision.
- 1936-8 Ordnance Survey National Grid Series 1:2500 map, Edition.

(b) Other Graphic Sources

- Historic photographs of works, early 20th century in Bache, 1905.
- Photograph of opening ceremony 19th July 1900 and early view of turbine hall interior, GCRO D 5670/1/6.

(c) Primary Sources

- GCRO GBR 1892/3 (Acc. No. G.161.3): Minute Books of the Gloucester Commercial Rooms, 1831-4.
- GCRO D3398: Sales particular for various plots to south and north side of Commercial Road, dated 1848 and 1852.
- GCRO D3117/1521-29: various leases relating to Bear Land estates, dated 1878.
- GCRO D3117/3586: sale particulars pertaining to the auction of Bearland House and associated estate lands, August 1854.
- GCRO D2299/2/4/45: Sales particulars for stock and machinery from Moussell Bros. Carriage Works, Commercial Road, July 1894.
- GCRO N12.85.GS: Municipal Electricity Supply under the Gloucester Corporation Electric Supply Order, 1896 (Pamphlet).
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- GCRO N12.232 (1) – (15): Estimates for erection of New Buildings at Bearland Estate, Gloucester, September-October 1898.
- GCRO GBR/L/6/7/16: various indentures/contracts for erection of Gloucester Electricity Works, November 1898; further contracts from July 1900; plan of switch house annexe, 1928.
- GCRO NF.12.233: Electricity Works and Refuse Destructor: Proposed extension, 1905. NB: No accompanying drawings.
- GCRO D7942/413: various drawings related to extension of Gloucester Electricity Works 1905, 1921, 1923.
- GCRO Planning File 203/49: Commercial Road Electricity Works: Planning documentation from 1949, 1963, 1970.

(d) Secondary Sources

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Jurico J, 1994. *Gloucester: A Pictorial History.* Phillimore, Chichester.

VCH, 1988. *The Victoria History of the County of Gloucester, **IV**: The City of Gloucester*. (NM Herbert, ed.)

Yeomans D, 1997. *Construction since 1900: Materials*. London, Batsford.

(e) Trade Directories (in chronological order)

- Kelly's Directory of Gloucestershire: 1870, 1879, 1885, 1889, 1894, 1897, 1906, 1910, 1914.
- Cope's Directory of Gloucestershire: 1935.

(f) On-line Resources

www.gloucester.gov.uk: website of Gloucester City Council

www.imagesofengland.gov.uk: English Heritage on-line catalogue of Statutory Listed Buildings

APPENDIX A: Project Brief (Gloucester City Council, Historic Environment Team)

BRIEF FOR ARCHAEOLOGICAL HISTORIC ENVIRONMENT BUILDING APPRAISAL COMMERCIAL ROAD SUBSTATION, GLOUCESTER

1. INTRODUCTION

1.1 The electricity substation on Commercial Road in its current form dates from the early to mid 1990s, but the site contains buildings dating from the original late C19 power station and part of the site is designated as a Scheduled Monument. The Scheduling relates to remains of *Glevum Colonia*, although there is undoubtedly contemporary and later archaeology of national importance extending outwith the Scheduled area.

1.2 The current proposals relate to the reconfiguration of the substation in order to meet requirements for future increases in demand. This will also require some extension to the north and west, within the land owned by Central Networks. The proposals involve the partial or complete demolition of two buildings on the site.

1.3 Any application which involves the alteration or demolition of extant structures on the site will require adequate historic building appraisal and record in order that the planning authority may make an informed decision regarding the proposals. The requirement for such historic environment information in support of a planning application (and Conservation Area Consent), on development sites where there is a potential for the presence of significant elements of the historic environment, accords with Government advice in PPGs 16 and 15, and the policy stated within the City of Gloucester's Local Plan and the SPD *Development Affecting Sites of Historic Environment (Archaeological) Interest*.

2. OBJECTIVES

2.1 An archaeological historic building appraisal will provide sufficient information to enable the planning authority to make an informed decision on any planning application in regard to the historic environment. Such a programme will comprise a graphic, photographic and textual record and analysis as detailed below.

3. GENERAL REQUIREMENTS

3.1 The investigation will comprise the archaeological appraisal of the site's standing buildings prior to the commencement of any alteration or demolition works.

3.2 The investigations will include the analysis and interpretation of the findings, the formation of a site archive that can secure the long-term conservation and storage of the records and recovered artefacts in appropriate conditions and the provision for the appropriate dissemination of the findings.

3.3 The investigations necessitated by the proposed works present an opportunity to address the following research questions:

- The presence and nature of remains of the original C19 power station and subsequent alterations.

- Do the forms of the structures relate to their Industrial Age use? How has this use changed over time and how is this archaeologically expressed?

NB: The above is not exhaustive, the contractor is invited to include additional research aims in the written scheme of investigation (see 5 below).

4. SPECIFIC REQUIREMENTS

4.1 The programme will include the production of an appraisal of the site's standings structures to level 2. This should include:

- Survey and drawing requirements 2, 4, 5, 6, 7, 9 & 11 (phased drawings only);
- Photographic requirements 1, 2, 4, 6 & 8 and;
- Written requirements 1- 9, 11- 14 & 18.

These should be produced in conjunction with guidelines as set out in English Heritage's *Understanding Historic Buildings: A guide to good recording practice*.

5. GENERAL REQUIREMENTS; WRITTEN SCHEME OF INVESTIGATION (WSI)

5.1 This brief has been produced so that a suitably qualified archaeological/historic building organisation can draw up a written scheme of investigation (WSI) for the programme of building recording.

5.2 In accordance with the standards and guidance of the IfA, this design brief will not be considered sufficient for the execution of the assessment etc. A WSI is required of the contractor to provide the basis for a measurable standard. The WSI will conform to the format and requirements contained in MoRPHE.

5.3 The WSI will be produced by a suitably qualified archaeological/historic buildings contractor and provided for approval by the City Council's Heritage Service. The WSI will include the following:

- Research design: this will demonstrate a clear understanding of the research agendas that apply to this project.
- Method statement: this will conform to the relevant guidelines and standards of practice laid down by the IfA and ALGAO.
- The WSI will provide, as far as is practicable, a provisional programme for the investigation.
- It will provide details of the project team, indicating the relevant experience of key members of staff.
- It will provide the details of the archiving of the findings and where this archive is to be deposited (if the archive includes no artefacts, the place of deposition is the City Council's Heritage Service).

5.4 The project will be conducted by an archaeological/historic buildings contractor working in accordance with the bye-laws of the IfA. The IfA's *Guidance for historic building recording* and ALGAO's *Standards for fieldwork in the East of England* (in lieu of the forthcoming document for the whole of England) will be used for guidance in the production of the WSI.

6. PRESENTATION OF RESULTS

6.1 Two copies of the grey literature report on the results of the building appraisal and recording will be prepared for submission to the planning authority as part of application submissions. The report will include consideration of:

1. The aims and methods adopted in the course of the investigation.
2. The nature, location, extent, date, significance and quality of any archaeological/ historic fabric identified.
3. Appropriate illustrative material such as maps, plans, sections, drawings and photographs, including a site location plan at 1:2500; site plan at 1:1250 and, where appropriate, large-scale site-specific plans.
4. Specialist reports.
5. Summary of results.
6. A schedule of the archive contents.
7. A concise, non-technical summary.
8. The dates of when the site investigation took place.
9. An appropriately completed OASIS form (see below) as an appendix to the report

6.2 Two hard copies of the grey literature report will be accompanied by:

- A .pdf copy of the grey literature report on disc
- A complete, digitised archive (all textual material will be scanned to 150 DPI and all graphical/pictorial material scanned to 300 DPI – it is emphasised that all materials of record must be included in the archive, even site investigation notebooks) on disc.

6.3 Gloucester City Council Historic Environment Record is registered with the online Access to Index of Archaeological Investigations (OASIS) project. The archaeological contractor must provide appropriate details relating to the project by completing the OASIS form at http://ads.ahds.ac.uk/project/oasis, in accordance with the guidelines provided by English Heritage and the Archaeology Data Service.

6.4 It is possible that further archaeological/historic building work may required, as mitigation of development impact, before and during development (but post any planning consent). The developer will be required to combine all investigations in one report and in one coherent archive.

6.5 On the completion of all archaeological/historic buildings work on the site, where warranted, the developer will provide for peer-reviewed, academic/professional publication. The Heritage Service will provide the note in the annual round up of archaeological fieldwork in Gloucester for Glevensis and the Trans. of the Bristol and Gloucestershire Archaeological Society.

If you wish to comment on this brief or require additional information, please contact Gloucester City Council's Historic Environment Team: Jonathan Smith (Historic Environment Manager) 01452 396346 or Phil Greatorex (HER Officer) 01452 396344

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APPENDIX B: Written Scheme of Investigation (Birmingham Archaeology)

Commercial Road Substation, Gloucester

Written Scheme of Investigation, February 2010

1 INTRODUCTION

1.1 The following document represents a Written Scheme of Investigation (WSI) for the provision of an archaeological historic building appraisal at Commercial Road Substation, Gloucester. It has been prepared based on a *Project Brief* prepared by Gloucester City Council's Historic Environment Team, and in response to an invitation to submit a quotation issued by Dr Stephen Townend of Entec UK Ltd (Planning and Environment Appraisal section) on behalf of Central Networks, in February 2010.

1.2 Gloucester City Council has adjudged that any application which involves the alteration or demolition of extant structures on the site will require adequate historic building appraisal and record in order that the planning authority may make an informed decision regarding the proposals. The requirement for such historic environment information in support of a planning application (and Conservation Area Consent), on development sites where there is a potential for the presence of significant elements of the historic environment, accords with Government advice in PPGs 16 and 15, and the policy stated within the City of Gloucester's Local Plan and the SPD *Development Affecting Sites of Historic Environment (Archaeological) Interest*.

2 SITE LOCATION AND ARCHAEOLOGICAL BACKGROUND

2.1 The Commercial Road Substation site is located on the western edge of Gloucester city centre. The site is located in a largely industrial area and is bound to the north by a carpark, to the south by Commercial Road, to the west by Barbican Road and to the east by Ladybellegate Street. Commercial Road itself leads directly to The Quay and The Docks (to the north) which form the eastern side of the bank of the Severn at this point.

2.2 The Commercial Road Substation site in its current form dates from the early to mid 1990s. However, the site contains buildings dating from an earlier late 19th-century power station.

2.3 None of the standing buildings on site are included on the Statutory List of Buildings of Special Architectural or Historic Interest, nor are they locally listed.

2.4 In addition to containing historic industrial structures, part of the site is designated as a Scheduled Ancient Monument. This Scheduling relates to remains of *Glevum Colonia* although there is undoubtedly contemporary and later archaeology of national importance extending outwith the Scheduled Area.

3 AIMS AND OBJECTIVES

3.1 The principal objective of the archaeological historic building appraisal will be to provide archaeological recording of significant elements of the historic built environment that

are likely to face an impact from the proposed development and any proposed demolition, with the provision for appropriate archiving and public dissemination of the findings in accordance with condition AR3 as set out in SPD *Development Affecting Sites of Historic Environment (Archaeological) Interest* – August 2008.

3.2 The main aim of the project is to provide an understanding of the historic development of the site through the compilation of a drawn, textual and photographic record with supporting archive/background information and interpretation/analysis, the nature of which will be outlined in more detail in section § 6 below.

4 REQUIREMENTS AND SCOPE OF WORKS

4.1 Requirement for Works

4.1.1 The archaeological historic building appraisal of Commercial Road Substation will be carried out prior to the commencement of any alteration or demolition works which are being proposed.

4.1.2 These proposals relate to the reconfiguration of the substation in order to meet requirements for future increases in demand. This will also require some extension to the north and west, within the land owned by Central Networks.

4.1.3 This reconfiguration of the substation will involve the partial or complete demolition of two historic buildings on the site; fragment of a former steam turbine hall (control room and switchgear building), and a derelict former administration building.

4.2 General Scope of Archaeological Works

4.2.1 The archaeological historic building assessment of the site's standing buildings will include the following:

- Create a record of the structures using written, drawn and photographic means
- Analysis and interpretation of the findings
- Formation of a site archive
- Provision for the appropriate dissemination of the findings

4.3 Research Questions

4.3.1 In addition the investigations necessitated by the proposed works present an opportunity to address the following research questions:

- The presence and nature of remains of the original 19th century power station and subsequent alterations.
- Do the forms of the structures relate to their Industrial Age use? How has this changed over time and how is this archaeologically expressed?

4.4 Specific Requirements

4.4.1 The archaeological historic buildings appraisal will include the production of an appraisal of the site's standing structures to level 2 (English Heritage 2006). More specifically this will include the following:

- Survey and drawing requirements 2, 4, 5, 6, 7, 9, & 11 (phased drawings only)
- Photo requirements 1, 2, 4, 6 & 8 and:
- Written requirements 1-9, 11-14 & 18

These will be produced in conjunction with guidelines as set out in English Heritage's *Understanding Historic Buildings: A guide to good recording practice*.

5 RESEARCH DESIGN

5.1 Research Questions

5.1.1 At this early stage of the project it is difficult to identify many specific research questions pertaining to the Commercial Road Substation site (other than those specified in section 3.3 of the brief and reiterated in Section 4.3 above). All fieldwork and desk-based study will be carried out with these research questions in mind. In addition, should the desk-based study and archaeological historic building appraisal raise any further research questions these will highlighted in the grey literature report.

6 METHODOLOGY

6.1 Introduction

6.1.1 The following outlines the methodology that will be employed in the archaeological historic building appraisal of the historic standing buildings at Commercial Road, Gloucester. There are four distinct elements to this methodology: Desk-based research, drawn record, photographic record and written record.

6.2 Desk-Based Research

6.2.1 In order to help gain an understanding of the historic form, function and operation of the Commercial Road Substation a rapid desk-based assessment will be carried out.

6.2.2 This will involve a rapid search of relevant and readily available published and unpublished documentary source material, including historic maps, early photographs and drawings, written descriptions, and primary and secondary sources related to the site held by the Gloucestershire Archives and the Libraries of the University of Birmingham.

6.3 Drawn Record

6.3.1 A comprehensive drawn record of both the derelict administration building and the former control room and switchgear building will be compiled. This will be made to illustrate particular features of historic, industrial and architectural interest and will be carried out using a mixture of hand survey (using a DISTO electronic distance meter) and a Reflectorless EDM (where appropriate). The drawn record[41] will include the following outputs and deliverables:

- A low-level, large-scale block plan will be produced using any existing architects' drawings or the current OS 2500 map extract. The position of each structure will be shown, noting the historic function of these (this block plan will not show internal partitions, windows, doors etc.). This will, where possible and appropriate, relate the buildings/site to other structures and to related topographical and landscape features.
- Measured plans of each floor level in both historic structures. In the case of the basement of the Turbine Hall building, where access is restricted due to Health and

[41] Will consist of phased drawings only as per requirements of the Gloucester City Council Brief

Safety considerations, survey will be generated by reference to historic survey material combined with a review of photographic material from a recent asbestos survey. Survey material will be validated on site by reference to above ground elements of the surviving structure.

- Measured cross-sections (to be located where deemed appropriate on site).
- Measured drawings of architectural decoration (where deemed appropriate to assist in the understanding of the development and history of the structure) and where not more readily obtained by photography..
- Measured elevations where deemed appropriate to providing an understanding of the building's design, development or function and where not more readily obtained by photography.
- Reconstruction drawings and phased drawings will be produced, if these are adjudged to be of value.

6.4 Photographic Record

6.4.1 The photographic survey will comprise both general and detail shots of the interior and exterior of both buildings, and will be carried out using a high resolution digital SLR camera (Nikon D50). All detail shots will include graded photographic scales (where possible). All photographs will be recorded on a *pro forma* record sheet detailing subject, direction, photographer and date.

6.4.2 More specifically, the photographic record will comprise the following:

- Oblique views showing all of the external elevations of the buildings
- The overall appearance of the principal rooms and circulation areas
- Any machinery or plant, or evidence for its former existence
- Any building contents or ephemera which have a significant bearing on the buildings' history, where not sufficiently treated in general photographs

6.5 Written Record

6.5.1 A written description will be prepared to supplement the photographic and drawn records, summarising the history, character, date, techniques of construction, phasing and significance of each building. Written records on site will be compiled on *pro forma* building and room record sheets.

7 TIMETABLE AND DELIVERABLES

7.1 Due to the need to put protective netting around the former control room and switchgear building, prior to the bird nesting season, the fieldwork is proposed to begin on Monday 22nd February 2010. All of the fieldwork at and around the former control room and switchgear building will be complete by Friday 26th of February. Fieldwork will continue in the following week on the former Administration Building. It is also envisaged that the desk-based study will be carried out at some point in this second week.

7.2 Within four weeks[42] of completion of the documentary research and fieldwork, the results of the archaeological historic buildings appraisal will be presented in a grey literature report. This will be equivalent to English Heritage's Level 2 Written Record, will include all information required by Section 6.1 of the project brief, and will contain the following information:

Text

- Non-technical summary
- Introduction
- Site location and description
- Aims and objectives
- Methodology
- Archaeological and historical context
- Historical development of the site
- Map regression analysis
- Description of standing buildings and in-situ machinery
- Discussion and summary of results
- List of sources consulted
- Brief and WSI (as appendix)
- A schedule of the archive contents
- An appropriately completed OASIS form

Figures

- Appropriate illustrations including location plan and a selection of historic maps / photographs
- Numbered and annotated block plan
- Annotated phased plans/drawings
- Plates

7.3 As required in section 6 of the project brief, two copies of the grey literature report will be prepared for submission to the planning authority and will, if deemed necessary, be submitted as part of application submissions.

7.4 These will be accompanied by:

- A .pdf copy of the grey literature report on disc
- A complete, digitised archive (all textual material will be scanned to 150 DPI and all graphical/pictorial material scanned to 300 DPI- it emphasised that all materials of record will be included in the archive, even site investigation notebooks) on disc.

7.5 An online OASIS form will be filled out and a digital copy of the report will be deposited at http://ads.ahds.ac.uk/project/oasis/.

7.6 The site archive will be deposited at Gloucester City Museum and Art Gallery if required.

7.7 On completion of all archaeological/historic buildings work on site, where warranted, the developer will provide for peer reviewed, academic/professional publication. In addition, the Heritage Service will provide a note in the annual round up of archaeological fieldwork in Gloucester for Glevensis and the Trans. of the Bristol and Gloucestershire Archaeological Society.

[42] It is anticipated that a full report will be available within two weeks of the completion of the fieldwork (in order to accompany a demolition consent application for the derelict administration building). However, due to unforeseen circumstances/workload it may be necessary to issue an interim report containing the results of the recording of the derelict administration building. An integrated report containing the overall results of the fieldwork project would then be issued at a later date.

8 STAFFING

8.1.1 The desk-based research and archaeological historic building appraisal will be carried out by a member of (or a combination of) Birmingham Archaeology's Built Heritage and Conservation Team. Each member of the Built Heritage and Conservation Team is an experienced buildings archaeologist with particular experience in the recording and assessment of industrial buildings of varying date and types. Recent industrial recording and assessment projects include Chance's Glassworks, Smethwick, Coalbournehill Glassworks, Amblecote, and Richard Arkwright's Tutbury Mill, Rocester.

8.1.2 In addition to the collective experience of Birmingham Archaeology's Built Heritage and Conservation Team, we could also call upon (if necessary) the experience of our sister organisation, The Ironbridge Institute, in an advisory capacity, particularly with regard to understanding process flow, *in situ* machinery, and the significance of the surviving structures.

Brief CVs of relevant key project personnel are included below.

8.2 Project Management

8.2.1 Overall project management will be undertaken by Shane Kelleher, AI*f*A, Assistant Project Manager (Built Heritage and Conservation).

8.3 Desk-Based Research

8.3.1 The Historic Building Appraisal element of the project would be carried out by Ric Tyler AI*f*A, Assistant Project Manager (Built Heritage and Conservation). Any recording in confined spaces would be carried out by either William Mitchell AIfA or Chris Hewitson AIfA, both of whom have the necessary confined space training, and are experienced archaeologists with particular interests in Industrial Archaeology and historic buildings.

8.3.2 The desk-based research element of the project would be carried out by Ric Tyler AIfA, Assistant Project Manager (Built Heritage and Conservation).

8.4 Historic Building Appraisal

8.4.1 The Historic Building Appraisal element of the project would be carried out by Ric Tyler AI*f*A, Assistant Project Manager (Built Heritage and Conservation). Any recording in confined spaces would be carried out by either William Mitchell AIfA or Chris Hewitson AIfA, both of whom have the necessary confined space training, and are experienced archaeologists with particular interests in Industrial Archaeology and historic buildings.

9 PROFESSIONAL STANDARDS

9.1.1 The project will follow the requirements set down in the *Standard and Guidance for Archaeological Desk-Based Assessment* (IfA, 2008a), and *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures* (IfA 2008b).

9.1.2 Birmingham Archaeology is a Registered Archaeological Organisation (RAO) with the Institute for Archaeologists (IfA); all project staff will adhere to the *Code of Conduct of the Institute for Archaeologists* (IfA, 2008c) at all times.

10 HEALTH AND SAFETY

10.1 All current health and safety legislation, regulations and guidance will be complied with during the course of the project. A site specific Risk Assessment will be carried out. In addition to normal PPE Birmingham Archaeology staff will also where necessary and appropriate wear disposable P3 dust masks, disposable overalls, disposable overshoes, vinyl gloves, and safety glasses/goggles.

11 REFERENCES

English Heritage, 2006. *Understanding Historic Buildings: A Guide to Good Recording Practice'* .

Institute for Archaeologists, 2008a. *Standard and Guidance for Archaeological Desk-Based Assessment.*

Institute for Archaeologists, 2008b. *Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures.*

Institute for Archaeologists, 2008c. *Code of Conduct of the Institute for Archaeologists.*

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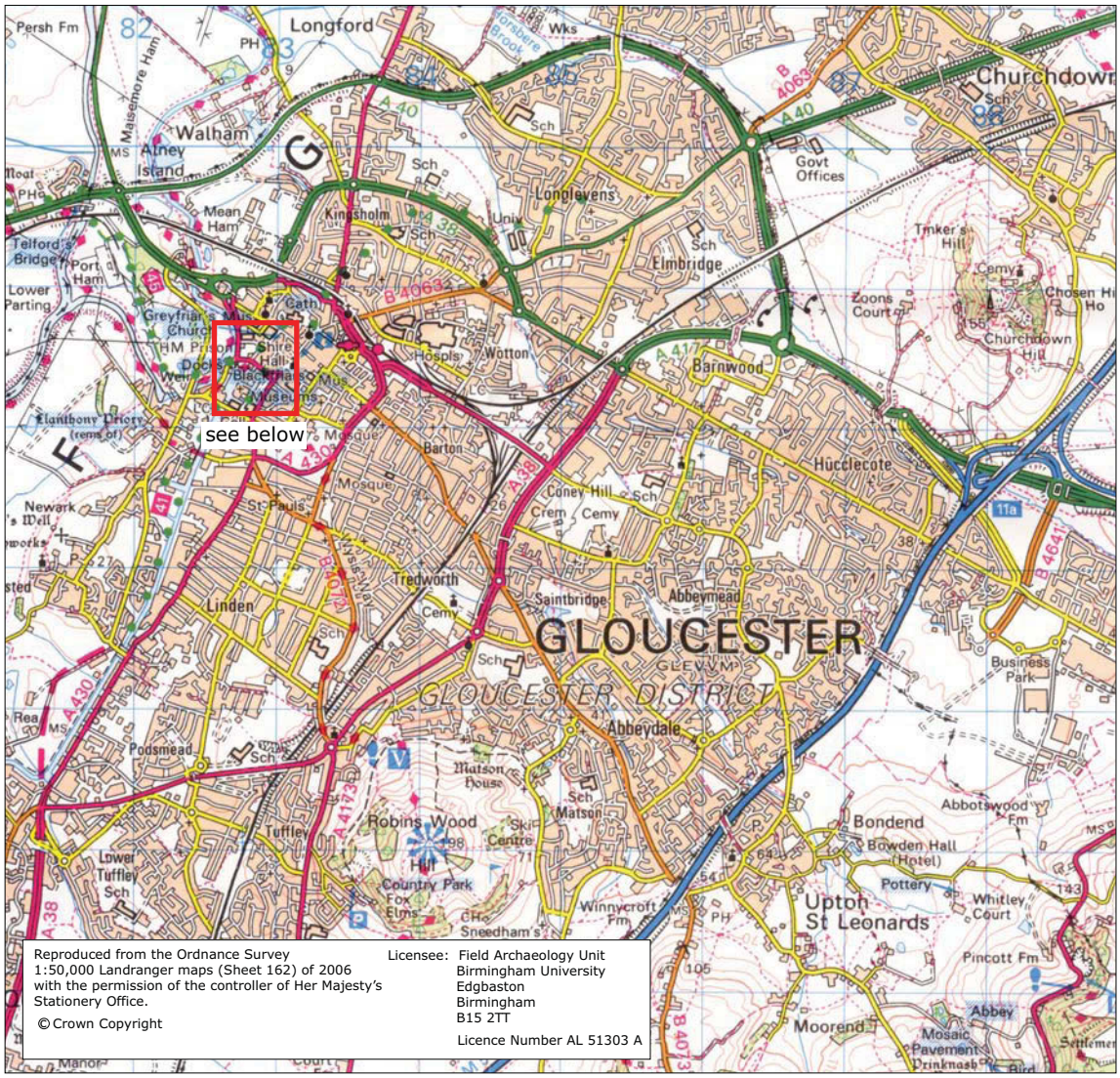

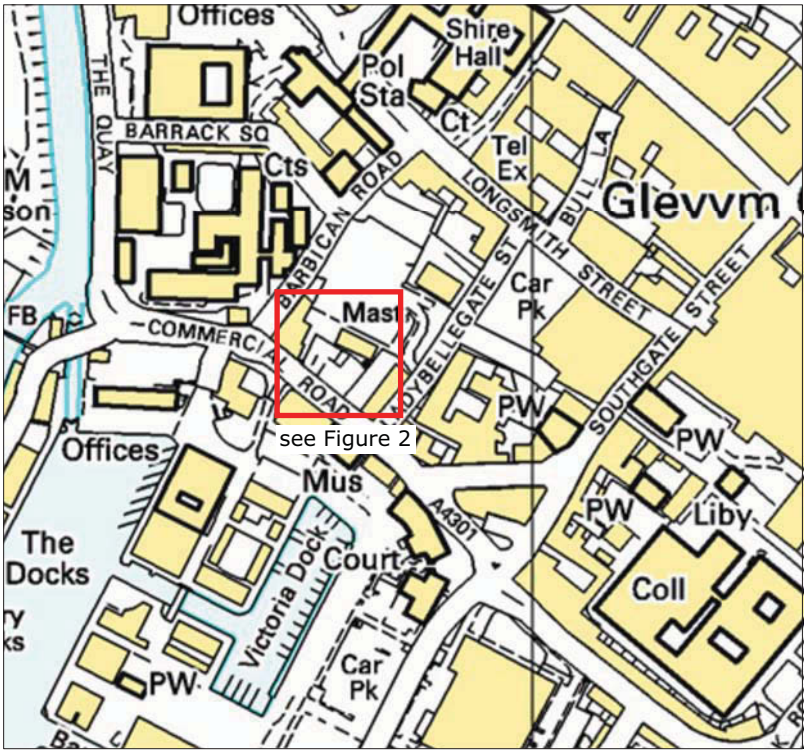

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Commercial Road Substation, Gloucester

Figure 1: Site location plan

KEY

- **A** Administration building
- **B** Switch-room/ Relay room block
- **C** Workshop block
- **D** Switch-room annexe

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Figure 2: Site Plan

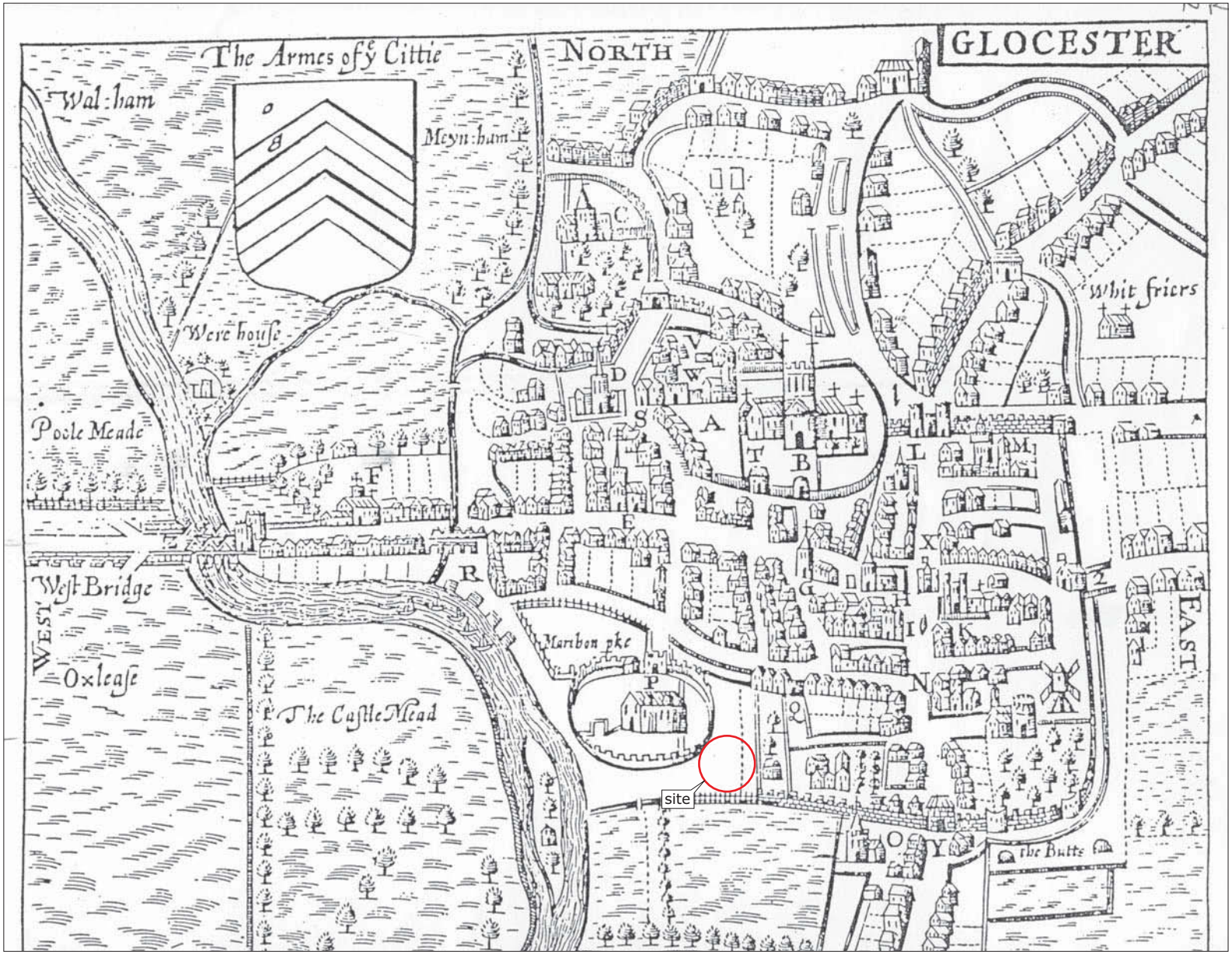

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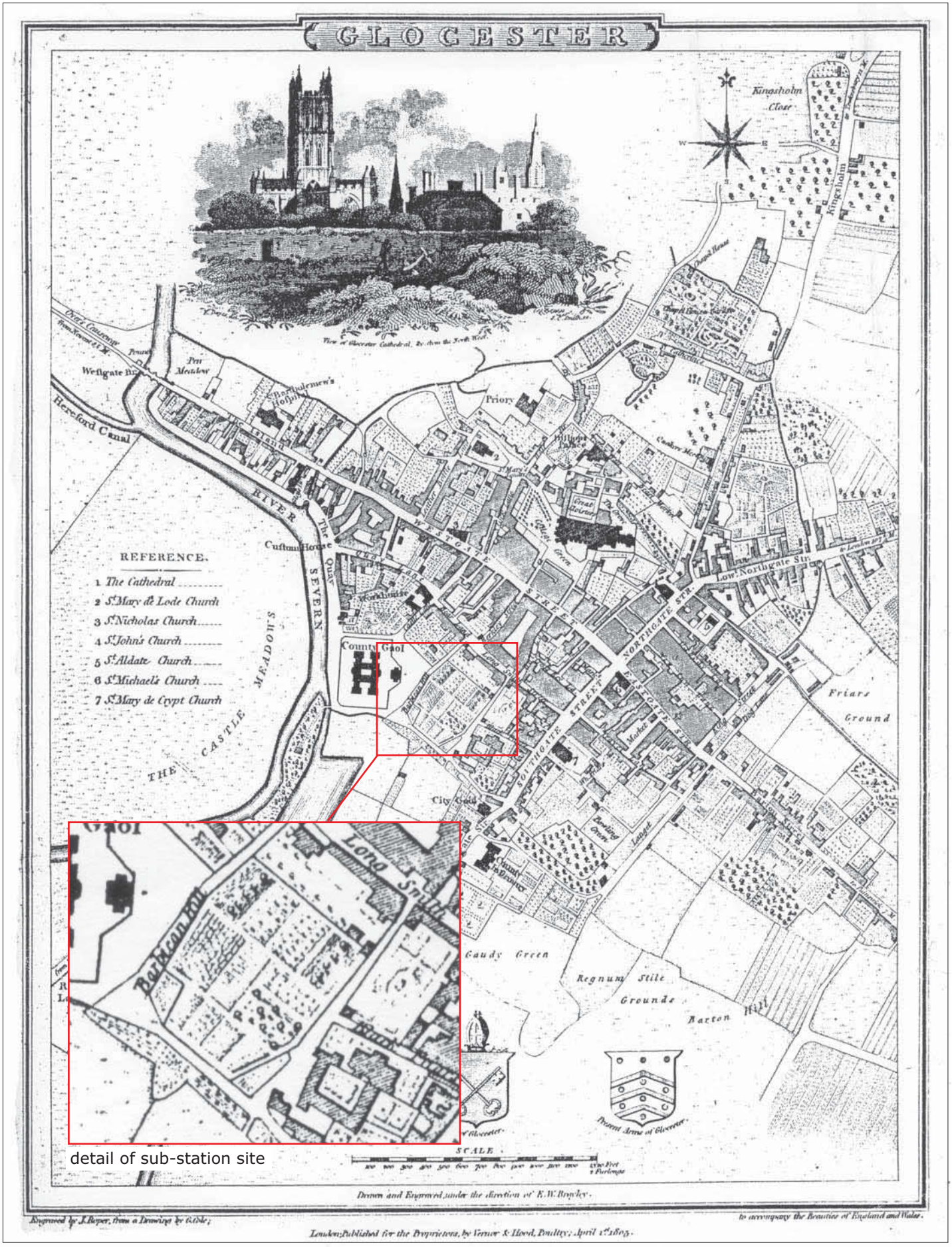
Figure 3: Speed's plan of Gloucester, 1610



detail of sub-station site

GCRO NX 34/26

PLAN
of
GLOUCESTER.
1841.
New Market
Worcester Street
Northgate
Hare Lane
Southgate Street
Eastgate Street
Westgate Street
Barton St
Queen St
Dog Lane
King Street
Mitre Street
New Inn Lane
St Johns Lane
Bell Lane
Bull Lane
Berkeley Street
Long Smith St
Black Friars
Grey Friars
Dragon Lane
Littleworth
Brunswick Square
Little Norfolk Street
Road to the Spa
Beaufort Buildings
Spa Grounds
Tramway
Norfolk Buildings
Road to Bristol
Deacon Street
3 Cocks Lane
Quay Street
Quay
River Severn
Basin
Bakers Wharf
Gloucester & Berkeley Canal
The Island
site

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Figure 6: Gloucester Board of Health plan of 1851

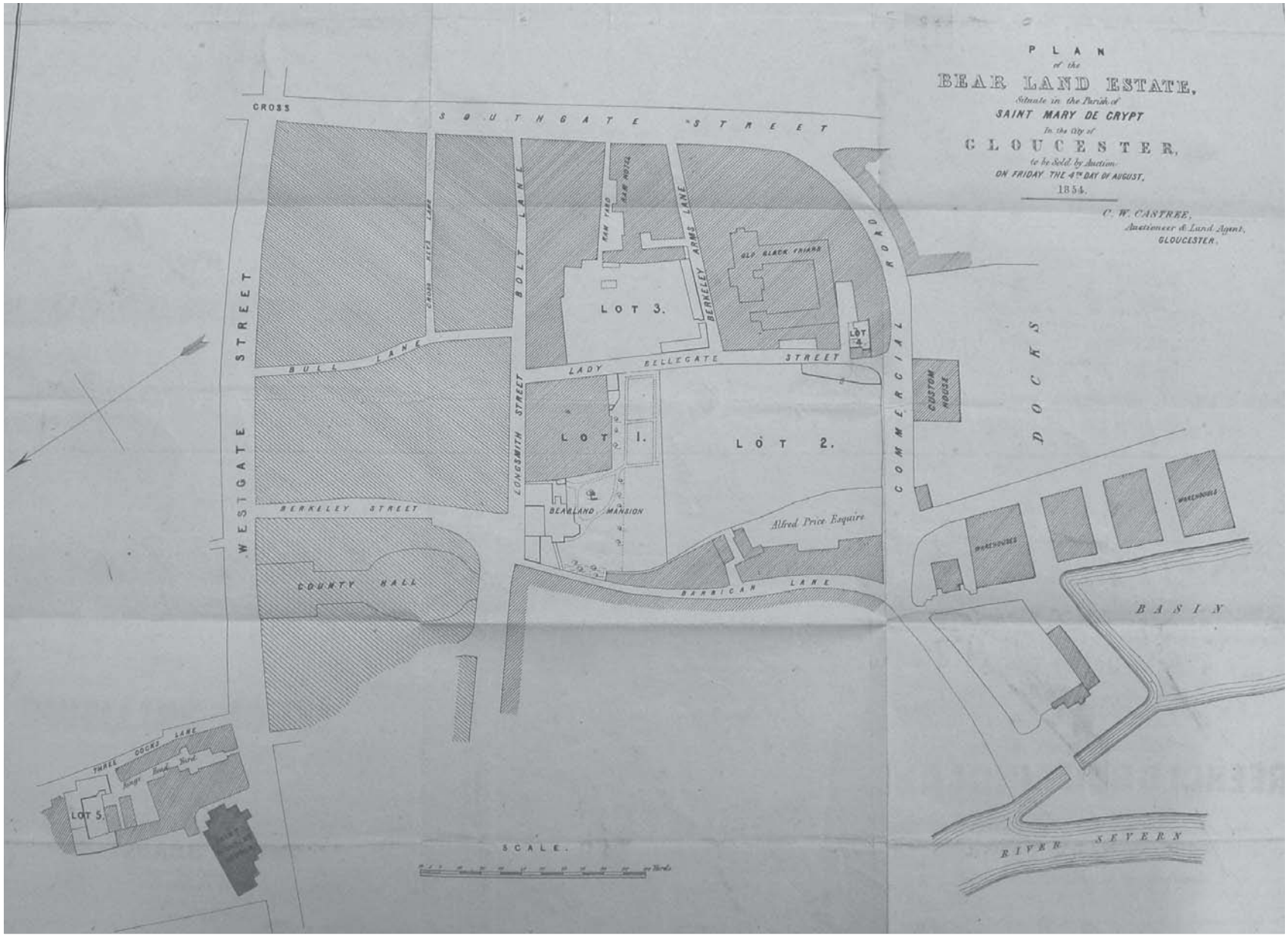

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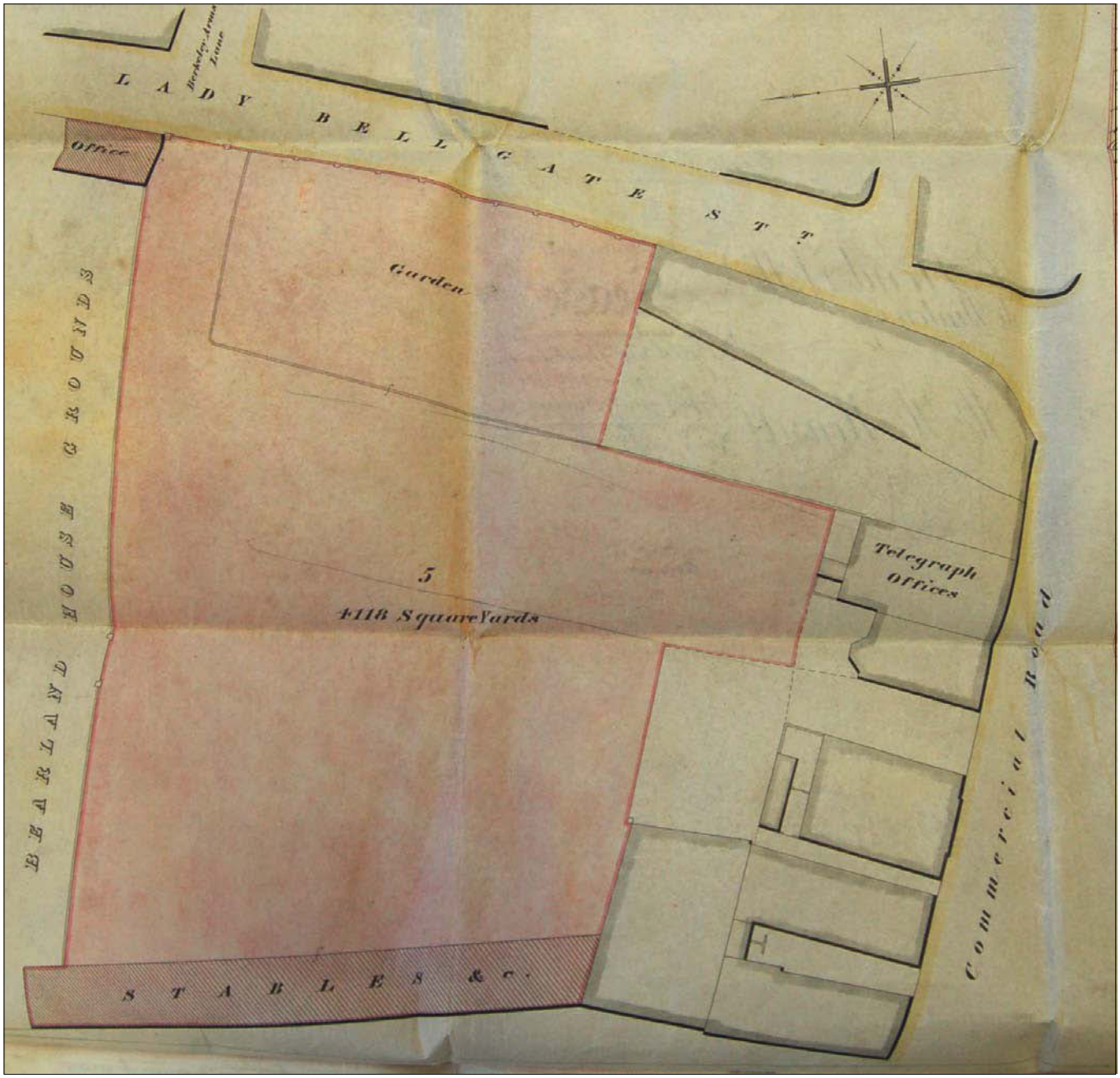
Figure 7: Plan accompanying sales particulars of 1854



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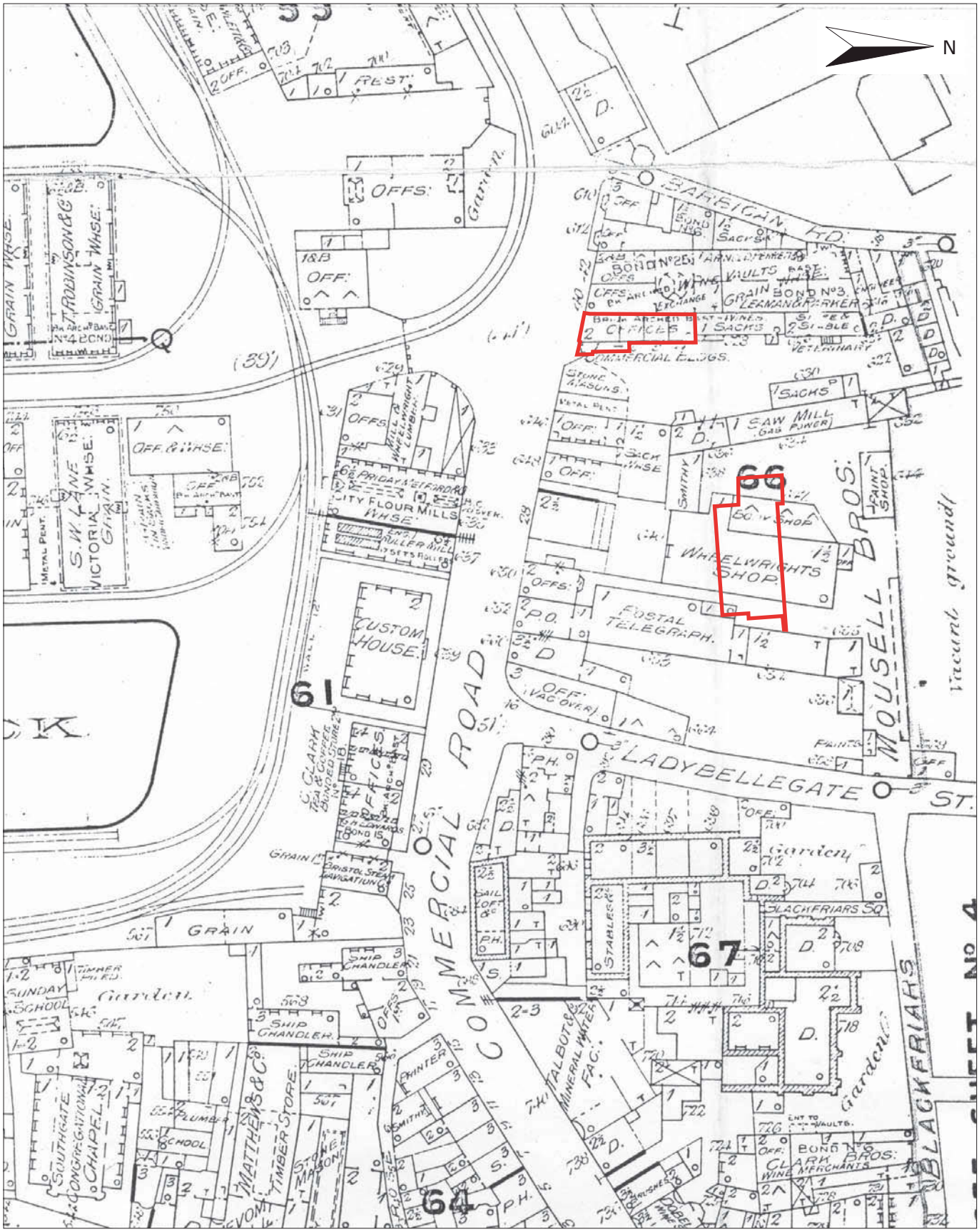
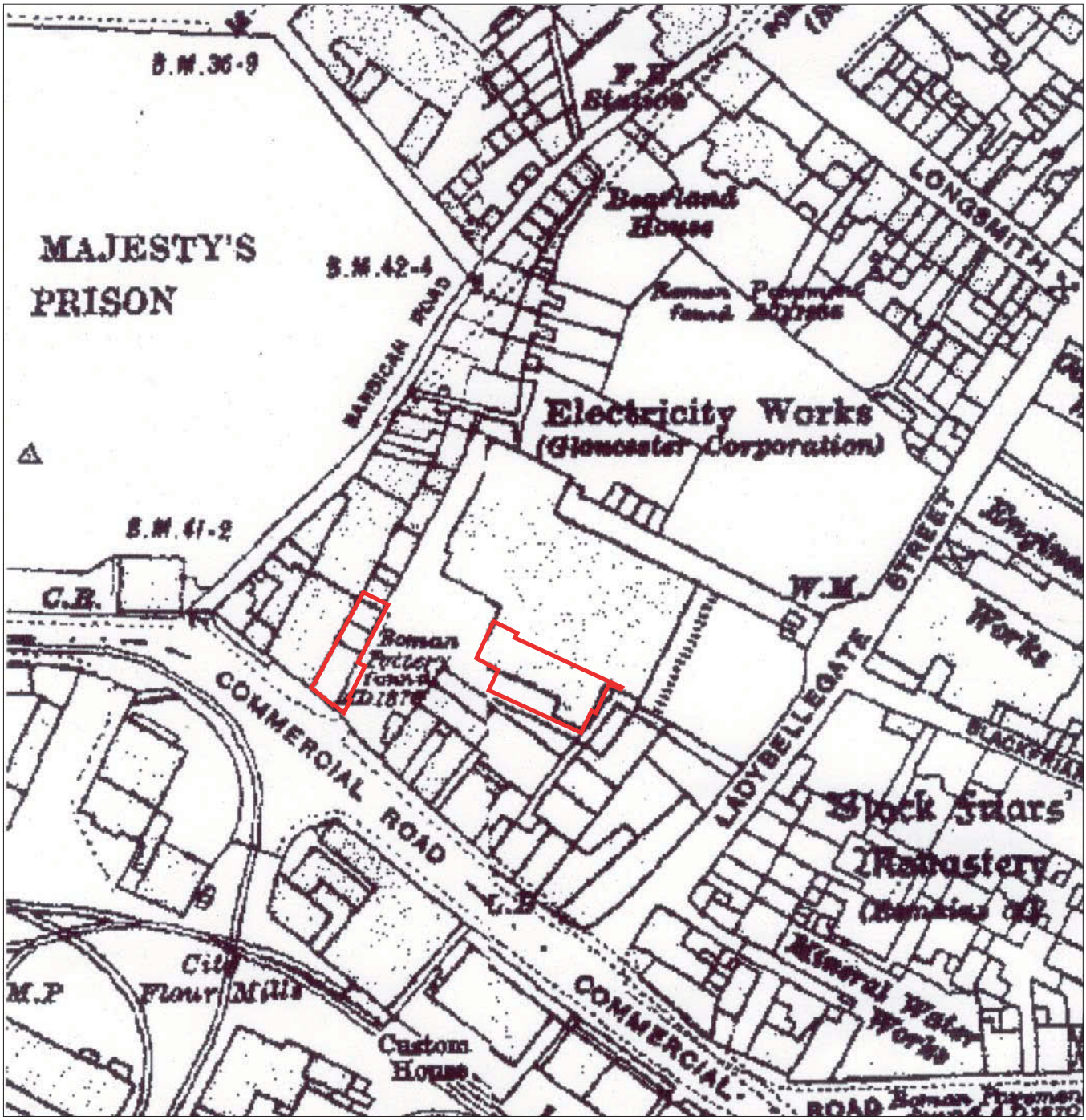
NB: extant buildings marked in red

Figure 9: Ordnance Survey County Series 1st Edition 1:2500 map of 1884-6



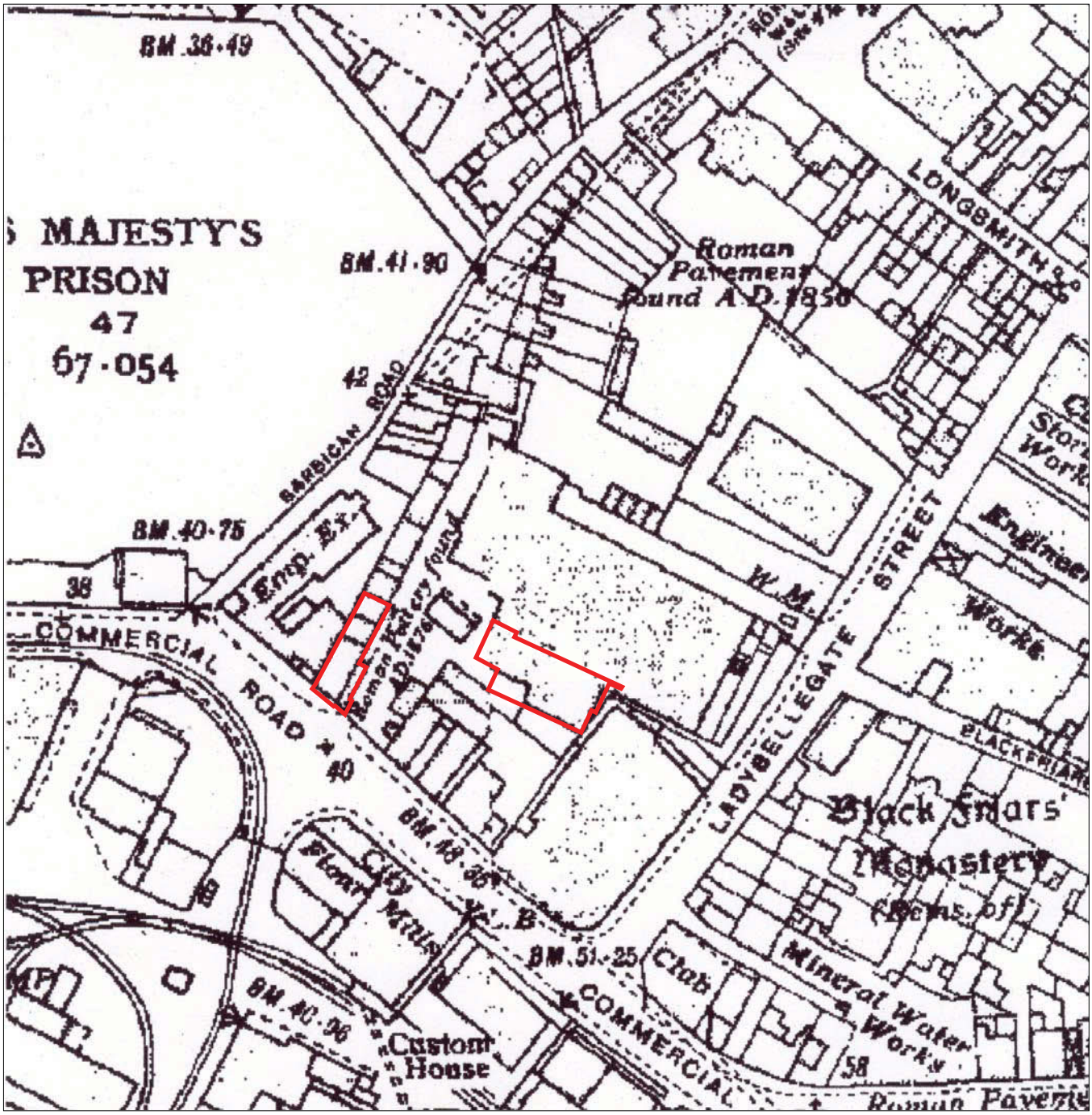
NB: extant buildings marked in red
GCRO NX 34/39 (3)

NB: extant buildings marked in red



NB : extant buildings marked in red

Figure 12: Ordnance Survey County Series 2nd Revision 1:2500 map of 1923



NB : extant buildings marked in red

PN: 2044
Commercial Road Substation, Gloucester
Figure 13: Ordnance Survey County Series 3rd Revision 1:2500 map of 1936-8