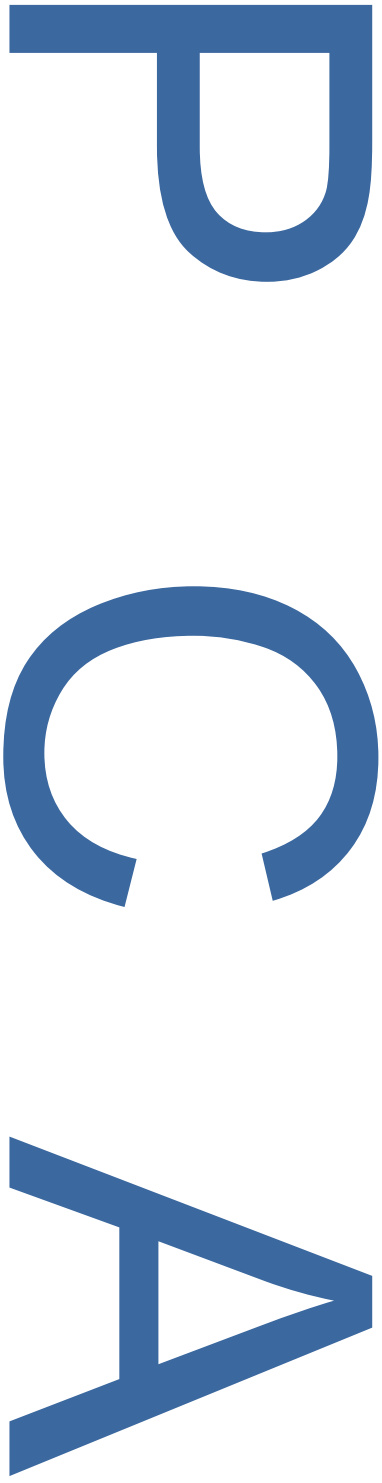
HISTORIC BUILDING RECORDING OF THE POWER HOUSE AT THE FORMER FORD STAMPING PLANT, KENT AVENUE, DAGENHAM, RM9 6SA LONDON BOROUGH OF BARKING AND DAGENHAM



PCA REPORT NO: R12771

JANUARY 2017

PRE-CONSTRUCT ARCHAEOLOGY

Historic Building Recording of the Power House at the former Ford Stamping Plant, Kent Avenue, Dagenham, RM9 6SA London Borough of Barking and Dagenham

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Site Code: KEA16

Project Manager: Charlotte Matthews

Client: CgMs Consulting on behalf of Dagenham Dock Ltd

Central Ordnance Survey National Grid Reference: TQ 49280 83203

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DOCUMENT VERIFICATION

Site Name

Power House
at the
Former Ford Stamping Plant,
Kent Avenue,
Dagenham,
RM9 6SA
London Borough of Barking and Dagenham

Type of project

Historic Building Recording

Quality Control

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1 NON TECHNICAL SUMMARY

1.1.1 Pre-Construct Archaeology Limited was commissioned by CgMs Consulting on behalf of Dagenham Docks Ltd to carry out Level 1-2 building recording of a redundant power house at the former Ford Stamping Plant, Dagenham, London Borough of Barking and Dagenham, prior to its demolition.

1.1.2 The power house was built *c*.1930-2 in order to provide power for the machinery and electrical lighting used in the Briggs Motor Bodies and Kelsey-Hayes Wheel Company plants in Chequers Lane, Dagenham. These companies, both British subsidiaries of existing North American Ford suppliers (based in Detroit) were principal suppliers to the adjacent Ford Motor Company Dagenham works.

1.1.3 Documentary evidence suggests that development of the Chequers Lane estate took place in tandem with the construction of the main Ford works to the south-east. An aerial photograph taken in 1932 shows that two factories had been built by that date to the east of Chequers Lane. Briggs Motor Bodies Ltd (Detroit) occupied the larger of the two plants, which lay to the north of Norwich Road, while the much smaller Kelsey-Hayes works was situated to the south fronting Chequers Lane. It also shows that the power house was built along with the works, although it was noticeably smaller than at present. The power house was enlarged between 1932-39 to address the requirements of the Briggs plant, which had almost doubled in area since 1932.

1.1.4 Second World War bomb damage plans of the factory complex show that the power house (superficially fire damaged) was divided into a boiler house and a compressor house. The boiler house was located within the main four storey block and the compressor house within a lower two storey range at the west end. The latter supplied compressed air to power plant and tooling within the main factory complex.

1.1.5 Within weeks of the end of the Second World War, the Ford plant at Dagenham was gearing up to build cars to meet the anticipated demands of peacetime. Despite Post-war austerity, punitive tax rates on the motor industry and petrol rationing, Ford Britain took over the Kelsey Hayes Wheel Company in 1947. The death of Walter Owen Briggs in 1953 and the threat that Ford's American rival Chrysler would purchase his company, provided the impetus for Ford to acquire the British holdings of Briggs Motor Bodies from the Detroit parent company.

1.1.6 An early (pre 1950) aerial depiction of the site shows the full extent of the Compressor House prior to its shortening, which occurred sometime after 1972 with the removal of the westernmost bay. It also depicts a large industrial chimneystack built alongside the northern elevation of the power house, presumably associated with the coal fired boilers and a network of tramlines to the south (along Norwich Road) providing the raw materials and connecting into a complex of coal and goods siding to the south.

2 INTRODUCTION

2.1 Background

2.1.1 Pre-Construct Archaeology was commissioned by CgMs Consulting on behalf of Dagenham Docks Ltd to carry out historic building recording of the redundant power house building at the former Ford Stamping Plant, Kent Avenue, Dagenham, RM9 6SA.

2.1.2 The building recording was carried out prior to the submission of proposals to redevelop the site and was undertaken in accordance with a Written Scheme of Investigation (Garwood, 2016), agreed in advance of works by the Greater London Archaeological Advisory Service (GLAAS), on behalf of the LPA (Local Planning Authority). The level of detail to which the survey was undertaken corresponded with the perceived significance of the building, assessed as locally significant, and accordingly was carried out at a relatively low, primarily photographic level, equivalent to an Historic England Level 1-2 survey. The building recording was carried out in accordance with guidance published in Historic England 2016 *Understanding Historic Buildings: A guide to good recording practice* and standards set out in CIfA guidance for the archaeological investigation and recording of standing buildings or structures (CIFA 2014).

2.1.3 The proposed development involves the demolition of the majority of the existing factory buildings and structures on site and ultimately the redevelopment of this former brown field site for residential use.

2.1.4 The aim of the building recording was to produce a permanent record of the power house building in its present condition. This will ultimately form part of an ordered archive and report that will preserve 'by record' the building and structures affected by the proposed demolition works and thereby, in part, mitigate their loss.

2.2 Site Location and Description

2.2.1 The former light industrial manufacturing site is centred at Ordnance Survey National Grid Reference TQ 49280 83203. It covers an area of 17.9ha to the south of the A1306 Ripple/New Road and lies within the London Borough of Barking and Dagenham (**Figures 1** and **2**).

2.2.2 The site is occupied by a series of large production and manufactory buildings (presently in the process of demolition) formerly in use as a Stamping Plant serving the Fords Motor manufacturing works at Dagenham. The Power House, the subject of this report, has been assessed as a locally significant heritage asset based on its association with the main Ford Motor Works site (to the south). None of the present buildings or structures on the site are listed and the site does not lie within or close to a Conservation Area. However it does fall within the boundary of the Ripple Road Archaeological Priority Area (HER Ref: DLO37897), an archaeologically rich area,

particularly for prehistoric remains, defined by the London Borough of Barking and Dagenham.

2.2.3 The power house was built as part of the Ford Stamping Plant, originally constructed in 1932 as the Briggs Motor Bodies and Kelsey-Hayes Wheel Company works.

3 PLANNING BACKGROUND

3.1 Introduction

3.1.1 National legislation and guidance relating to the protection of historic buildings and structures within planning regulations is defined by the provisions of the Town and Country Planning Act 1990. In addition, local planning authorities are responsible for the protection of the historic environment within the planning system and policies for the historic environment are included in relevant regional and local plans.

3.2 Legislation and Planning Guidance

3.2.1 Statutory protection for historically important buildings and structures is derived from the Planning (Listed and Conservation Areas) Act 1990. Guidance on the approach of the planning authorities to development and historic buildings, conservation areas, historic parks and gardens and other elements of the historic environment is provided by the National Planning Policy Framework (NPPF), which was adopted on 27 March 2012.

3.2.2 Historic buildings are protected through the statutory systems for listing historic buildings and designating conservation areas. Listing is undertaken by the Secretary of State; designation of conservation areas and locally listed buildings is the responsibility of local planning authorities. The historic environment is protected through the development control system and, in the case of historic buildings and conservation areas, through the complementary systems of listed building and conservation area control.

3.3 London Plan Policy

7.8 Heritage assets and archaeology states:

A. London's heritage assets and historic environment, including listed buildings, registered historic parks and gardens and other natural and historic landscapes, conservation areas, world heritage sites, registered battlefields, scheduled monuments, archaeological remains and memorials should be identified, so that the desirability of sustaining and enhancing their significance and of utilising their positive role in place shaping can be taken into account.

B. Development should incorporate measures that identify, record, interpret, protect and, where appropriate, present the site's archaeology.

C. Development should identify, value, conserve, restore, re-use and incorporate heritage assets, where appropriate.

D. Development affecting heritage assets and their settings should conserve their significance, by being sympathetic to their form, scale, materials and architectural detail.

E. New development should make provision for the protection of archaeological resources, landscapes and significant memorials. The physical assets should, where possible, be made available to the public on-site. Where the archaeological asset or memorial cannot be preserved or managed on-site, provision must be made for the investigation, understanding, recording, dissemination and archiving of that asset.

3.4 Barking and Dagenham Local Plan Core Strategy Development Plan (adopted July 2010).

POLICY CP2: Protecting and Promoting Our Historic Environment

Barking and Dagenham has a rich local history. Signs of our fishing, maritime and industrial heritage can still be seen for example at Barking Town Quay, the Ford works in Dagenham, and the Malthouse and Granary buildings on Abbey Road. The Becontree Estate, the Curfew Tower and remains of Barking and Abbey, Eastbury Manor House, Valence House and Dagenham Village are also important symbols of our past. However, compared to many other areas the Borough has relatively few protected historic environment assets such as listed buildings and conservations areas. With this in mind the Council will take particular care to:

Protect and wherever possible enhance our historic environment.

Promote understanding of and respect for our local context.

Reinforce local distinctiveness.

Require development proposals and regeneration initiatives to be of a high quality that respects and reflects our historic context and assets.

POLICY BP3: ARCHAEOLOGY

The conservation or enhancement of archaeological remains and their settings will be secured by:

A. Requiring an appropriate assessment and evaluation to be submitted as part of the planning application for any developments in areas of known or potential archaeological interest.

B. Operating a presumption in favour of the conservation of scheduled ancient monuments and other nationally important archaeological sites and their settings.

C. Requiring the conservation in situ of other archaeological remains or, where this is not justifiable or feasible and the need for the development and or other material considerations outweigh the importance of the remains, making provision for their excavation, recording and dissemination. Where appropriate, access to and interpretation of in-situ archaeological remains should be provided, if this is possible without having a detrimental impact on the site.

3.4.1 No designated World Heritage Sites, Registered Parks, Scheduled Monuments, Listed buildings, Historic Battlefield sites or Historic Wreck sites lie within the vicinity

of the site. The site does not lie within a Conservation Area but is within the Ripple Road Archaeological Priority Area (HER Ref: DLO37897) as defined by the London Borough of Barking and Dagenham.

4 METHODOLOGY

4.1 Aims and Objectives

4.1.1 The aim of the building recording as set out in the Written Scheme of Investigation (Garwood, 2016) was to provide a record of the former power house and associated structures site prior to their demolition. The aim of the work was to produce a permanent record of the building in its present condition and landscape, meeting nationally recognised standards as set out in Historic England (2016) *Understanding Historic Buildings: A guide to good recording practice*.

4.1.2 The historic building survey was to be undertaken to a standard that allowed the future understanding and interpretation of the building and its site setting.

4.2 On-Site Recording

4.2.1 The on-site survey was carried out during the week ending 16/12/2016 by the author, PCA Historic Building Specialist, and Armando Ribeiro, PCA Photographer. Due to high levels of asbestos entry into the building was prohibited A photographic survey comprising high quality digital images was undertaken recording all external elevations, and where safety allowed principal interior spaces and key features, fixtures or fittings. General shots of the site, placing the building in context with its surrounding buildings were also completed. A selection of the images has been included in this report and **Figure 17** shows the location and direction of these photographs.

4.2.2 The historic building recording broadly accords with a Level 1-2 survey as set out in the Historic England's guidelines *Understanding Historic Buildings: A guide to good recording practice* (2016). A Level 1 survey is principally a full visual record (photographic) supplemented by very basic descriptive information. This survey was Level 1-2 since it also included a brief historic background and broad building description.

4.3 Documentary Research

4.3.1 Preliminary research indicated that the London Borough of Barking and Dagenham Local Studies Centre did not hold any corporate records relating to the Ford Motor Company. The archives formerly held by the Ford works at Dagenham were transferred to the company's archive department in the United States following the acquisition of the British operation by its American parent in the 1960s. These records were subsequently transferred to the independent H. Dearborn Archive, also in the United States. Research for the present assessment therefore comprised investigation of primary source materials held by The National Archives at Kew, as well as relevant secondary information at the British Library and online.

4.4 Project Archive

4.4.1 A full and ordered archive including written, drawn and photographic records relating to this survey was completed as defined in CIfA (2014); Taylor and Brown (2009) and UKIC and ADS guidelines for the preparation of archaeological archives for long term storage, and "*Archaeological Archives: A Guide to Best Practice in creation, compilation, transfer and curation*" (AAF 2007).

4.4.2 The archive will be provisionally stored in Pre Construct Archaeology's London Office in Brockley, before its deposition with the LAARC.

4.5 Standards and Guidance

4.5.1 All works were undertaken in accordance with standards set out in:

- Historic England: *GLAAS Standards for Archaeological Work* (2014)
- English Heritage (now Historic England): *The Presentation of Historic Building Survey in CAD* (2005)
- CIFA: *Standards and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures* (2014)

5 HISTORICAL BACKGROUND

5.1 Introduction

5.1.1 Whilst a settlement is believed to have existed at Dagenham as early as the 7th century AD, it was not mentioned in the Domesday Book, suggesting that it was then part of the substantial manor of Barking. The parish of Dagenham was in existence by the early 13th century, when reference was made to a church there (Powell, 1966: 294). The southern part of the parish was dominated by marshland commons, which were mainly used for grazing sheep. The complex pattern of landholding in the marsh, together with the ever-present risk of flooding, discouraged local landowners from developing the marshes for commercial farming during the 17th and 18th centuries (**Figure 3**).

5.1.2 In the south-western corner of the parish lay the manor of Cockermouth, a free tenement held of Barking Abbey until 1330, when it was granted to the abbey in demesne (*ibid*: 267-281). The abbey retained Cockermouth until the Dissolution, following which it was leased, then sold, to Sir Anthony Browne. By the mid-19th century the title to the manor was held by one Thomson Hankey, although it had been greatly reduced in extent during the intervening centuries.

5.1.3 The manor house of Cockermouth originally stood at the junction of Ripple Road and Chequers Lane, immediately south of the Chequers Inn (**Figures 4**, **5** and **6**). This building was demolished in the 19th century and replaced by Pound House, its name derived from the manorial pound which occupied part of the yard. Pound House Farm descended with Westbury in Barking until 1879–80, when it was sold to Francis Sterry of Romford. In 1898 Sterry sold the farm to Samuel Williams, the developer of Dagenham Dock and founder of the eponymous shipping firm. The farm was subsequently let to tenants, before being acquired by the London County Council in 1922.

5.1.4 Although it had been proposed to build a dock at Dagenham linked by railway to the existing line at Chadwell Heath as early as 1846, it was not until Samuel Williams (d. 1899) purchased the land in 1887 that development of the dock commenced. During the next few years the foreshore was filled in and raised to the height of the river wall, following which new jetties were built, forming a tidal basin and quay. The acquisition of Pound Farm secured the remaining land on the west side of Chequers Lane, offering the company an opportunity to develop the remainder of the marsh for commercial purposes. In 1903 Samuel Williams & Sons completed a new deep-water jetty, the first concrete structure of its kind on the Thames. Five years later the company built Dagenham Dock station in conjunction with the London, Tilbury and Southern Railway. Having secured permanent access to the railway network, Samuel Williams & Sons set about building the Dagenham Dock estate. Four new factories designed by the firm of Charles Heathcote & Sons were built between 1909 and 1914

for leasing to other firms.

5.2 The development of the Ford Works at Dagenham, 1923-1931

5.2.1 The history of the Ford Motor Company's business in Britain can be traced back to 1904, when Aubrey Blakiston imported a dozen Model A Fords which he intended to sell to the public via the newly established Central Motor Car Company (Burgess-Wise, 2001: 11). Blakiston resigned from the company in 1906, when he was succeeded by Percival Perry as managing director. Perry (1878-1956) liquidated the firm the following year, when he set up Perry, Thornton & Schreiber Ltd to sell the newly introduced Ford Model N, which the company supplied to customers with British-made coachwork. The firm was the first to introduce the famous Model T to the global market at the 1909 London Olympia motor exhibition. Perry parted company with Thornton and Schreiber the same year, when he was invited by Henry Ford to head the Ford Motor Company's first branch in England.

5.2.2 In 1911 the Ford Motor Company (England) Ltd was established to manufacture Ford cars specifically for the British market, the first Ford company to be set up outside North America. Perry found a disused tramcar factory at the Trafford Park trading estate near Manchester which the company converted into an assembly works for its cars. A local coachbuilder was acquired by the company in 1912 to build vehicle bodies for the British market. By 1914 the Trafford Park factory had been fitted with one of Ford's innovative moving assembly conveyors and was producing chassis at a rate of 21 per hour (*ibid*: 14). During the First World War the factory was used to manufactured modified Model T cars for use by the armed forces, in addition to the production of shell casings. A subsidiary factory was established by the firm at Cork in southern Ireland, intended originally for the manufacture of Fordson agricultural tractors.

5.2.3 Following the end of the First World War, the company began to search for an alternative production site to Trafford Park, which was too small to permit future expansion. Although Perry found and purchased a site at Southampton which offered the deep-water access demanded by Henry Ford, the scheme did not receive the wholehearted backing of the American company and it was subsequently sold off in the 1920s. Perry resigned from the company's service in 1919, entering into a partnership with Noel Mobbs of the Pytchley Autocar Company to acquire a disused military transport depot at Slough, which they developed as the phenomenally profitable Slough Trading Estate. Knighted for his services during the First World War, Perry retired to the Channel Islands three years later.

5.2.4 During the early 1920s Ford's share of the English market began to decline, as the company suffered from the effects of protectionist legislation such as the 1920 Motor Car Act and the import duties imposed upon components manufactured at the company's Cork factory following the creation of the Irish Free State in 1922. The

company's search for a new manufacturing site in mainland Britain intensified, culminating in the discovery in 1923 by Edward Grace (manager of the Cork works) of an area of undeveloped land close to Dagenham Dock station. Although the site was notoriously marshy, comprising areas of rough grazing interspersed with rubbish tips piled high with London's waste, the company purchased 295 acres of land from Samuel Williams & Sons for £150,000 in May 1924. Owing to financial uncertainties brought about by continuing falls in Ford sales in Britain, development of the site was delayed until later that decade (*ibid*: 21; Powell, 1966: 267-281).

5.2.5 In 1927 Ford finally ceased production of the Model T after 19 years of continuous production. The launch of the new Model A was accompanied by an in-depth review of the company's European operations conducted by Henry Ford himself. Ford conceived an ambitious plan whereby the British operation would become "a Detroit in miniature, a virtually self-sufficient manufacturing colossus supplying and controlling a chain of 11 European assembly plants" (Burgess-Wise, 2001: 22). In order to implement what became known as Ford's '1928 plan', Sir Percival Perry was coaxed out of retirement. Perry recruited A.R. (Rowland) Smith from Standard Cars to take charge of Ford Britain's new manufacturing operation. The new Ford Motor Company Ltd was successfully floated in December 1928.

5.2.6 Work on the new Dagenham factory began the following May, when a ground-breaking ceremony was held on the site, attended by Henry Ford's son Edsel and Sir Percival Perry. Sir Charles Heathcote & Sons (architects of Samuel Williams' Dagenham Dock factories) were appointed architects to the scheme, whilst Sir Cyril Kirkpatrick was taken on as consulting engineer. An area of 66 acres was earmarked for the Ford factory itself, construction of which was preceded by a programme of site levelling and stabilisation which necessitated sinking 22,000 concrete piles in the marshy ground to a depth of up to 80ft. The factory itself was built over a period of two years on concrete rafts laid on top of the piles. Amongst the buildings erected by Ford at Dagenham were a riverside power station, which from 1936 was illuminated at night by a Ford sign visible from 20 miles away, a foundry, coke ovens, gas plants and a blast furnace, together with the largest private wharf on the Thames (ibid: 31). By the time that production commenced at Dagenham in the autumn of 1931, the company had spent some £5 million on the works and faced an uncertain future in an economy mired in the depths of the Depression.

5.3 The Briggs Motor Bodies and Kelsey-Hayes Wheel Factories at Chequers Lane, 1930-1954

5.3.1 Having previously made a fortune from the development of the Slough Trading Estate, Sir Percival Perry appreciated the potential profits that might be made from establishing a similar enterprise at Dagenham. The company therefore set about purchasing additional parcels of land adjoining the works, acquiring a total holding of

approximately 600 acres by 1932 (*ibid*: 35). The first part of the estate to be developed lay on the east side of Chequers Lane, in an extensive plot bordered by the New Road to the north and the London to Tilbury railway line to the south. New roads named Kent Avenue and Norwich Road were laid out across the site in anticipation of the arrival of business tenants. In the event, the only companies to set up factories on the Chequers Lane estate were closely connected with Ford itself, most notably the British subsidiaries of existing North American Ford suppliers the Briggs Manufacturing Company and the Kelsey Hayes Wheel Corporation, both of Detroit. By the late 1930s these companies had been joined by W.J. Reynolds (Motors) Ltd, a main dealer of Ford cars and Fordson commercial vehicles (TNA HO 192/1486).

5.3.2 Documentary evidence, aerial photographs and historical maps suggest that development of the Chequers Lane estate took place in tandem with the construction of the main Ford works to the south-east. An aerial photograph taken in March 1932 indicates that two factories had been built by that date to the east of Chequers Lane (**Figure 8**). Briggs Motor Bodies Ltd occupied the larger of the two plants, which lay to the north of Norwich Road. The much smaller Kelsey-Hayes works occupied the plot to the south, with an open sports ground fronting Chequers Lane to the west (**Figure 9**). The aerial photograph **(Figure 8)** clearly shows that the power house was built along with the works, although at this date was noticeably smaller. Maps and plans surveyed in the late 1930s and early 1940s indicate that W.J. Reynolds (Motors) Ltd had taken possession of the plot to the north of the Briggs plant by the time that war broke out in September 1939 (**Figures 9, 10** and **11**).

Kelsey Hayes Wheel Co. Ltd

5.3.3 At the end of July 1930 the Kelsey Hayes Wheel Co. Ltd was incorporated as private company with a nominal capital of £10,000 (TNA BT 31/36478/249866). The business was initially based in offices at 106 Regent Street, London W1. The British branch of the company was established in order to "carry out the business of manufacturing, designing, building and dealing in wheels of all kinds…for use in motor cars, lorries, coaches, omnibuses, cabs, tractors, trucks, cycles, aircraft, locomotives, railway coaches and all or any other vehicles or means of transport". Its directors included the President, Vice President and Chairman of the Kelsey Hayes Wheel Corporation, although a small number of British directors rotated through the board as the 1930s progressed. On 20th March 1931 the company moved its registered office to Chequers Lane, suggesting that the construction of its factory there was sufficiently advanced for staff to relocate from Regent Street. The company raised debentures of £80,000 and £40,000 from its bankers and Ford Motor Company respectively in the first half of 1932, which were secured against its land at Dagenham. The following

year the company raised its nominal capital to £100,000.

5.3.4 Kelsey-Hayes manufactured welded wire wheels at the Chequers Lane plant using a unique high speed production process developed by its parent company (Burgess-Wise, 2001: 52). Subsequently the plant produced pressed steel wheels at a rate of 30,000 per week. The factory also manufactured hubs and brake drums for Ford's Dagenham plant.

Briggs Motor Bodies Co. Ltd

5.3.5 The Briggs Manufacturing Company was formed out of an existing coach building company by Walter Owen Briggs of Detroit in 1909 (http://www.coachbuilt.com/bui/b/briggs/briggs.htm). From the outset the company manufactured interiors for the Model T, following which it concentrated the manufacture of closed coach bodies for Ford. The company was successfully floated in 1924, whilst the following year it manufactured half a million automobile bodies and turned a profit of $11 million, giving shareholders an astonishing 200% dividend. The United Kingdom subsidiary appears to have been established as two separate concerns, a private company called Briggs Motor Bodies and the Briggs Trust Limited, the latter of which held the company's assets (TNA BT 31/37769/303263). In a lease dated 6th June 1932 between the Ford Motor Company and Briggs Motor Bodies for 99 years from 24th June 1931 the former demised the Chequers Lane site (containing an area of approximately 80,433 square yards) to the latter for a rent of £2849 per annum.

5.3.6 On 24th July 1935 the nominal capital of Briggs Motor Bodies was increased from £1,000 to £1 million through the issue of 999,000 ordinary shares of £1 each, and the business was reconstituted as a public company. The company was established with the object of carrying on "the business of designers, builders and manufacturers of motor bodies for use in connection with motor vehicles of any description". The company purchased the undertaking, business and assets of Briggs Trust Ltd in consideration of 599,993 ordinary shares. Whilst the Earl of Granard was appointed Chairman of the new company, the Board was dominated by directors of the American parent company, including Walter Owen Briggs himself, Robert Pierce and William Dean Robinson.

5.3.7 The Briggs Motor Bodies plant manufactured all of the coachwork for Ford's Dagenham works, together with that for the company's eleven European satellites in the early 1930s (Burgess-Wise, 2001: 52). The earliest bodies built by the plant comprised ash frames to which steel panels were attached. The pressings were comparatively small, welded together in jig tools that located the body panels by pneumatic pressure. Whilst the method of construction was said to have resulted in stronger bodies than those assembled from larger panels, it meant that the plant was unable to stamp out metal roof panels during the 1930s. Aside from windows and

seat trim, which were fitted in the Ford plant, Briggs supplied ready trimmed and painted bodies to the neighbouring works.

5.3.8 An aerial photograph of March 1932 showed that the western half of the Briggs plant had been completed by that date, together with the eastern part of the power house that forms the subject of the present report (**Figure 8**). Later plans and documentation indicate that the power house comprised two principal elements; the two-storey compressor house at the west end, with the four-storey boiler house to the east. Power for manufacturing processes and electricity for lighting were carried from the power house to the main plant by overhead pipelines and electrical cables (TNA HO 192/1486). A tunnel that ran under Norwich Road conveyed compressed air (from the compressor house) and steam (from the boiler house) to the Kelsey Hayes plant.

5.3.9 An aerial photograph taken shortly before the Second World War and a plan of the plant prepared by the architects Fuller, Hall and Foulsham in 1940 reveal that the Briggs Body Works had been almost doubled in area during the years since 1932 (**Figures 10** and **11**). These figures also indicate that the compressor house had been extended by the addition of an extra bay at its west end and the boiler house similarly enlarged to the east (**Figures 10** to **13**). Other additions included the erection of a shipping department in the space adjoining the compressor house. It is possible that the enlargement of the plant took place during the second half of the decade, when capacity at the main Ford works was increased by doubling the size of the foundry and the addition of a rolling mill and spring-making section. In addition to its work for Ford, Briggs sought contracts from rival manufacturers during the late 1930s. By 1939 the company devoted as much as 20% of its activities to building components and vehicle bodies for other motor manufacturers and employed a workforce of 3,000 (Burgess-Wise, 2001: 128). While the Chequers Lane factory had originally been designed to produce 60 vehicle bodies per day, at the end of the decade it was turning out more than 180 daily. In order to meet increased demand, the company was obliged to seek additional manufacturing capacity, which it found at the Dagenham River Plant, a complex of buildings on an 11 acre site outside the Ford estate.

5.3.10 The manufacturing process at Briggs' Chequers Lane plant at the end of the 1930s can best be comprehended with reference to **Figure 11**. Raw materials in the form of sheet steel arrived by road at department 49 ('steel storage') in the south-west corner of the plant. This steel was then processed through the shears and presses in the press shop and steel stampings department (department 24 on **Figure 11**), before being transported to stores. From there it went to the framing jigs in department 373, before being taken by the floor conveyors into department 376 ('metal lines'), which comprised departments 374 (panel hanging) and 375 (door hanging). The partially assembled vehicle bodies then processed through the cleaning line and paint shop

(no. 381 on **Figure 11**), before being taken through wet sand (no. 384). All of the aforementioned processes took place on the ground floor of the works; the remainder took place in the trim department on the first floor of buildings 1 and 2, before the almost finished bodies left the plant via a lift in the north-east corner.

The Second World War

5.3.11 At the start of the Second World War Ford instituted a programme of Air Raid Precautions (ARP) measures to protect the Dagenham works against attack from the air. In addition to disguising the roofs of the plant with camouflage paint and instituting a comprehensive blackout, the company's ARP scheme included elaborate plans for the immobilisation of the plant in the event of invasion (Burgess-Wise 2001: 66-68; TNA ADM 204/1517). Owing to the plant's prominent location on the north bank of the Thames however, the Government was initially reluctant to place extensive orders with Ford for vehicles and equipment useful to the war effort.

5.3.12 Following the evacuation of the British Expeditionary Force from Dunkirk and the abandonment of much of the Army's equipment in occupied France in May 1940, Ford received sizeable orders from the Government for additional and replacement military and fire, police and civil defence vehicles, as well as a host of components materials necessary for fighting the war with Germany. In order to meet increased demand, Briggs developed an additional seven factories, including plants at Dundee and Southampton (Burgess-Wise, 2001: 128). At its peak, the company employed 23,000 workers. The Chequers Lane works itself built a wide range of motor bodies for the Ministry of Supply, both for Ford vehicles and other manufacturers including the Commercial Car Ltd and Standard Motor Car Ltd, for whom it built truck cabs and ambulance bodies (TNA HO 192/1486). In addition to vehicle bodies, the plant manufactured such materials as steel helmets, projectile boxes and body armour sets for the Ministry of Supply, mine sinkers, spherical floats and secret 'boom defence experimental' components for the Admiralty, as well as aircraft engine cowlings and bomb tail units for the Ministry of Aircraft Production.

5.3.13 The first enemy air raid to hit the Ford works at Dagenham occurred on 8th September 1940, the second night of the Blitz. On the night of 21st September incendiary bombs fell on both the Ford and Briggs plants, although the latter was spared serious damage when a fireman swept the bombs off the roofs of the oil and paint stores with a high pressure hose, so that they exploded harmlessly against an external wall (Burgess-Wise, 2001: 78). At 8.30pm on the night of 22nd September approximately 150 incendiary bombs fell on buildings 1, 2, 3, 4, 5 and 6 as indicated on **Figures 10** to **12**, causing extensive fires which gutted these units. At approximately 2am on the morning of 24th September a 50kg high explosive bomb fell between the power house and the main factory buildings, severing the overhead electrical cables, pipes and

power lines to the plant ('bomb no. 3' on **Figure 12**). Although the building suffered superficial damage from the explosion along its northern elevation, the compressor house and boiler house survived the blast intact. At the time of the raids, the plant was in the process of switching from peacetime to wartime production (TNA HO 192/1486). The damage caused severe disruption to the production process for a few week after the raids, whilst rebuilding work was largely completed within eight months (**Historical Plates A**, **B** and **C**). The reconstruction process was finally completed some two years later (**Figure 13**).

The Briggs Body Works during the Post-War period

5.3.14 Within weeks of the end of fighting in Europe, the Ford plant at Dagenham was gearing up to build cars to meet the anticipated demands of peacetime (Burgess-Wise, 2001: 97). Post-war austerity, punitive tax rates on the motor industry, petrol rationing and fuel shortages combined to suppress demand for private cars in the United Kingdom, forcing Ford and other companies to concentrate on export sales. Notwithstanding the gloomy economic outlook, Ford Britain took over the Kelsey Hayes Wheel Company in 1947.

5.3.15 Following the expansion of its manufacturing activities during the Second World War, Briggs Motor Bodies reduced the extent of its operations during the post-war period. By 1948 the workforce had fallen to less than 6,000. In order to maintain the company's finances, Briggs continued to build bodies and components for rival motor manufacturers, including Austin, Rootes, Standard, Leyland and Chrysler (*ibid*: 128). The death of Walter Owen Briggs in 1953 and the threat that Ford's American rival Chrysler would purchase his company provided an opportunity for Ford-Britain's Managing Director, Sir Patrick Hennessy to gain possession of the firm's British holdings. The Detroit parent company approved Sir Patrick's plan, and the British company was sold to Ford-Britain for the very reasonable sum of £3.2 million the same year.

5.4 The Briggs Motor Bodies Works under Ford ownership. 1954-2002

5.4.1 The acquisition of Briggs Motor Bodies Ltd by Ford-Britain led to a number of significant changes at the Chequers Lane plant. In 1954 Sir Patrick Hennessy launched an ambitious expansion and modernisation programme at Ford, which was intended to enable Dagenham to build as many as 2,000 vehicles per day (*ibid*: 137). A critical element of the scheme was the remodelling and re-equipping of the Briggs plant (known henceforth simply as the stamping plant), together with the construction of a new Paint, Trim and Assembly (PTA) building on the former Ford sports ground on the opposite (east) side of Kent Avenue to the Chequers Lane plant (**Figure 14**). The new building was to occupy an area of 250,000 square feet and would be totally

automated. When finished, the PTA building contained nine miles of conveyor track controlled by 1,200 miles of electric cabling.

5.4.2 The takeover of Briggs' British operations by Ford was also accompanied by a decline in labour relations at the Chequers Lane plant. Ford was keen to establish new procedures for negotiation and the resolution of disputes at Briggs, where industrial relations had traditionally been poor, in line with those at the main Ford works, where relations were more harmonious (TNA LAB 10/1515). Even before the new arrangements were introduced, during the three months to July 1954 Briggs was hit by no fewer than 53 strikes called by shop stewards at the plant. Output at Briggs was affected by repeated strikes over weekend working arrangements throughout 1954, and it took more than four years for the national trades unions to reach an agreement with Ford to adopt the new procedures.

5.4.3 In November 1960 Ford America announced that it intended to buy up the 45.4% shareholding in Ford-Britain that remained in private hands in order to further integrate its operations and increase marketing effectiveness in both countries (TNA BT 64/5205; Burgess-Wise, 2001: 144). The parent company paid nearly £120 million for the outstanding 17,726,804 shares the following January. The move resulted in a diminution of Dagenham's role at the centre of the company's British operations, accompanied by a process of decentralisation that increased as the decade progressed. The styling, engineering and prototype divisions all migrated from Dagenham to Aveley (Essex) in 1960, while a new manufacturing plant capable of building 1,000 vehicles per day opened at Halewood on Merseyside in October 1963. The headquarters of Ford's operation in Britain, and subsequently Europe, relocated to a purpose-built office complex at Warley in Essex. The westernmost bay of the compressor house of the former Briggs power house was demolished at some point after 1972 (**Figures 2, 15** and **16**).

5.4.4 As other factories and divisions of Ford elsewhere in Britain and Western Europe took up an increasing share of production during the 1970s, so the importance of Dagenham to the company declined. While engine production continued to be a mainstay of the plant's output, the number of car lines built at the plant fell to one (the Fiesta) in the 1990s. Owing to falling sales and over-capacity in Europe, the company announced in early 2000 that it would axe 1,500 job at Dagenham (Burgess-Wise, 2001: 189). The same year the company announced that the PTA plant would close in 2002, with the loss of a further 1,900 jobs. As vehicle assembly ceased to be an element of the company's operations at Dagenham, the company invested instead in the construction of a new diesel engine plant, which continues to operate to the present.

6 BUILDING DESCRIPTION

6.1.1 At the time of the recording, many of the production buildings that comprised the former stamping plant were in the process of demolition, leaving the redundant power house, formerly surrounded by buildings on all sides, in isolation as a free standing structure.

6.1.2 The power house was broadly built to a rectangular floor plan with its principal long elevations facing north and south (**Plates 1** to **3**, **6** and **7**). The southern elevation was built over four storeys, rising in height with an additional floor (to four storeys), built to gravity top feed the coal fired boilers, along the southern side. The northern elevation was dominated by four, tall, symmetrical chimney stacks, which projected skywards from the third floor level and backed onto the elevated, higher fourth floor to their rear (**Plates 1** to **3**). This fourth floor was fenestrated on its south side only and was flanked at its eastern and western ends by either an over-sailing, cantilevered loading stage or a similar but enclosed 'lucam' (**Plates 4** to **7**). The latter projected out above a lower, flat-roofed two storey range, formerly the Compressor House, which projected westwards from its western end elevation and had latterly been partly demolished and rebuilt using modern blockwork (**Plates 3**, **4** and **7**).

6.1.3 The main four storey power house appears to have been built over five principal bays and over two main phases, incorporating an eastern extension added between 1932 and 1939 and built to assimilate with the external appearance of the existing power house (**Figures 8**, **10** and **15**). The fenestration along the first three storeys of both long elevations (over both phases) and the eastern end wall used tall, floor height glazing; as bands of continuous fixed glazing to the east and south elevations and bay-wide fixed glazing to the south (**Plates 1**, **5** to **8**). These large expanses of glazing would have provided sufficient levels of natural light to the working floors.

6.1.4 The building appeared to have been constructed around a robust concrete frame superstructure with intermediate non-load bearing curtain walls and internal walls built in brickwork. Simple, conventional-sized window openings with fixed iron-framed windows and rough brick sills were present along the northern elevation at ground floor level (**Plate 10**). They and the windows above were set below heavy horizontal concrete beams (seen externally as bands) representing the floor levels and doubling as lintels to the openings. The rear less visible northern elevations faced onto a series of low, flat-roofed brick-built open-sided sheds (**Plate 9**), formerly accommodating the transformer and hog mill (which in turn backed onto the flank wall of the demolished former Wood Mill shop factory building) and between the two, onto a number of large free-standing silos, tanks and an intricate complex of pipework, connecting the power house with the adjoining buildings (demolished).

6.1.5 Whilst access into the building was not possible, glimpses of its interior through door or window openings at ground level revealed an array of heavy concrete posts and a

sub-structure of steel stanchions and joists forming the first floor structure to the boiler house (**Plates 15** and **16**).

7 DISCUSSION

7.1.1 By the start of the 20th century, purpose-built power stations had begun to emerge as a distinct, recognisable building type. Their chief features were a parallel arrangement of boiler and engine houses, tall chimneys to disperse smoke from the boiler furnace, and a raft of allied buildings and structures. Steel-frame construction, which was robust and quick to build, was used early on to frame the large spaces required and to carry overhead travelling cranes which facilitated the installation and maintenance of machinery. The steel frame became the standard means of construction for most power stations built in the 20th century, enabling them to be erected rapidly, to have their plant installed ahead of the building's completion, and to bear the brunt of heavy, moving cranes and the vibrations of machinery. It also offered spatial openness and flexibility for the re-organisation and upgrading of plant, facilities that assumed greater importance as electrical engineering progressed and demand increased (Clarke, 2015).

7.1.2 Through the first half of the 20th century, these structural steel frames were hidden behind brick self-supporting, or curtain walls, which by the 1930s had become known as the monumental 'brick cathedral' style. This monumental tradition, began to be challenged in the 1930s with the construction of the consciously Modernist, glass-walled power houses (such as Barking 'B', Essex (1931-9) and Dunston 'B' at Gateshead (1933-4). But it was not until after the Second World War that power station architecture saw fundamental, widespread, change. A report of 1953 backed by the Minister of Fuel and Power encouraged the experiment of new building techniques in the interests of economy and a more 'functional' approach to power station design (*ibid*).

7.1.3 It was probably these well established 'cathedral style' coal-fired power stations, many built following the Electricity (Supply) Act of 1926 and under the guidance of the Central Electricity Board (CEB), that provided the blue-print for the design and layout of the power house at the stamping works. This power house was constructed with a side-by-side boiler house and compressor (or turbine) hall configuration.

7.1.4 The power house was built *c*.1930-2 in order to provide power for the machinery and electrical lighting used in the Briggs Motor Bodies and Kelsey-Hayes Wheel Company plants in Chequers Lane. These companies, both British subsidiaries of existing North American Ford suppliers (based in Detroit) were principal suppliers to the adjacent Ford Motor Company Dagenham works. The power house was therefore built during a period when domestic supply of electricity (by CEB) was dominated by this type of coal-fired plant. However, the power house was designed with a bias towards a more functional, modernist style, typical of contemporary tastes in architecture and not influenced or restricted by the aesthetic requirements of the CEB. It was purpose-built to fit within a constrained site, dominated by blocks of factory buildings.

7.1.5 Documentary evidence suggests that development of the Chequers Lane estate took place in tandem with the construction of the main Ford works to the south-east. An aerial photograph taken in March 1932 shows that two factories had been built by that date to the east of Chequers Lane. Briggs Motor Bodies Ltd (Detroit) occupied the larger of the two plants, which lay to the north of Norwich Road, while the much smaller Kelsey-Hayes works was situated to the south fronting Chequers Lane to the west. It also shows that the power house was built along with the works, although at this date was noticeably smaller than at present. The power house was enlarged between 1932-39, with additions to both the boiler and compressor houses, carried out to address the additional requirements of the Briggs plant, which had almost doubled in area since 1932. By the time that war broke out in September 1939, W.J. Reynolds (Motors) Ltd had taken possession of the plot to the north of the Briggs plant.

7.1.6 Wartime schematic plans of the site compiled to illustrate areas and extent of bomb damage within the factory complex, show that the power house (superficially fire damaged at the time) was divided into two principal areas, a boiler house and a compressor house. The boiler house was located within the main four storey block, and supplied the high pressure steam required to drive the apparatus in the adjoining Compressor House. The latter was housed within a lower two storey range to the west of the main block and supplied via a network of steel pipes, compressed air to power plant and tooling within the main factory complex.

7.1.7 Within weeks of the end of the Second World War, the Ford plant at Dagenham was gearing up to build cars to meet the anticipated demands of peacetime. Despite Post-war austerity, punitive tax rates on the motor industry and petrol rationing, Ford Britain took over the Kelsey Hayes Wheel Company in 1947. The Briggs Motor Bodies Works reduced the extent of its operations during the post-war period, its workforce fell to less than 6,000 and to maintain the company's finances, Briggs continued to build bodies and components for rival motor manufacturers, including Austin, Rootes, Standard, Leyland and Chrysler (ibid: 128). The death of Walter Owen Briggs in 1953 and the threat that Ford's American rival Chrysler would purchase his company, provided the impetus for Ford to acquire the firm's British holdings from the Detroit parent company. The acquisition of Briggs Motor Bodies Ltd by Ford-Britain led to a number of significant changes at the Chequers Lane plant. In 1954 the managing director Sir Patrick Hennessy launched an ambitious expansion and modernisation programme, undertaken to increase productivity to 2,000 vehicles per day. A critical element of the scheme was the remodelling and re-equipping of the Briggs plant, together with the construction of a new Paint, Trim and Assembly (PTA) building on the former Ford sports ground on the opposite (east) side of Kent Avenue.

7.1.8 An early (pre 1950) aerial depiction of the site shows the full extent of the

Compressor House prior to its shortening, which occurred sometime after 1972 with the removal of the westernmost bay, which had been added between 1932 and 1939. It also depicts a large industrial chimneystack built alongside the northern elevation of the power house, presumably associated with the coal fired boilers and a network of tramlines to the south (along Norwich Road) providing the raw materials and connecting into a complex of coal and goods siding to the south.

8 ACKNOWLEDGEMENTS

8.1.1 Pre-Construct Archaeology Limited would like to thank CgMs Consulting for commissioning the project.

8.1.2 The project was managed for Pre-Construct Archaeology Limited by Charlotte Matthews. The documentary research was undertaken by Guy Thompson. The photographic survey was carried out by Armando Ribeiro and Adam Garwood. The building recording was carried out by Adam Garwood. This report was written by Adam Garwood and the illustrations were prepared by Hayley Baxter.

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IR 30/12/104 Tithe map of Dagenham, 1844

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10 APPENDIX 1: OASIS FORM

OASIS ID: preconst1-273325

Project details	
Project name	Historic Building Recording of the Power House at the former Ford Stamping Plant, Kent Avenue, Dagenham, RM9 6SA
Short description of the project	Pre-Construct Archaeology Limited was commissioned by to carry out an Historic England Level 1-2 building recording of the redundant power house at the former Ford Stamping Plant prior to its demolition. The power house was built c.1930-2 in order to provide power for the machinery and electrical lighting used in the Briggs Motor Bodies and Kelsey-Hayes Wheel Company plants in Chequers Lane. These companies, both British subsidiaries of existing North American Ford suppliers (based in Detroit) were principal suppliers to the adjacent Ford Motor Company Dagenham works.
Project dates	Start: 16-12-2016 End: 16-12-2016
Previous/future work	No / No
Type of project	Building Recording
Site status	None
Current Land use	Industry and Commerce 1 - Industrial
Monument type	POWER HOUSE Modern
Methods & techniques	'"Photographic Survey"',"'Survey/Recording Of Fabric/Structure"'
Project location	
Country	England
Site location	GREATER LONDON BARKING AND DAGENHAM DAGENHAM former Ford Stamping Plant, Kent Avenue, Dagenham
Postcode	RM9 6SA
Site coordinates	TQ 49280 83203 51.527473061124 0.152230434861 51 31 38 N 000 09 08 E Point
Project creators	
Name of Organisation	Pre-Construct Archaeology Limited
Project brief originator	Greater London Archaeological Advisory Service
Project design originator	Adam Garwood
Project director/manager	Charlotte Matthews
Project supervisor	Adam Garwood
Type of sponsor/funding body	Client
Name of	Dagenham Docks Ltd

sponsor/funding body	
Project archives	
Physical Archive Exists?	No
Digital Archive recipient	LAARC
Digital Media available	"Images raster / digital photography"
Paper Archive Exists?	No
Project bibliography 1	
Publication type	Grey literature (unpublished document/manuscript)
Title	Historic Building Recording of the Power House at the former Ford Stamping Plant, Kent Avenue, Dagenham, RM9 6SA London Borough of Barking and Dagenham
Author(s)/Editor(s)	Garwood, A and Thompson, G
Other bibliographic details	PCA Report No. R12771
Date	2017
Issuer or publisher	Pre-Construct Archaeology Ltd
Place of issue or publication	London Office
Description	A4 Typescript
Entered by	Charlotte Matthews (cmatthews@pre-construct.com)
Entered on	19 January 2017

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Figu
Site Locat
1:25,000 at

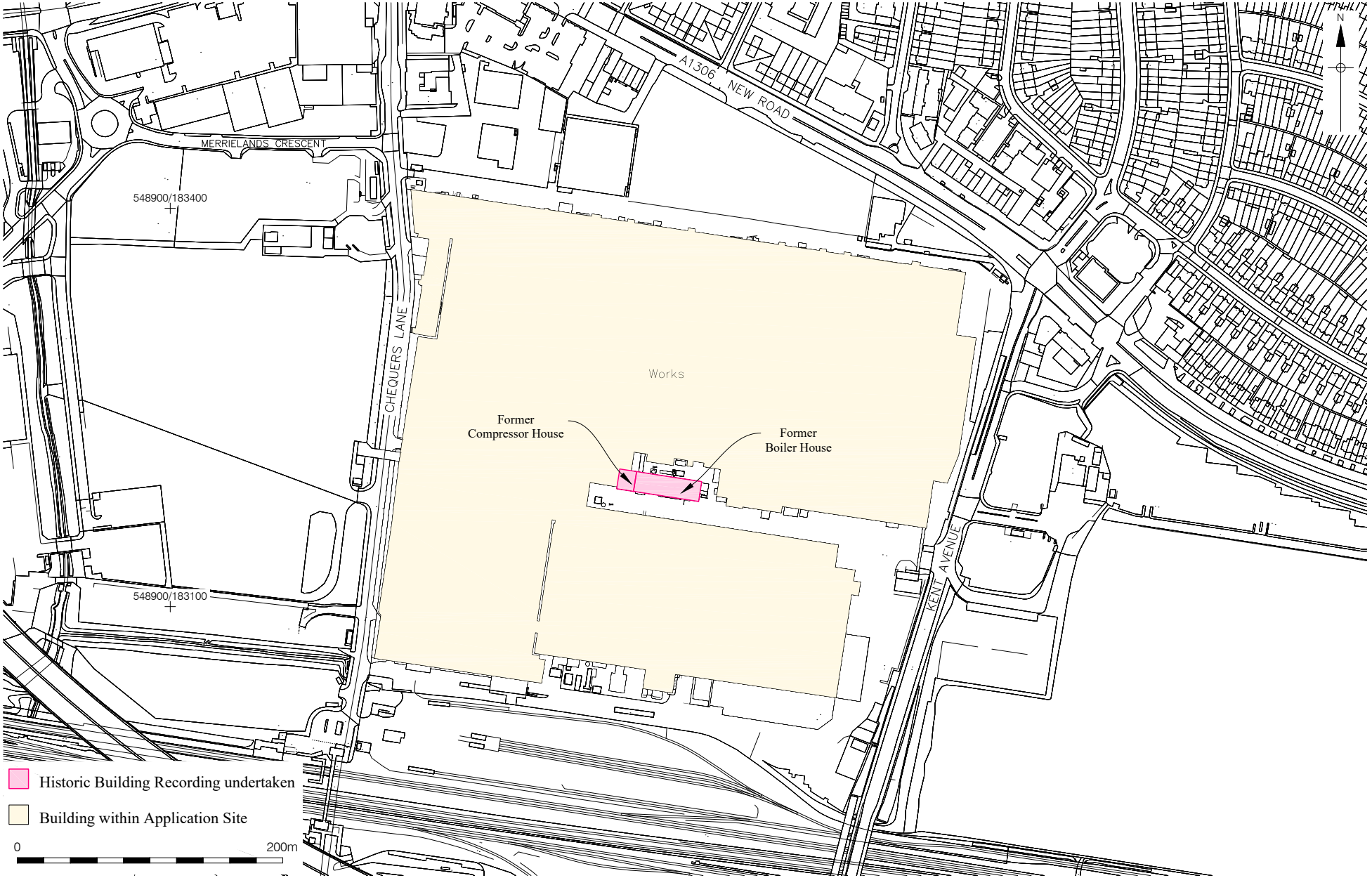

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Figure 2
Detailed Site Location
1:4,000 at A4

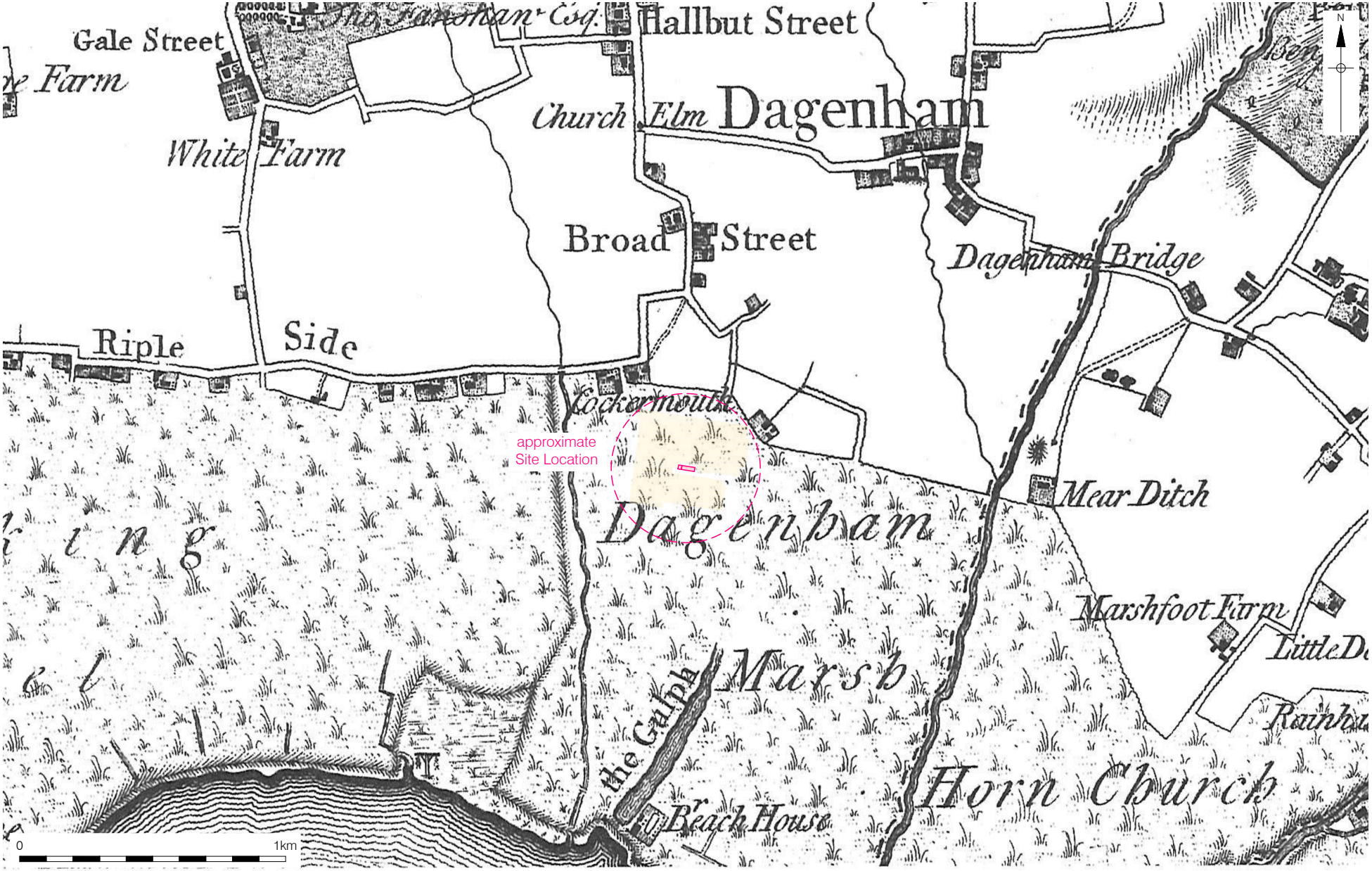

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Figure 3
Chapman & Andre Map of 1777
approx 1:20,000 at A4

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Figure 4
Dagenham Tithe Map, 1844
1:4,000 at A4

12/01/17 HB

Figure 5
First Edition Ordnance Survey, 1864
1:4,000 at A4

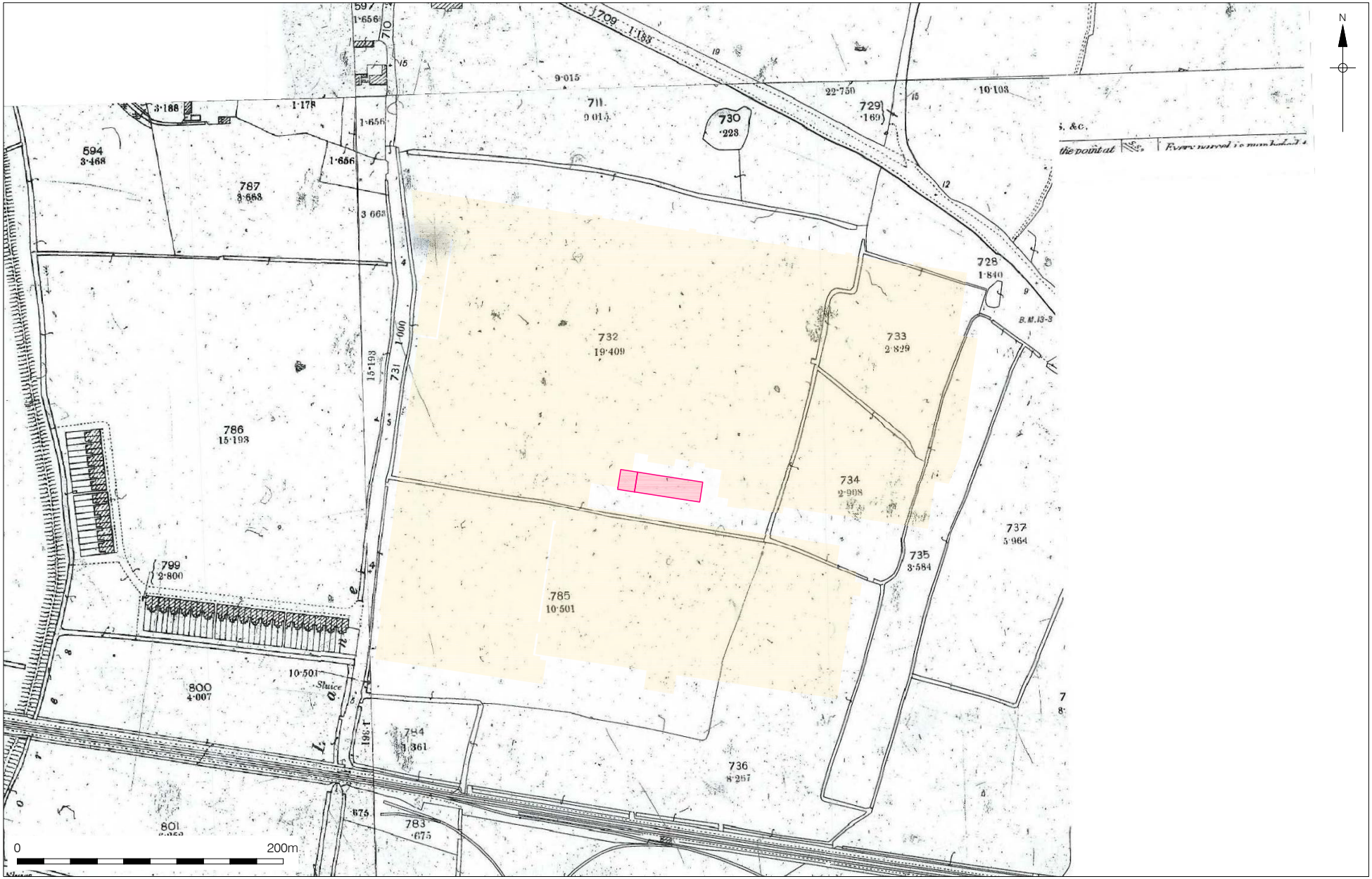

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Figure 6
Second Edition Ordnance Survey, 1897
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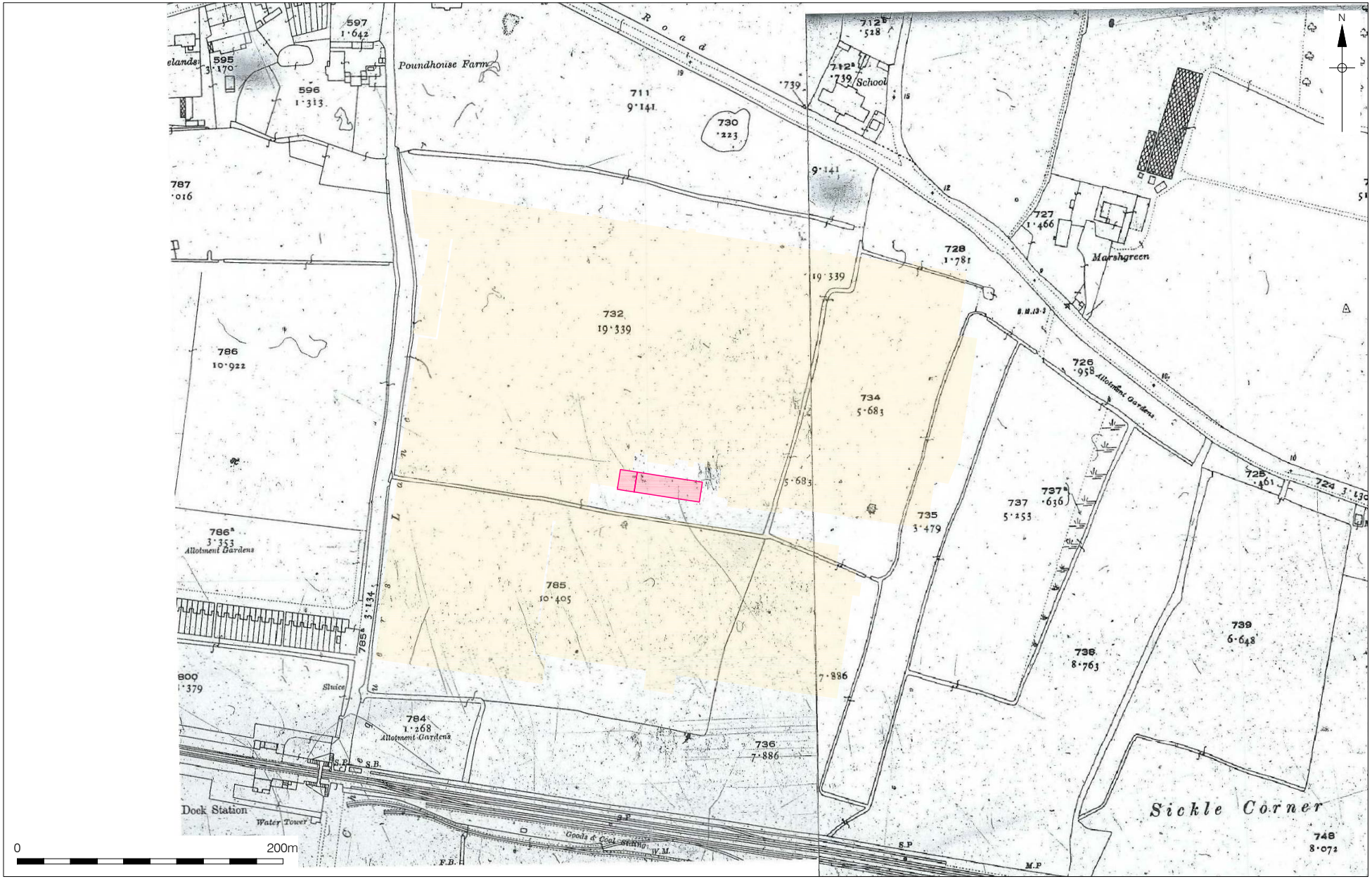

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Figure 7
Third Edition Ordnance Survey, 1920
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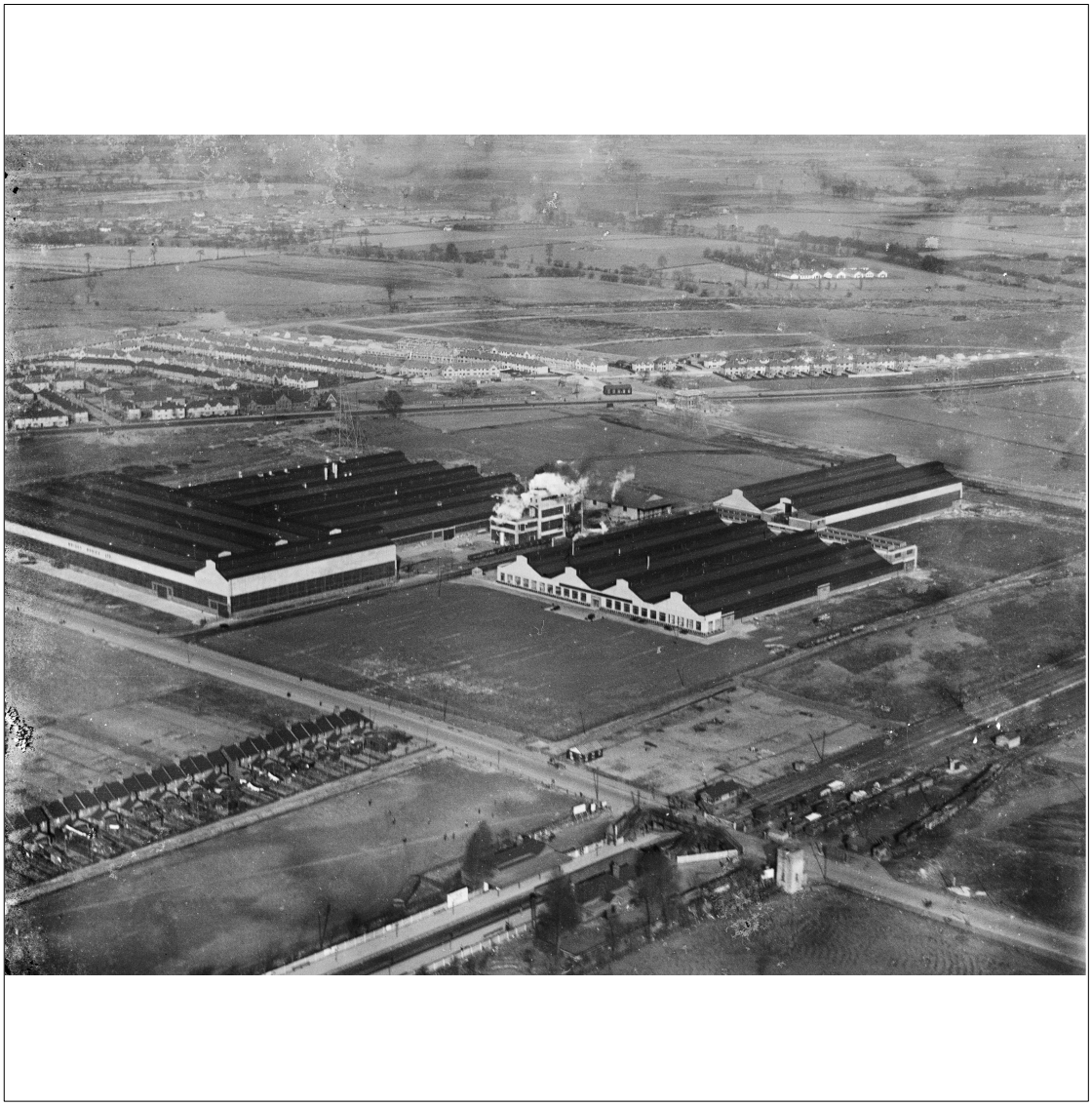
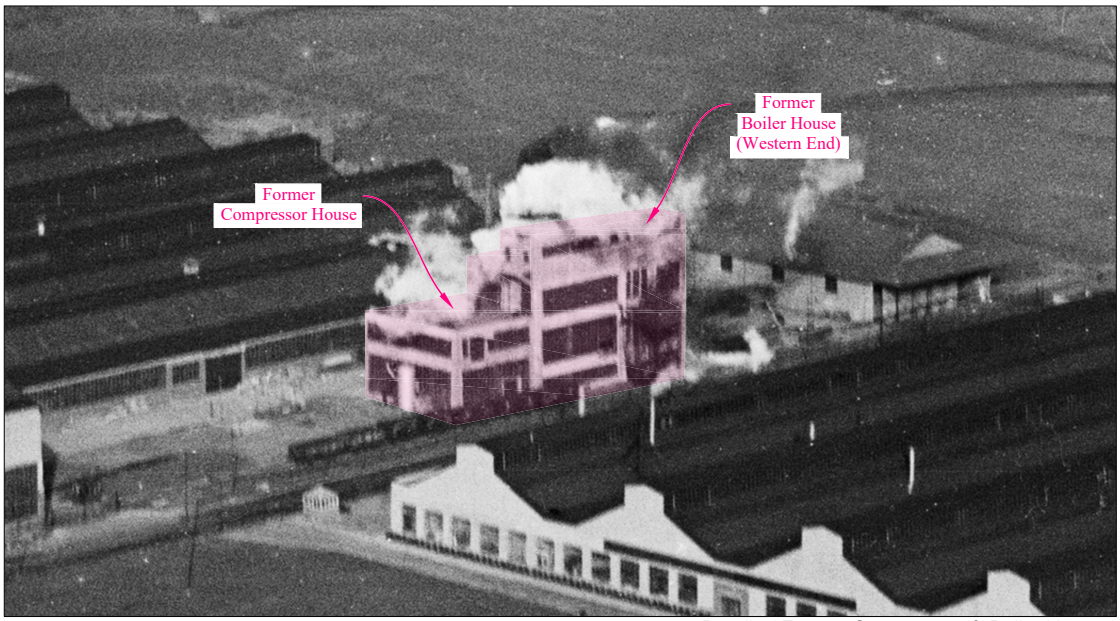


General View of Site



Detail of Former Compressor & Boiler Houses

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Figure 8
Aerial Photograph, March 1932
Looking North East

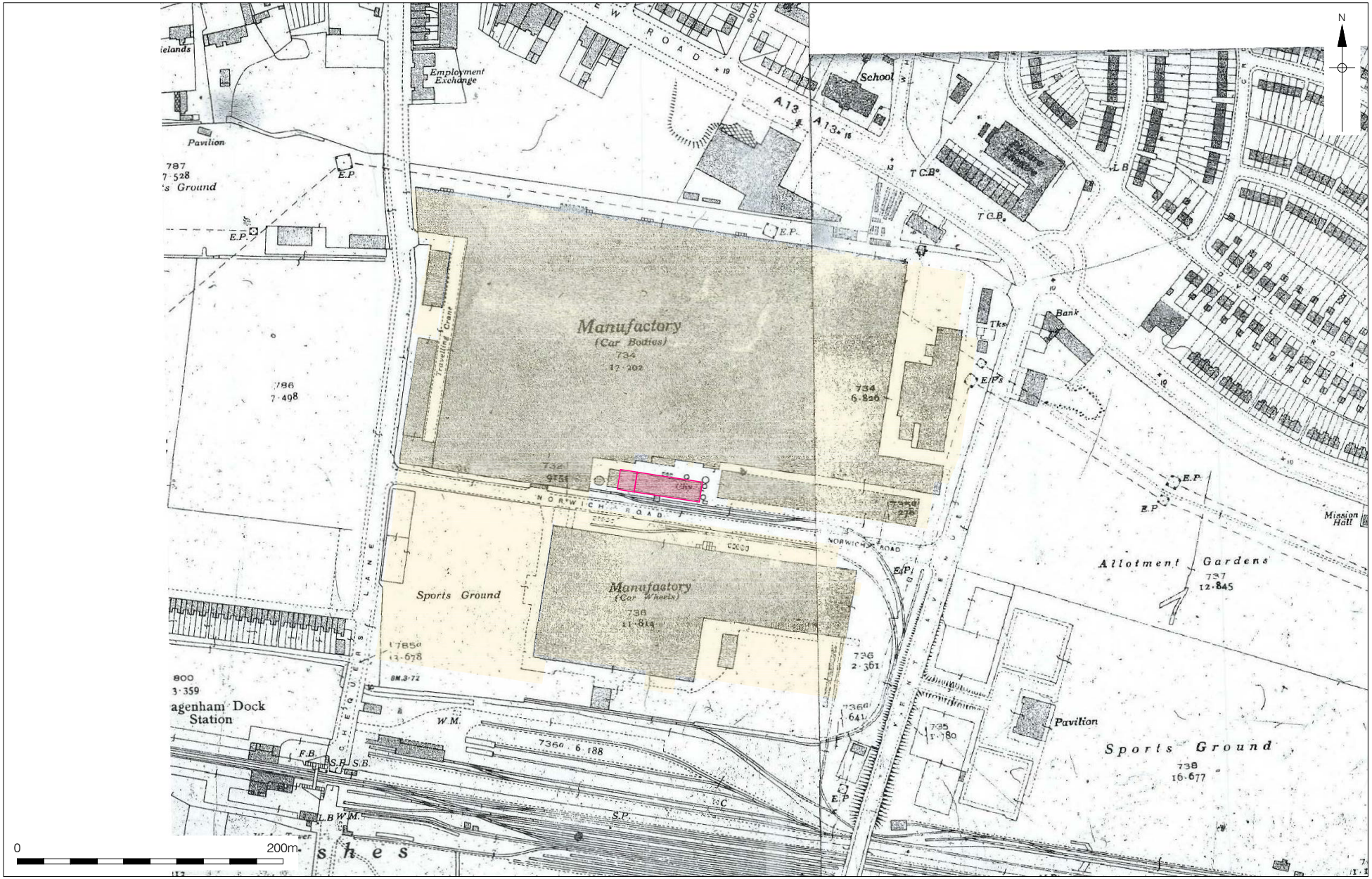

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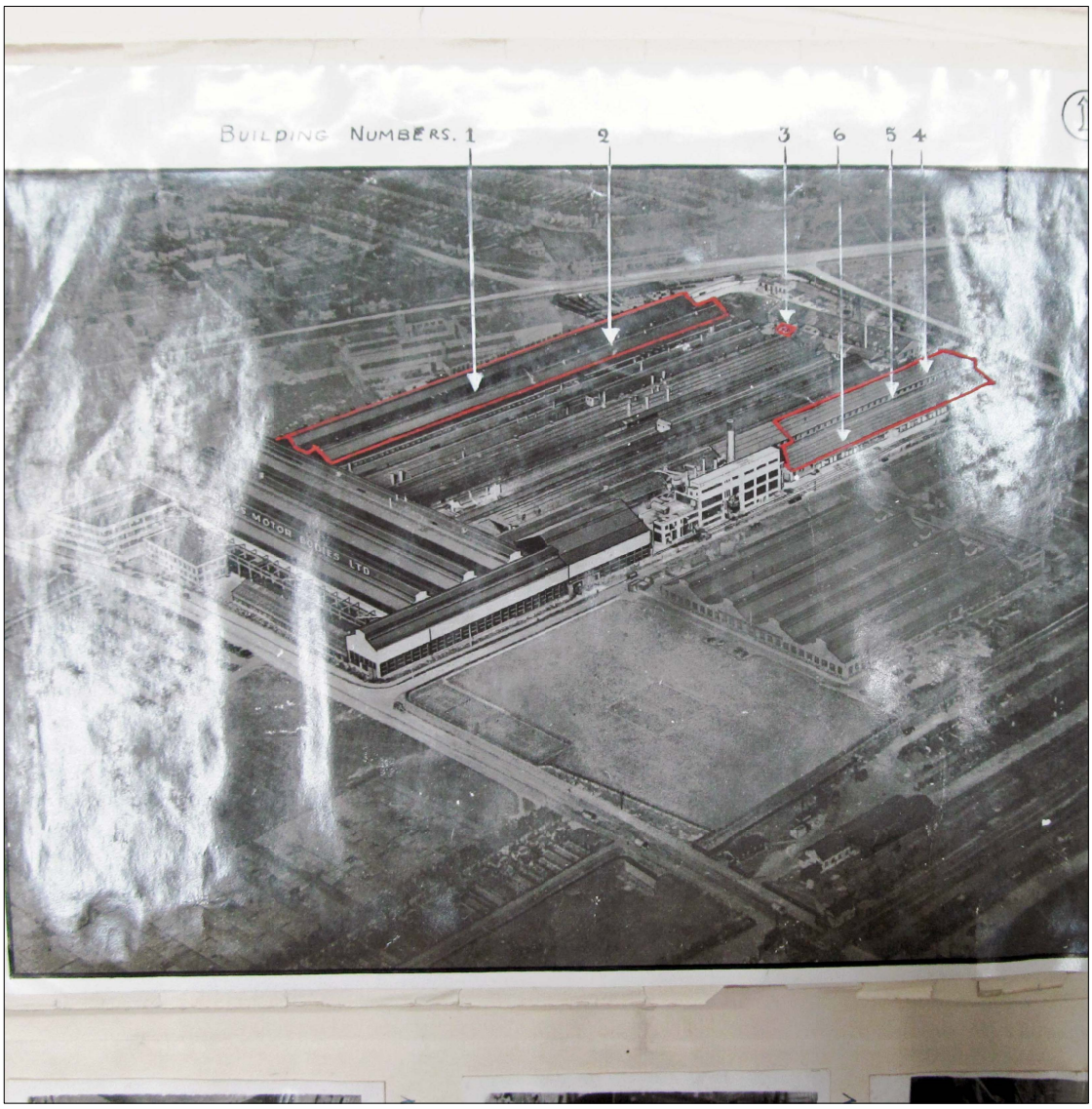
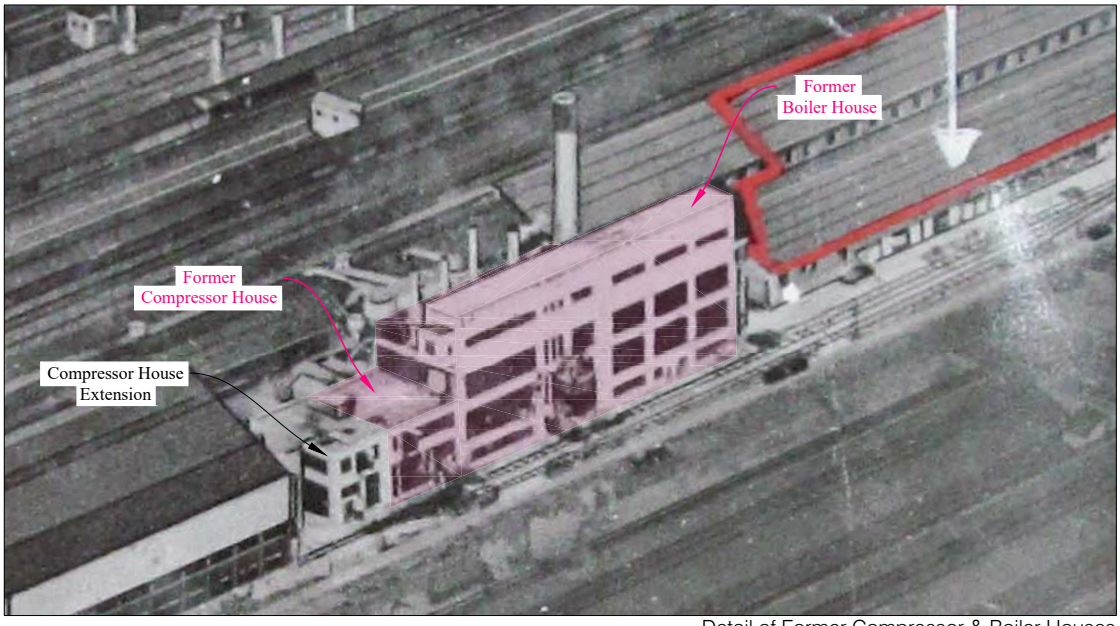
Figure 9
Ordnance Survey, 1939
1:4,000 at A4



General View of Site showing locations of Bomb Damage



Detail of Former Compressor & Boiler Houses

12/01/17 HB

Figure 10
Augmented Aerial Photograph of the Site, c.1939
showing locations of Bomb Damage
Looking North East

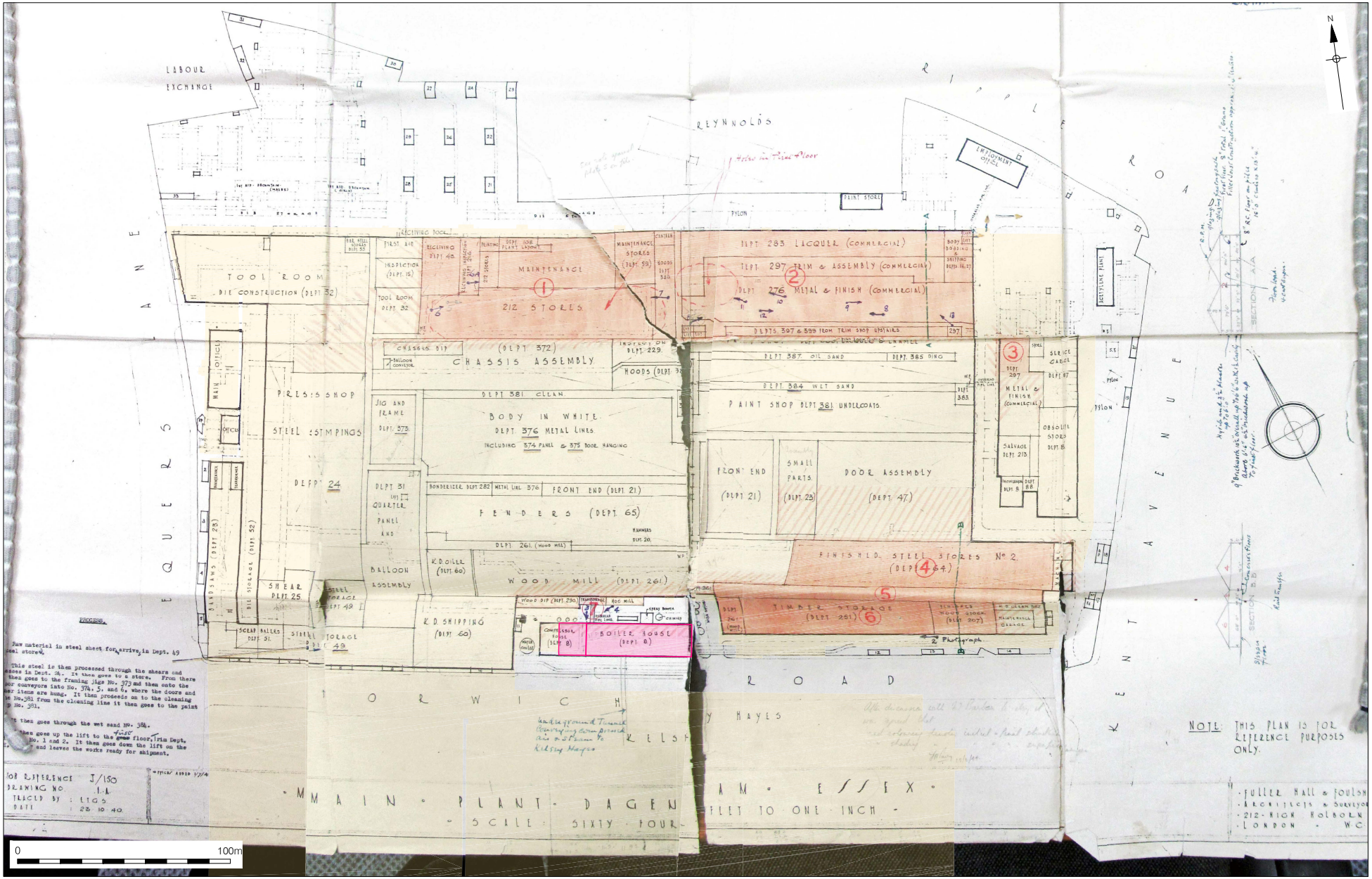


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Figure 11
Plan of Briggs Motor Bodies Works, 1940
showing locations of Bomb Damage
approx 1:2,500 at A4

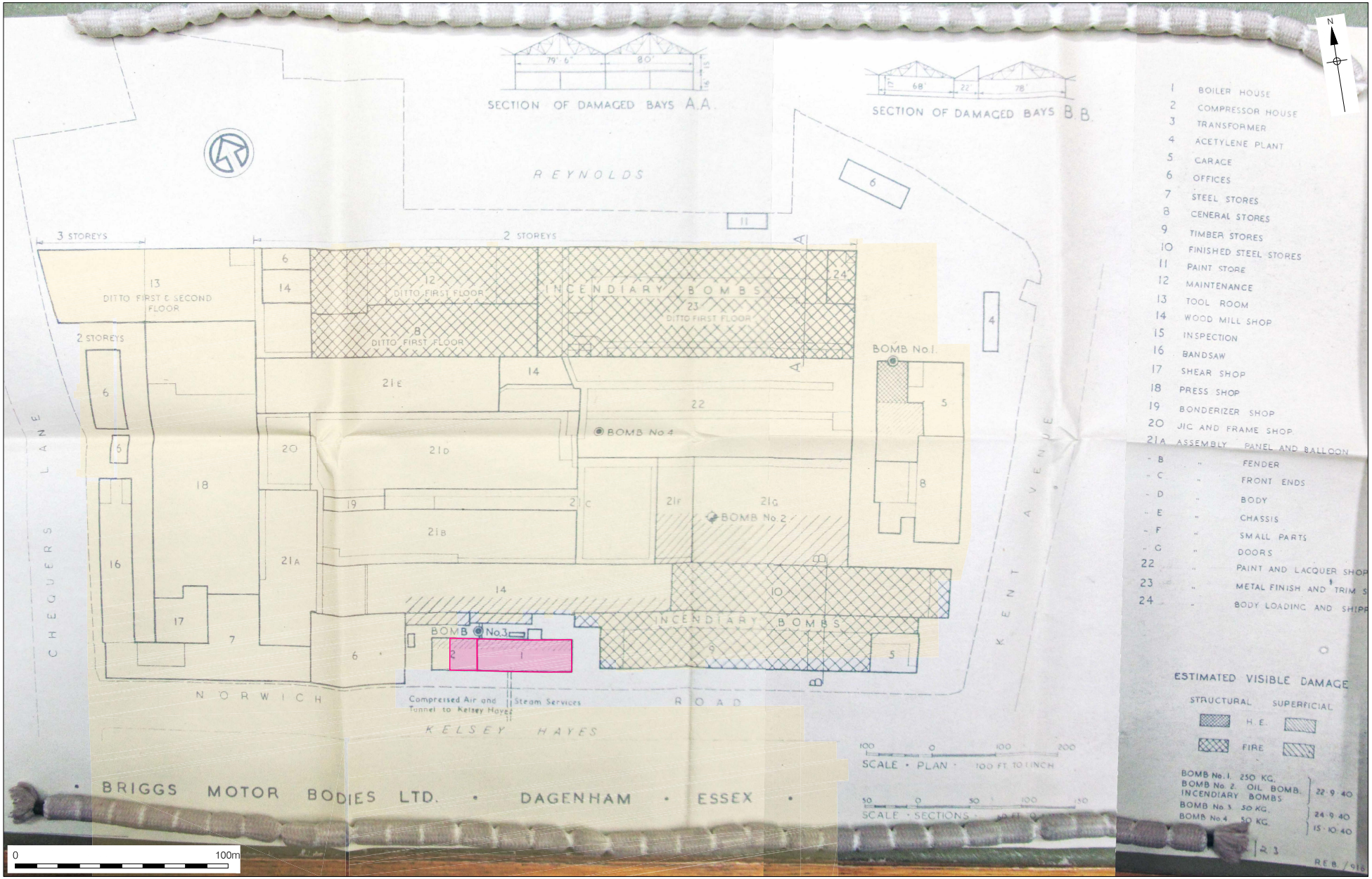

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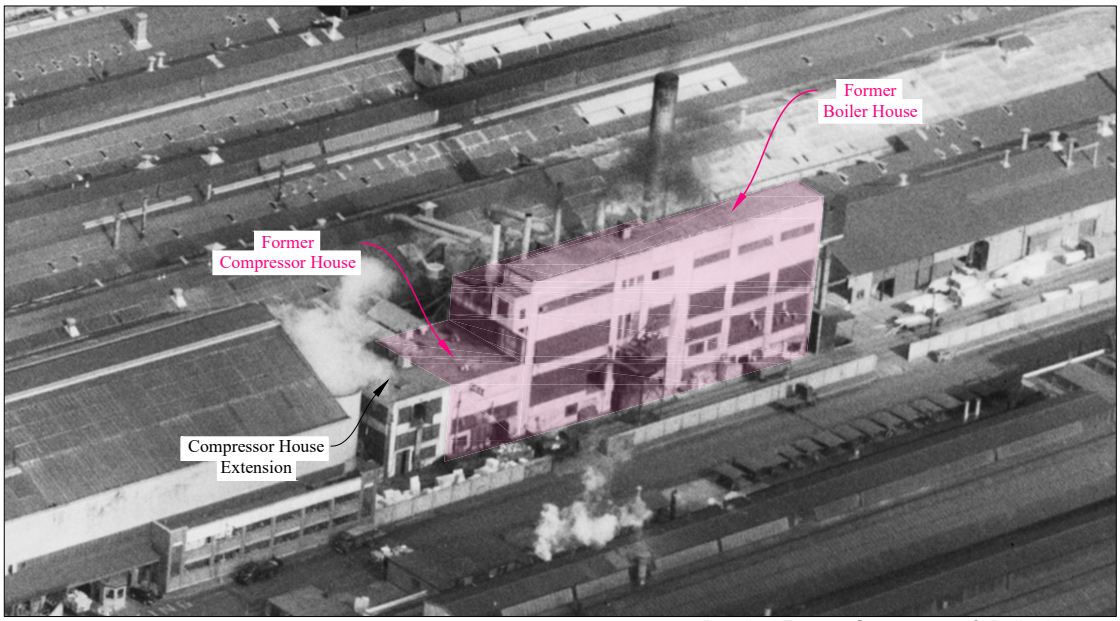
Figure 12
Bomb Damage Schematic of Briggs Motor Bodies Works Ltd, 1944
approx 1:2,500 at A4

General View of Site



Detail of Former Compressor & Boiler Houses

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Figure 13
Aerial Photograph, 1953
Looking North East

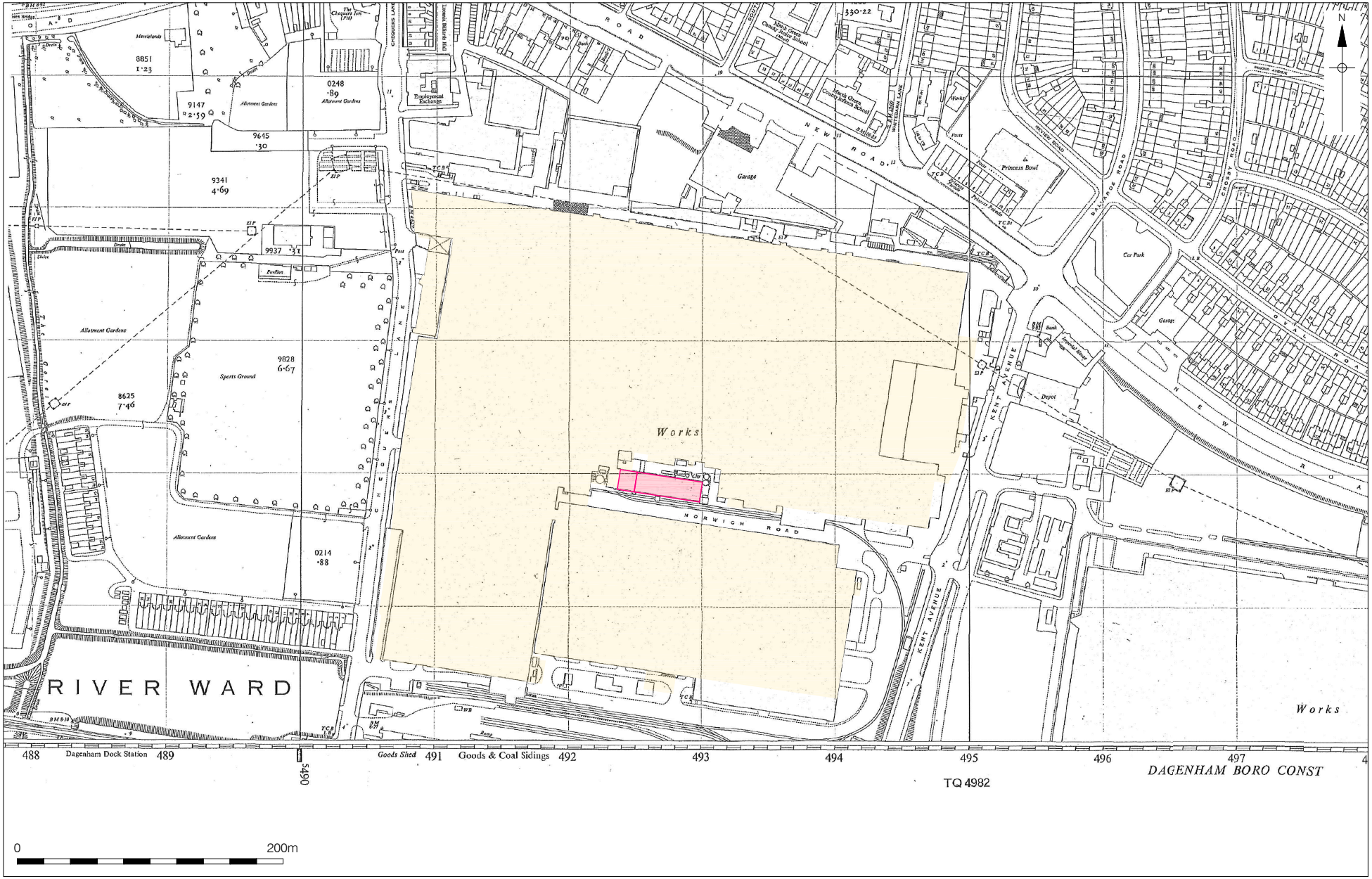

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Figure 14
Ordnance Survey, 1963
1:4,000 at A4

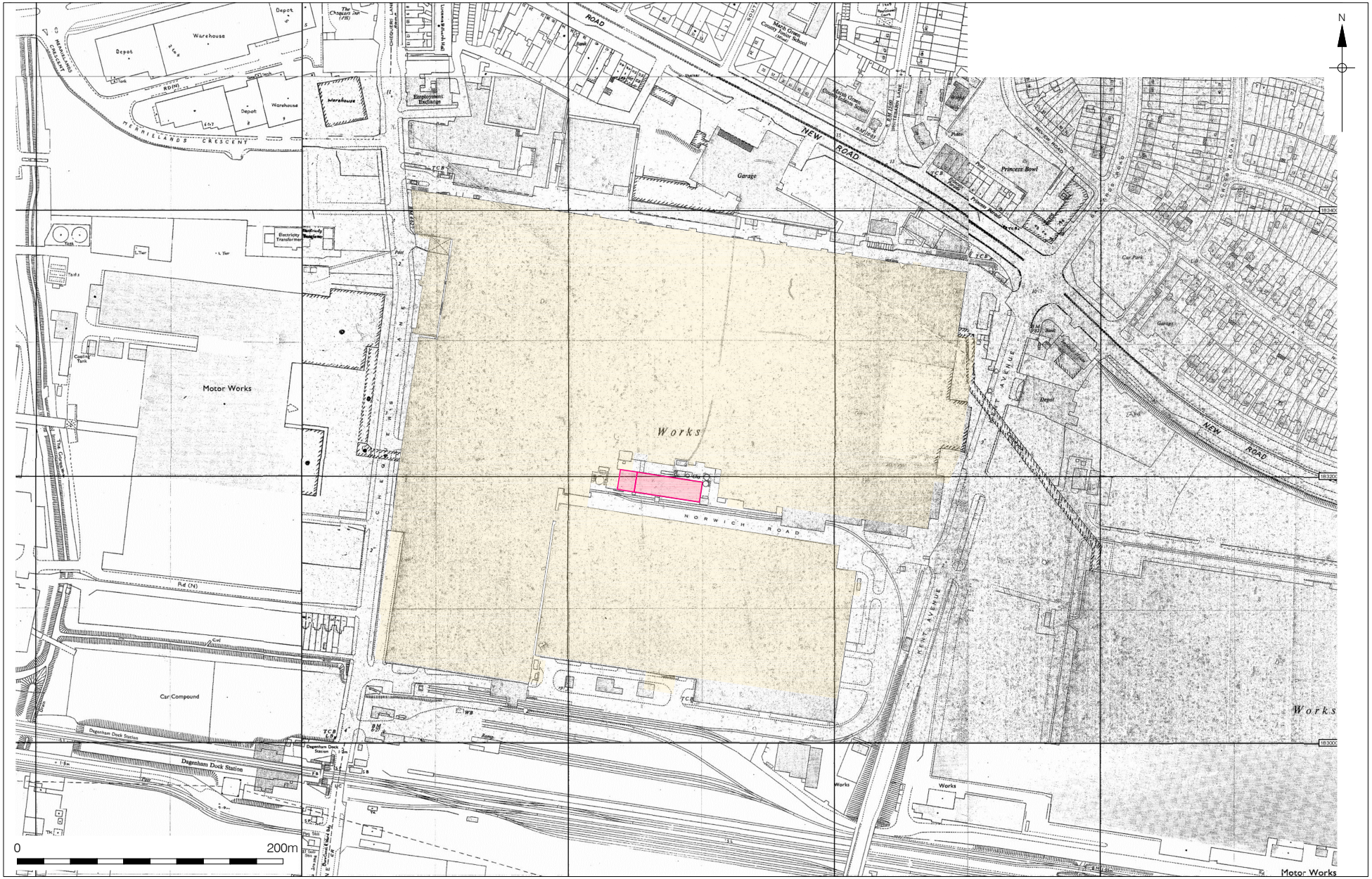

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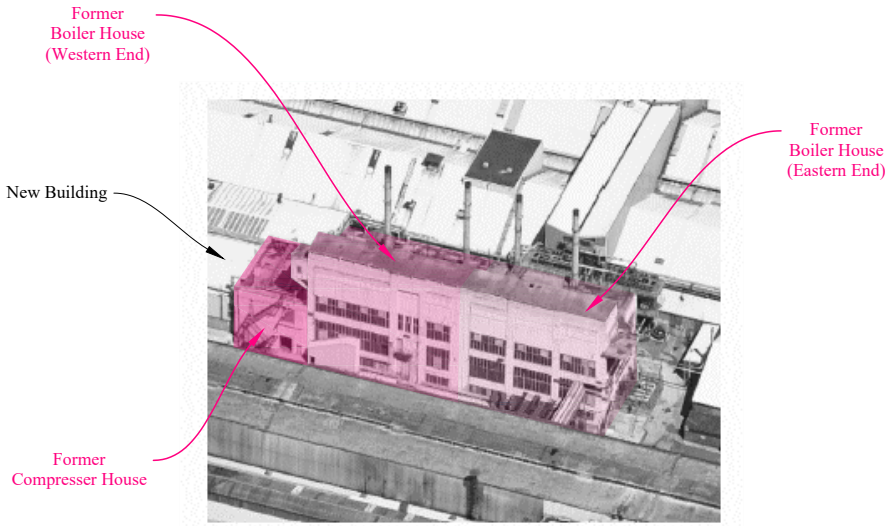
Figure 15
Ordnance Survey, 1972-90
1:4,000 at A4

Detail of Former Compressor & Boiler Houses, Looking North



Detail of Former Compressor & Boiler Houses, Looking South

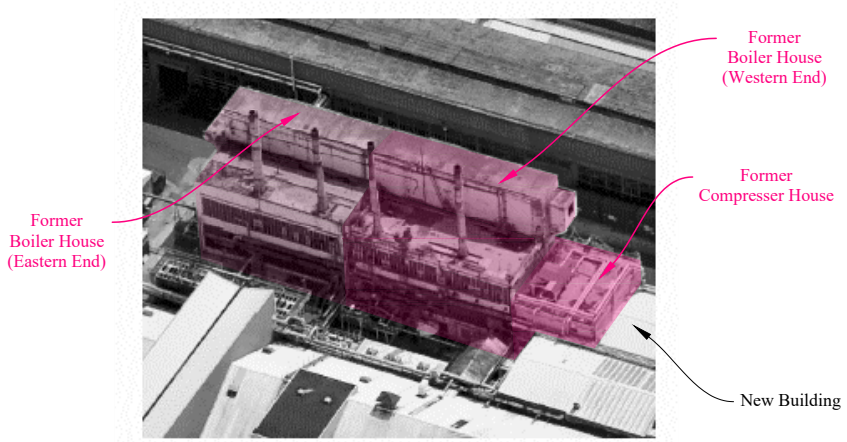


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Figure 16
Modern Aerial Photographs
showing site before demolition

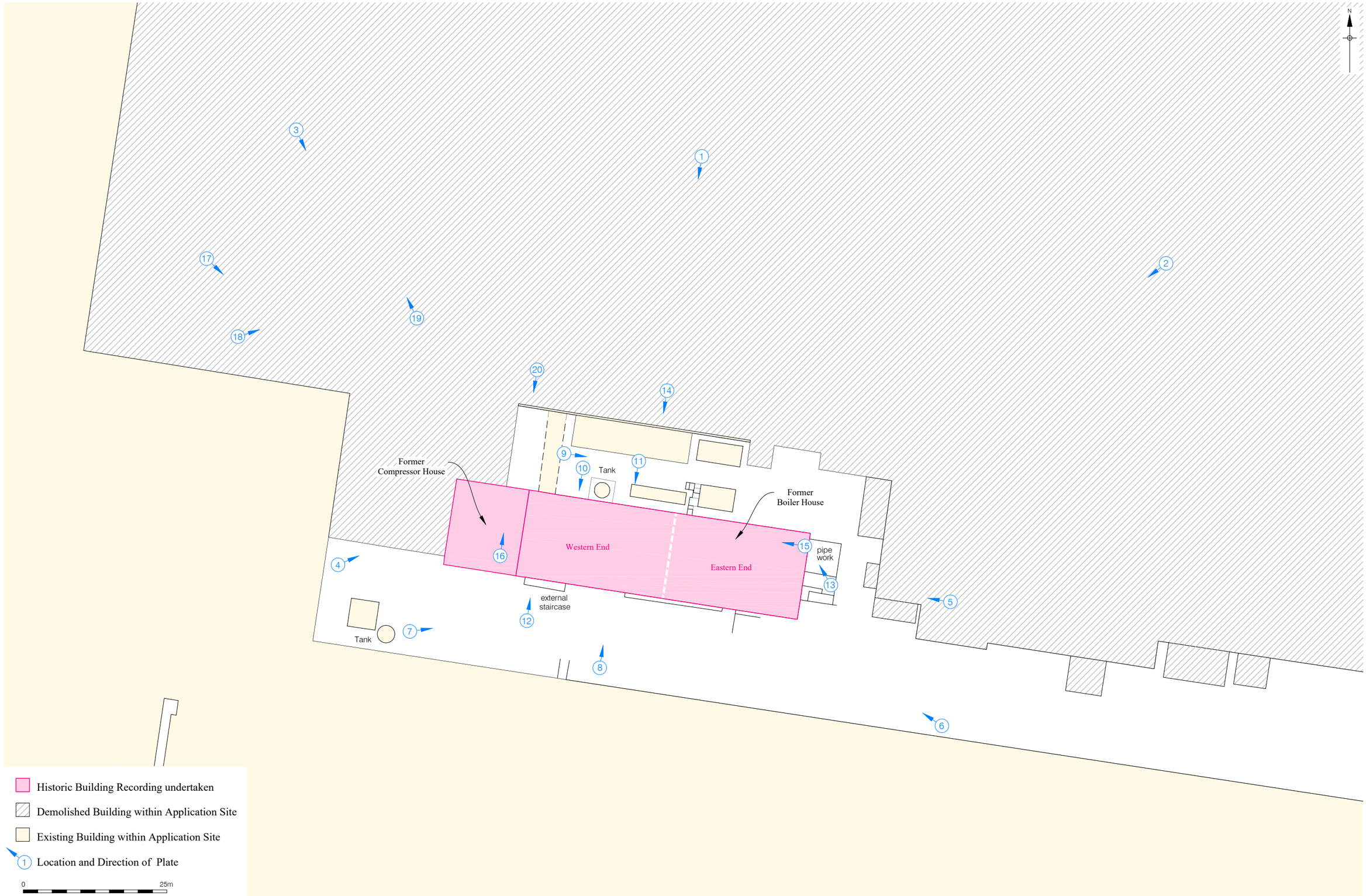

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Figure 17
Plate Locations
1:625 at A3

HISTORICAL PLATES

Plate A: Clearing up after the air raid on Briggs Motor Bodies Ltd, September 1940

Plate B: Home Secretary Sir John Anderson inspects the bomb-damaged Briggs Motor Bodies factory, September 1940

Plate C: Air raid damage at Briggs Motor Bodies Ltd, September 1940

Plate 1 Northern Elevation looking south

Plate 2 Northern Elevation looking south-west

Plate 3 Northern Elevation looking south-east

Plate 4 Western End Elevation looking east

Plate 5 Eastern End Elevation looking west

Plate 6 Eastern and Southern Elevations looking west

Plate 7 Southern Elevation looking north-east

Plate 8 Detail of Fenestration, Southern Elevation

Plate 9 Northern Elevation, view to adjacent tanks and sheds

Plate 10 Northern Elevation, fenestration to ground floor

Plate 11 Northern Elevation

Plate 12 Southern Elevation, modern external stairwell

Plate 13 Pipework to east of Power House

Plate 14 Compression Pipework into adjacent range (north)

Plate 15 Internal views from eastern end wall

Plate 16 Internal view, western bays (former compressor house)

Plate 17 Examples of apparatus removed from demolished buildings

Plate 18 Examples of apparatus removed from demolished buildings

Plate 19 Adjacent production buildings during demolition

Plate 20 Electrical Outlet/Exchange box

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