

**AIR-RAID SHELTERS AT THE FORMER PRITTLEBROOK INDUSTRIAL ESTATE,  
PRIORY CRESCENT, SOUTHEND, SS2 6JX**

**(Centred at NGR 587651 187749)**

**HISTORIC BUILDING RECORD  
(HISTORIC ENGLAND LEVEL 3)**



**Commissioned by  
Bellway Homes Ltd**



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**Site Code: SSPB15  
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| <b>Prepared by:</b>                  | <b>Hannah Green BA, MA and<br/>Christopher Curtis</b> | <b>Assistant<br/>Archaeologist</b> |  |
| <b>Reviewed and<br/>approved by:</b> | <b>Amy Williamson BA</b>                              | <b>Project Manager</b>             |  |
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**Archaeology South-East  
Units 1 & 2  
2 Chapel Place  
Portslade  
East Sussex  
BN41 1DR**

## SUMMARY

*In May 2016, April 2017 and June 2017 Archaeology South-East (a division of the Centre for Applied Archaeology, UCL) carried out a programme of historic building recording of two air-raid shelters on the site of the former Ekco Works, Prittlebrook Industrial Estate, Priory Crescent, Southend, SS2 6JX, prior to the proposed redevelopment of the site. This recording exercise forms a detailed survey of the most recently discovered air-raid shelters (Shelters 4 & 5) within the site to Historic England Level 3 standard (English Heritage 2006a).*

*The structures form part of a wider group of shelters formerly located beneath the Ekco Works, which is now demolished. Three air-raid shelters have previously been recorded on the site, firstly by the Essex County Council Field Archaeology Unit (ECC FAU; now part of ASE) who produced a measured survey and historic building record to English Heritage Level 3 for Shelters 1 – 3, in 2008. An additional assessment was carried out by Archaeology South-East in 2014 in order to record the condition of the shelters and the degree of survival of interior fixtures and fittings since the initial recording exercise. As a result of the initial recording exercise, surviving fixtures and fittings were removed by Southend Museum for their preservation in advance of the shelters' proposed demolition / infilling.*

*By 1937 the Ekco Company was involved in research and development into radar and production work supplying radio sets to the military. The previously recorded shelters are believed to have been constructed before the outbreak of WWII. The principal shelter, Shelter 1, is thought to have been built during a period of factory expansion in 1938-9, at the same time as the so-called "Lamp Factory" above it, as the main shelter for specialist staff and the technologies they were developing there. The structure was built to resist gas attack, with Dreadnaught air-lock doors and gas filter systems. Shelters 2 and 3 were constructed around the same time within an extension of the former north factory range and provided more basic facilities for the general workforce. The most recently discovered shelters (Shelters 4 and 5), the focus of this report, are believed to form additional basic facilities serving the wider workforce. Shelter 4 is located beneath the southern end of the former western range, which formerly served as the radar factory (FAU 2008, 3), while Shelter 5 is located south of Shelter 4, towards the southern end of the site.*

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## **CONTENTS**

|     |   |
|-----|---|
|     | List of Plates                          |
|     | List of Figures                         |
| 1.0 | Introduction                            |
| 2.0 | Scope and Methodology                   |
| 3.0 | Site Location                           |
| 4.0 | Historic Background                     |
| 5.0 | Description of the Structures           |
| 6.0 | Discussion                              |
| 7.0 | Sources Consulted                       |
| 8.0 | Deposition of the Archive               |
| 9.0 | Acknowledgements                        |
|     | Plates                                  |
|     | Figures                                 |
|     | Appendix 1 Index of Digital Photographs |
|     | Appendix 2 Ekco Works Advertisement     |
|     | Appendix 3 OASIS Data Collection Form   |

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## LIST OF PLATES

Plate 1: Shelter 4, assumed entrance passage to the north of the west gallery, facing east (11)

Plate 2: Shelter 4, west gallery following asbestos removal works, facing south (41)

Plate 3: Shelter 4, southern passage, facing east towards the south-east chemical closet and east gallery (70)

Plate 4: Shelter 4, east gallery, facing north (74)

Plate 5: Shelter 4, south-west corner of the west gallery, facing north-east (2)

Plate 6: Shelter 4, fitting-out diagram located within the west gallery, facing west (52)

Plate 7: Shelter 4, fitting-out measurement located within the southern passage, facing north-east (58)

Plate 8: Shelter 4, written graffiti reading '? PIGS Co. &', located within the southern passage below the south-west escape hatch, facing south-east (66)

Plate 9: Shelter 4, dated graffiti within the west gallery, reading '28-3<sup>rd</sup>-40/45/46?', facing west (51)

Plate 10: Shelter 4, dated graffiti within the south-west escape hatch passage, reading 'D.S.C.N 1939/89?', facing west (65)

Plate 11: Shelter 4, west gallery viewed from ground level, facing north (9)

Plate 12: Shelter 4, northern end of the west gallery, facing north (27)

Plate 13: Shelter 4, western wall of the west gallery, note: combined brick and concrete construction, facing east (down) (7)

Plate 14: Shelter 4, detail of the reinforced concrete ceiling above the west gallery, facing north (30)

Plate 15: Shelter 4, typical example of the light fittings found throughout the structure, facing west (15)

Plate 16: Shelter 4, detail of the redundant brackets formerly supporting the west gallery bench seating (no longer *in-situ*), facing south-east (23)

Plate 17: Shelter 4, retained wall-mounted timber seating within the west gallery, facing north (27)

---

Plate 18: Shelter 3, example of the bench seating previously recorded within the west gallery. It is likely Shelter 4 formerly held a similar arrangement, minus the painted wall finishes (FAU 2008, 52)

Plate 19: Shelter 4, collection of objects / materials and degraded timber planks found within the western gallery prior to asbestos removal works, facing north (28)

Plate 20: Shelter 4, example of a moulded plastic product found within the southern linking passage, presumably relating to the shelter's post-war use (77)

Plate 21: Shelter 4, remains of a pinned paper notice located on the north wall of the west gallery, facing north (22)

Plate 22: Shelter 4, exposed baffle section of east gallery (the main part of the gallery is backfilled with rubble). Vertical scar in brickwork to the left is from chemical closet wall. Facing north-west (137)

Plate 23: Shelter 4, partially excavated east gallery with bench marks on wall, facing south-west (163)

Plate 24: Shelter 4, excavated east gallery (left), baffle (middle) and entrance passage (right), facing west (162)

Plate 25: Shelter 4, excavated entrance passage to east gallery, facing south (161)

Plate 26: Shelter 4, view of the north-west chemical closet, facing south (12)

Plate 27: Shelter 4, view of the south-west chemical closet, facing north-east (32)

Plate 28: Shelter 4, view of the south-east chemical closet with timber board partition, facing north (72)

Plate 29: Shelter 2, example of a better preserved chemical closet, identical in layout to that within Shelter 4 (north-west) (FAU 2008, 53)

Plate 30: Shelter 4, detail of the scarring left by the former chemical toilet (removed) within the concrete screed flooring within the south-west closet, facing north-east (55)

Plate 31: Shelter 4, protruding round headed steel pin (possible door pintle) located adjacent to the north-west chemical closet, facing north-west (13)

Plate 32: Shelter 4, padlock and timber planks found adjacent to the north-west chemical closet, facing south (12)

Plate 33: Shelter 1, example of a lightweight timber board door used to separate a chemical closet within Shelter 1 from the passage (FAU 2008, 41)

Plate 34: Shelter 4, view of the narrow passage opposite the north-west chemical closet, facing north (13)

---

Plate 35: Shelter 3, typical appearance of the ventilated entrance doorway that served Shelter 3 (FAU 2008, 51)

Plate 36: Shelter 4, spring-loaded air-vent located in the corner of the north-west chemical closet, facing south-west (16)

Plate 37: Shelter 1, well preserved example of a spring-loaded air vent within the changing area of Shelter 1. Note the instruction notices (FAU 2008, 37)

Plate 38: Shelter 2, example of the fan system providing air movement throughout Shelter 2, it is possible that Shelter 4 utilised the same system (FAU 2008, 52)

Plate 39: Shelter 1, example of the stink trap valve unit within the chemical closets in Shelter 1 (FAU 2008, 41)

Plate 40: Shelter 4, redundant ceiling valve opening found within the north-west chemical closet that formerly held the stink trap unit, facing south (18)

Plate 41: Shelter 4, southern passage providing access to the south-west escape hatch, facing east (33)

Plate 42: Shelter 4, south-west escape hatch with embedded metal rung access, facing east (up) (35)

Plate 43: Shelter 4, view of the passage connecting the south-west escape hatch and central circulation area, facing north (53)

Plate 44: Shelter 4, view of the passage connecting the south-east escape hatch and central circulation area, facing north (67)

Plate 45: Shelter 4, view of the central circulation area within the southern end of the shelter, facing south (60)

Plate 46: Shelter 4, central circulation area within the southern end of the shelter, facing south-east (61)

Plate 47: Shelter 4, detail of the redundant valve opening within the central circulation area, formerly serving ventilation purposes, facing south-east (63)

Plate 48: Shelter 4, detail of the electrical switch unit within the southern central circulation area, facing north (64)

Plate 49: Shelter 4, detail of the light fittings within the eastern range of the shelter, facing south-east (76)

Plate 50: Overview of remains of Shelter 5, facing east (79)

---

Plate 51: Shelter 5, view of link corridor and remains of switch unit, facing south (81)

Plate 52: Shelter 5, north end of west corridor with scarring to the wall for a brick partition for chemical/water closet, facing north (87)

Plate 53: Service tunnel, east kerb of road to the top right of the frame, facing north-east (114)

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## **LIST OF FIGURES**

- Figure 1      Site location
- Figure 2      Site plan
- Figure 3      Site block plan with former Ekco Works structures identified
- Figure 4      Site plan with shelter locations identified
- Figure 5      Ordnance Survey 1:2500 2<sup>nd</sup> Rev. (1922)
- Figure 6      Aerial view of the former Ekco Radio Products Manufactory (July 1934)  
(Britain From Above)
- Figure 7      Ordnance Survey 1:2500 3<sup>rd</sup> Rev. (1938)
- Figure 8      Aerial photograph of the site (1946)
- Figure 9      Ordnance Survey 1:2500 (1955)
- Figure 10     Ordnance Survey 1:2500 (1963-69)
- Figure 11     Ordnance Survey 1:2500 (1971)
- Figure 12     Aerial photography of the site (2016) (Google Maps)
- Figure 13     Shelter 4 - floor plan (scale 1:100)
- Figure 14     Shelter 5 - floor plan (scale 1:100)
- Figure 15     Service tunnel - floor plan (scale 1:100)
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## **1.0 INTRODUCTION**

- 1.1 In May 2016 Archaeology South-East (a division of the Centre for Applied Archaeology, UCL) carried out a programme of historic building recording of an air-raid shelter on the site of the former Ekco Works, Prittlebrook Industrial Estate, Priory Crescent, Southend, SS2 6JX (Figures 1 & 2; NGR 587651 187749), prior to the proposed redevelopment of the site for mixed use development comprising 231 residential dwellings, a hospice facility, commercial floor space and associated highways works, open space, landscaping and car parking facilities (Planning ref. 14/00943/FULM – 31/03/2015). The initial recording exercise formed a detailed survey of the most recently discovered air raid shelter within the site to Historic England Level 3 (English Heritage 2006a). The site was revisited in April 2017 when the remains of another air-raid shelter were uncovered during groundworks. Further work took place in June 2017 when part of the western gallery of Shelter 4 was uncovered. The shelters were also recorded to Historic England Level 3.
- 1.2 The structures form part of a wider group of shelters formerly located beneath the Ekco Works, which is now demolished. Three air-raid shelters have previously been recorded on the site, firstly by the Essex County Council Field Archaeology Unit (ECC FAU; now part of ASE) who produced a measured survey and historic building record to English Heritage Level 3 for Shelters 1 – 3, in 2008 prior to the redevelopment of the site. An additional assessment was carried out by Archaeology South-East in 2014 in order to record the condition of the shelters and the degree of survival of interior fixtures and fittings since the initial recording exercise. As a result of the initial recording exercise, surviving fixtures and fittings were removed by Southend Museum for their preservation in advance of the shelters' proposed demolition / infilling.
- 1.3 Southend-On-Sea Borough Council attached the following condition (Condition 3) to the planning permission, requiring a scheme of archaeological investigation works to be carried out prior to the redevelopment of the site (Ref. 15/00525/AD – 13/05/2015):
- a) *No development across the entire site shall take place until a written scheme of investigation for a programme of archaeological work has been submitted to and approved in writing by the local planning authority. This must include details of the suitably qualified person or organisation that will carry out the archaeological work and reasonable notification to the local planning authority when the works will be undertaken.*
  - b) *The archaeological work and development must then be carried out in accordance with the approved scheme. A written report of the investigation and findings must be produced, showing that the archaeological work and development has been carried out in accordance with the approved scheme and recommendations within the report carried out. Copies of the written report of the investigation and findings must be sent to Southend Borough Council.*
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- c) No part of the construction work shall commence until the local planning authority has provided written confirmation that the archaeological fieldwork and development has been carried out in accordance with the approved scheme.*

*Reason: To avoid damage to archaeological remains on site as set out in the National Planning Policy Framework (NPPF), DPD1 (Core Strategy) policy KP2 and CP4, Borough Local Plan 1994 policy C1, and SPD1 (Design and Townscape Guide).ensure that the industrial archaeological features are properly examined and recorded.*

## **2.0 SCOPE & METHODOLOGY**

- 2.1 The work was carried out in accordance with the relevant ClfA standards and guidance.
- 2.2 Southend-On-Sea Borough Council recommended that the shelter be recorded to Historic England Level 3 standard prior to its demolition/infilling (English Heritage 2006a).
- 2.3 The site was visited by Hannah Green and Seth Price on the 17<sup>th</sup> May 2016 and subsequently by Hannah Green and Chris Curtis on the 24<sup>th</sup> May 2016 and Chris Curtis on the 6<sup>th</sup> April 2017 and 2<sup>nd</sup> June 2017 in order to carry out the recording work. This entailed the compilation of written notes and the production of a photographic and drawn record. The written record includes a description of the buildings' location, form, function, date, materials and sequence of development.
- 2.4 As far as is known, no building plans exist of the shelters, nor do they feature on the ground floor plans for the Ekco factory buildings, which are housed with Southend Borough Council. The drawn record comprises a location plan and measured floor plans of the shelters as existing. These plans were produced during the recording exercise and are included within the report as Figures 1 – 4, 13 and 14.
- 2.5 The photographic record was produced using high-quality digital photography. Both the interiors and exteriors of the structures were surveyed, including general views to illustrate their wider setting. Within the report selected digital images have been reproduced as plates to supplement the descriptive text. A full index of the digital photography is included as Appendix 1 and location plots are shown on the accompanying figures.
- 2.6 The analysis of the structures has been informed by historic background research already undertaken for the site during earlier phases of work, in order to place the structures within their historical context. All sources consulted are listed in Section 8.
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- 2.7 The initial recording exercise was undertaken over two visits due to access constraints. The initial visit (17<sup>th</sup> May) included the recording of the majority of the western range of Shelter 4, including the gallery and chemical closet at the northern end. Access to the assumed entrance corridor thought to be situated at the northern end of the gallery was blocked and inaccessible (Plate 1). The remainder of the structure was inaccessible due to asbestos contamination. Following asbestos removal works, the second site visit (24<sup>th</sup> May) entailed the survey of the link at the southern end of the structure, along with the two escape hatches. The northern end of the western range had been blocked as a consequence of the asbestos removal works and as a result none of this area was surveyed further (Plate 2). Access into the entire eastern range of the structure, including the gallery, chemical closet and access corridor were inaccessible due to rubble / dirt infill, which in areas extended to ceiling level (Plate 3).
- 2.8 A third site visit was made on 6<sup>th</sup> April 2017 following the discovery of another air-raid shelter during groundworks (Shelter 5). Only the link section, escape hatches and northern part of the two galleries survived. Neither the roof, nor any fixtures and fittings remained.

### **3.0 SITE LOCATION**

- 3.1 The site, known as the former Prittlebrook Industrial Estate, is located c.3km to the north of the town centre within the Prittlewell district in Southend (Figure 1). The wider site encompasses an area of 7.3ha and is bounded by the Ekco Social and Sports Club Association and sports field to the west, the Thornford Gardens residential development to the north, the railway line to the eastern side, and Priory Crescent (A1159) access road and Prittlewell Priory Park located to the south. The site is accessible via entrances at the north and south, with the principal entrance being to the south via Priory Crescent.
- 3.2 The industrial estate was established in the 1930s as the site of the Ekco Works, a radio manufacturing plant, and has been added to and extended in subsequent decades. The last owners were Ecomold, a specialist moulded plastic product manufacturer (FAU 2008). The buildings had associated yards, roadways and parking areas covered by tarmac or concrete. As viewed from aerial photography, the entire site was previously covered by buildings or hard-standing. The site is no longer in use and comprises areas of concrete hardstanding and made ground in the form of levelled brick / concrete rubble following the demolition of the former factory buildings. The last building to be demolished within the site was a long 1930s range, situated to the western edge of the site, under which the previously recorded air-raid shelters are located (Figures 2 & 3). Other shelters are understood to exist across the site and their locations broadly known, but their entrances are now sealed beneath newer buildings or tarmac.
- 3.3 Shelter 1 is located beneath the former lamp factory range which links the north and south ends of the western range. Shelters 2 and 3 occupy the northern and
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southern ends respectively of the transformer manufacturing shop, which is located within the western range's northern end. Shelter 4 is located at NGR 587651 187749 (Figures 1 and 2) beneath the north-east corner of the former radar factory (FAU 2008, 3) (now demolished), which formerly occupied the southern extent of the western range (Figure 4). Shelter 5 is located south of Shelter 4, towards the southern end of the site, at NGR 587656 187688.

## **4.0 HISTORIC BACKGROUND**

### *Ekco Radio Products Manufactory*

- 4.1 The historic background of the site has been informed by the research undertaken as part of the 2008 report (FAU 2008) and by the various cartographic sources.
  - 4.2 The Ekco founder, Eric K. Cole, began producing wireless radio sets in Westcliffe in 1922. The Ekco company was established soon after in 1926 and new premises were built at Prittlewell in 1930 (ERO TS 30/15). During the 1930s, EKCO was a household name as an important and innovative producer of radios, televisions and electric heating. As part of the manufacturing process, the factory produced the valves and moulded 'bakelite'-type casings for the products in contemporary Deco-style. The factory was also one of the largest employers in the town, employing over 2000 people (ERO TS30/15) at the time.
  - 4.3 By 1937, the Ekco Company was involved in top secret research and development into radar systems and building 'Type 19' army radio sets for tanks, commando packs and aircraft for the War Office (<http://www.bbc.co.uk/ww2peopleswar>). During 1938-9, the works were enlarged and a number of air raid shelters were incorporated into the new building design. The new build included Building TF405, the 'Lamp Factory', inserted between the two long workshop ranges and containing Shelter 1.
  - 4.4 The main shelter, Shelter 1, is believed to have been built as part of the factory expansion works c. 1938-9, as the shelter for the scientists and the technologies they were developing there (Figure 2). The 2008 survey showed the structure was equipped for surviving gas attack, with its own cleansing facilities, filtered air system and independent power supply, although they were never used for their intended purpose. The shelter survived virtually intact, with many original fixtures and fittings (Dreadnaught air-lock doors, gas filter systems and benches) and WWII signage remaining throughout.
  - 4.5 Shelters 2 and 3 were built around the same time, when the northern end of the western range was widened, but provided more basic, secondary facilities for the factory workers. Other similar shelters were located to the east and beneath the western range's southern end, the radar factory (C. Poole pers. comm.), where a workers' shelter, which forms the subject of this report, was filled-in in advance of the construction of modern extensions to the factory (ECC FAU
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2008, 3). These were more utilitarian in nature with basic facilities that lacked any built-in gas prevention measures.

- 4.6 With the outbreak of war in 1939, resources were given over to full military production. The factory was the first to produce air-interception and anti-surface-vessel radar used by aircraft to search out enemy ships (ERO TS 30/15), including the A1 Mk2 night fighter radar (Nash 2008). The works became a target for Luftwaffe air-attacks and in 1940 the danger of enemy attack led to the transfer of war work to shadow factories at Malmesbury and other sites further inland. However, it was soon realised these other factories were almost as vulnerable, so the Southend factory was re-equipped for military production (ERO TS 30/15). The factory was never hit.
- 4.7 After the war, Ekco adopted a role in the fledgling nuclear power industry, alongside its production of domestic radios, television sets etc and at some point the shelters were cleared for use as store rooms. In 1985 Ekco were taken over by Linpak and later on, in 2005, by Ecomold. Following the FAU survey completed in 2008 some of the internal fittings were removed from the main shelter by Southend Museum to accompany a proposed interactive exhibition at the new Cliffs Museum. After this the above-ground factory buildings were demolished and the site cleared, the last range was demolished in 2014.

#### *The Site*

- 4.8 The Ordnance Survey map of 1922 (Figure 5) shows the site to have formed part of a large area of undeveloped land which extended beyond the site boundary to the north and west. The extreme south-eastern part of the site formed part of a small field bisected by a small brook which formed the site's south-eastern boundary. The then labelled 'GER Southend Line' railway track is shown running in a north-west – south-east direction along the site's eastern edge, while the site of Prittlewell Priory is visible a short distance to the south of the site.
- 4.9 Aerial photography of the site taken in July 1934 (Figure 6) depicts the layout of the Ekco works at that time. By this date the works consisted of a principal range occupying the site's eastern side. The principal range comprised a two-storey entrance/office block with central thoroughfare from Priory Crescent. Beyond which are depicted a series of four linked single-storey pitched roof ranges/sheds, with an additional linear range towards the structure's north-west end. A series of additional structures are shown to the eastern side of the principal range which appear to have formed stores or shelter for vehicles due to their large entrance doors. The small triangular piece of land just beyond the site's south-east boundary seems to have remained largely undeveloped but evidence of an access track from the main range and areas of concrete hardstanding suggest its development was imminent. The western area of the site remained undeveloped, although just beyond a series of residential properties had been built fronting Priory Crescent.
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- 4.10 By the completion of the Ordnance Survey map of 1938 (Figure 7) two additional linear ranges had been constructed along the site's western edge, both aligned roughly north – south, which formed part of the company's pre-war expansion works; the southern of the two formed the site's radar development works. Shelters 2 and 3 are located beneath the northern structure, conforming to the government guidelines of the time that required newly constructed factory buildings to provide shelter facilities for workers. In addition to the two western range structures a 'T'-shaped structure is shown to their southern end facing onto Priory Crescent. The development work seen in its initial stages in 1934 beyond the south-east boundary looks to have been completed, the map showing a large rectangular structure with a series of open-sided structures to its north. Vehicle access tracks are shown running from the newly laid out Thornfield Gardens residential development to the north of the site, in a southerly direction between the principal range and new structures to the west which also provided access to the northern end of the main range. A separate track is shown serving the western side of the new ranges, which in-turn linked the north and south ends of both ranges to the central track. No separation is marked between the land to the west of the site and the Ekco works, highlighting the land was under single ownership. The entire factory site is labelled as 'Wireless Factory' (1:10560) 'Manufactory (Radio Products)' (1:2500) at this time.
- 4.11 Aerial photography of the site taken in May 1946 (Figure 8) gives a view of the war-time site. The works had undergone a period of expansion, with the addition of a further four ranges to the north of the principal range and a sizable extension to the principal range's north-west end. A series of small structures are shown to the southern end of the site between the principal range and western ranges by this date. The most noticeable change within the western half of the site includes the extension of the northern linear range in an eastwards direction, effectively doubling its floor space. Additionally, a square-shaped building, serving as the lamp factory, is shown situated centrally between the two western ranges, it is in this area that Shelters 1 and 4 are located. Note the camouflage treatment of the western range roofs within this photograph.
- 4.12 The Ordnance Survey map completed in 1955 (Figure 9) shows further expansion to the Ekco works compound. The existing ranges located with the northern half of the site along the eastern side had been joined to create a substantial structure along the eastern boundary. The existing building to the north of the site has been extended northwards to create a large workshop. The structures located to the site's western edge had also been subject to alteration and expansion, with the central section of the southern range extended eastwards. The previously separated north, central and south ranges had been merged to create a continuous long range. An additional building is shown connected to the northern end of the western range. Lastly, a series of smaller structures and water coolers are shown located between the western range and the former principal range to the east. The site is labelled as a 'Radio Products Factory', while the area to the west is identified as a separate sports field with purpose built pavilion to its northern end.
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- 4.13 Further expansion of the Ekco Works is illustrated on the Ordnance Survey mapping of 1963-69 (Figure 10). This map shows the extension of the north-eastern range in a westerly direction and the construction of a separate building between this structure and the newly extended northern end of the western range. A number of other structures on the site had also been extended and an extensive network of road access routes are shown serving the new structures on the site.
- 4.14 The Ordnance Survey maps of 1971 (Figure 11), 1986 and 1990 (not reproduced), show the site much unchanged. The most noticeable change involves the joining of the newly constructed northern building to the northern end of the western range and the demolition of two buildings previously located with the site's south-east corner. Additional mapping completed during the late 1970s but at an insufficient scale to allow for detailed analysis of the Site (not reproduced), identifies the large structure adjacent the site's south-east corner as offices and the main compound is accompanied with 'Plastic Works' and 'Warehouse' labels. No changes are shown during the 1980s and 1990s.
- 4.15 Current aerial photography of the site dating to 2016 (Figure 12; Google Maps) shows the demolition of all structures within the site. The former site layout is visible only through areas of concrete and tarmac hardstanding in the location of the former factory buildings.

## **5.0 DESCRIPTION OF THE STRUCTURES**

### **Air-Raid Shelter (Shelter 4) (Figure 13)**

- 5.1 Although not recorded in its entirety the symmetrical layout of the previously recorded air-raid shelters, in particular Shelter 2, which follows an identical plan form (Figure 4), allowed the layout of Shelter 4 to be reconstructed. The majority of the western gallery was accessible, and here, only minor variations were highlighted between the floor plan of Shelter 2 and this structure, principally in the form of floor level variation and room dimensions and not differences in room use or location. Its symmetrical form was confirmed – at least in part – during subsequent recording work which uncovered the northern end of the eastern gallery, and also by a limited number of photographs taken during the initial record (Plate 4).
- 5.2 Shelter 4 (Plate 5) was built to serve the general workers of the Ekco manufactory and adopts a usual WWII shelter design as seen elsewhere (FAU 2008, 4). The western half of the shelter comprises a long linear rectangular gallery, flanked at either end by a chemical closet and walkways leading to entry points (although the suspected entrance arrangement at the northern end of the structure could not be recorded). It is likely that when combined the eastern and western ranges created a broadly U-shaped symmetrical plan form comprising two parallel galleries. These galleries are linked at their southern end by a
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narrow articulated passage containing two chemical closets, individual escape hatches and a ventilated circulation/storage area. The structure's design incorporates thick blast walls of concrete and English-bonded Fletton brickwork construction with elaborate right-angled turns, in order to limit bomb blast travelling through the system's structure (Nash 2008). The construction, finish and standard of fittings is basic, with bare unplastered brick walls and bare cast concrete ceilings and concrete screed flooring. The floor level of the air-raid shelter lies at a relatively consistent depth of approximately 3.8m below ground level with each area accommodating varying room heights.

- 5.3 A collection of pencilled graffiti was recorded on the Fletton brickwork throughout the structure. These inscriptions included various measurements, initials and dates (Plates 6, 7 and 8). The most notable of which include two dated examples; the first noted within the southern end of the west gallery, upon the western wall read '28 – 3<sup>rd</sup> – 40 / 45 / 46 ?' (Plate 9), the second was located to the west side of the south-west escape hatch passage, 'D.S.C.N. 1939 / 89' (Plate 10). Due to the nature of the pencilling and dark brickwork inclusions it was difficult to define the dates, as such it is important to note that the graffiti recorded above are interpretations only. The dates do however appear to conform to the period of occupation of the shelter during WWII, the probable 1939 date in particular coincides with a period of pre-war expansion of the Ekco factory works over the western half of the site, suggesting a probable date for the shelter's construction.

#### *Galleries*

- 5.4 The western gallery (Plates 11 and 12) follows the usual arrangement as elsewhere, constructed with English-bonded Fletton brickwork, with concrete floor and ceiling. The gallery is set beneath c.1.28m of earth with a ceiling height of 1.99m. The east and west walls appear to be reinforced on their outer edge by an additional concrete skin measuring a width of c. 0.10m (Plate 13). The gallery measures a width of 1.52m and extends 12.81m in length, which conform to the recommended dimensions required to accommodate 50 persons per gallery/100 per shelter (Nash 2008).
- 5.5 Both galleries comprise a thick reinforced cast concrete ceiling with large coarse gravel inclusions (Plate 14). The partially surviving ceiling above the northern end of the western gallery measures 0.22m deep. The concrete is faced with indentations left by the casting process, in the form of timber grain markings. No evidence of any openings, such as ventilation valves were observed within the remaining ceiling section of the western gallery or within the southern end of the eastern gallery.
- 5.6 Electricity was run in steel conduits along both the gallery ceilings, serving as a light feed to original wall-mounted plain square iron surrounds with brass bulb fixtures (Plate 15).
-

- 5.7 Other period fixtures and fittings within the gallery include a series of redundant steel nails and brackets (Plate 16), set within a line approximately 0.70m above floor level; these punctuate the east and west walls, and mark the location of the timber bench seating that formerly sat along the length of these walls (like those seen within Shelters 2 and 3). A single timber plank remains secured to the west wall at its northern end and forms the only remaining *in-situ* seating within the western gallery (Plates 17 and 18). A collection of free-standing softwood and plywood furniture, significantly degraded timber planks and miscellaneous metal objects seemingly of an industrial nature (Plate 19) were located within the northern end of the gallery during the initial site visit. Some of this might have represented debris from original bench seating, while other items seemed to be post-war stored materials. A large collection of moulded plastic wheels and a pair of plastic car models presumably date to the period of ownership by Ecomold (Plate 20). Further investigation of the items could not be carried out due to restricted recording practice due to asbestos contamination and subsequent clearance works. The remains of a paper notice was located centrally upon the northern wall (Plate 21); the steel pins securing it to the wall remained *in-situ*, however the nature of the notice could not be determined due to its degraded condition.
- 5.8 The north end of the eastern gallery was uncovered during groundworks in June 2017. The gallery was found to be in poor condition. The roof and upper part of the walls were truncated by later building works and the gallery and entrance passage were backfilled with rubble (Plate 22). Although some of the walls are missing, the excavated part of the gallery was found to be similar in plan to Shelters 2 and 3, containing a baffled entrance with stairs (Plates 23-25). The construction was also the same, comprising English-bonded brick walls reinforced with rebar. The entrance section was narrow, at 0.57m wide, while the gallery itself was 1.52m wide. The gallery had remnants of white paint on its walls with marks where the bench seating would have been fixed. Scars on the east wall of the gallery indicate where another wall would have been situated, south of the baffled section, to provide space for a chemical closet.

#### *Chemical Closet*

- 5.9 A single chemical closet (WC) was situated at each the north and south end of both galleries. During the initial site survey, three closets were recorded (Plates 26, 27 and 28). All the closets were consistent in form; comprising a small rectangular room, aligned north – south, measuring a width of 0.76m and a room height of 2.52m. The chemical closets were identical in form to those within Shelter 2 (Plate 29).
- 5.10 With no plumbed system for dealing with waste, ‘Elsan’-type chemical toilets were employed (FAU 2008, 14), the outlines of which can be seen on the concrete floors of the small rooms (Plate 30). It is likely each closet served around 25 persons.
-

- 5.11 Adjacent to the north-west chemical closet is a rounded steel pintle which protrudes from the western wall (Plate 31), in addition to a single padlock secured to a timber plank (Plate 32) observed in the same location. The significantly better preserved condition of Shelters 1, 2 and 3 suggests these features could have formed part of the lightweight boarded toilet door that formerly separated the toilet from the passageway (Plates 33 and 34). However it is possible the padlock served one of the heavy perforated wooden doors that were fitted throughout the other structures (Plate 35) and are likely to have been situated at the entrances of this shelter also.
- 5.12 Each chemical closet was lit in the same manner as the galleries (described previously).

#### *Ventilation*

- 5.13 A small circular spring-loaded air vent (Plate 36) was fitted to the ceiling within the north-west closet; presumably this was the case within all closets but the ceiling of the south-west closet no longer remained *in-situ* for recording purposes and the south-east closet had been shortened at its northern end with a rudimentary timber board. These vents were kept open for ventilation unless there was a gas attack, in which case they could be closed with a slight turn of the handle. Within Shelter 1 these vents are accompanied with operational wall labels reading 'air vent keep open' and 'Direct fresh air, normally – keep open, close by turning' in red paint and wall mounted notices (FAU 2008, 37) (Plate 37). No such labelling remains within Shelter 4 although fragments of paper notices are observed within the north-west closet which potentially served a similar function. These air vents were linked by a common system of mainly external piping that makes it difficult to follow and appreciate the system in full. Single air vents and redundant valves marking their former location were observed within the chemical closets and southern link but not in either gallery.
- 5.14 Within Shelter 2, a single ceiling mounted fan (Plate 35) was found within one of the galleries in order to circulate the air provided from the vents. Although no such system was observed within this shelter, it is possible the structure was served in the same manner. The manufacturer of the sprung air vents is unknown.
- 5.15 In addition to the sprung air vents situated within each chemical closet, evidence of a wall-mounted stink pipe fitted with non-return rubber valve (Plate 39) (FAU 2008 41) was observed in the north-west closet (Plate 40), the redundant ceiling valve marks its former location.

#### *Southern Link*

- 5.16 The east and west ranges were linked at their southern end via a narrow corridor, aligned east – west, which provided access to a central circulation/storage area. The central area is flanked to its north-west and north-east sides by a pair of escape hatches. These hatches were accessed via the
-

narrow passageway network (Plate 41) and served by metal rungs that were embedded into the brickwork walls (Plates 42, 43 and 44). Each hatch originally housed a steel cover (as viewed above Shelters 2 and 3) and provided an alternative exit back to ground floor level. These escape hatches were kept open by some of the younger workers during an air-raid and only closed if the factory was under direct attack (FAU 2008, 15).

- 5.17 The central circulation/storage area (Plate 45 and 46) measures a length of 2.73m and 1.77m in width, with a relatively high ceiling height of 2.34m. The ceiling within this room differs from that described elsewhere, instead it is constructed with plain reinforced concrete slabs, measuring a width of 0.30m, laid horizontally from north to south. The room is featureless except for a redundant ceiling valve which formerly held a spring-loaded air-vent within its south-east corner (Plate 47). A single rectangular steel electrical switch unit control panel is mounted to this room's north wall and contains three separate manual operation switches, one of which reads 'D.C. Supply – Off On', above which two small bulbs appear to signal the operational status of the unit (Plate 48). A series of steel conduits are secured around the room's ceiling serving a series of wall-mounted plain square iron surrounds with brass bulb fixtures (as elsewhere) (Plate 49).

#### **Air-Raid Shelter (Shelter 5) (Figure 14)**

- 5.18 Although only a fragment of the air-raid shelter survives, it appears to have a similar layout and form of construction to Shelters 2, 3 and 4 (Plate 50). The shelter is located to the south of the site, and either appears to have been built beneath an unidentified factory building or under a yard area. The shelter would have had two symmetrical galleries aligned north to south, with a link corridor to the north.
- 5.19 The surviving section of the shelter consists of the northern link and a small part of the north end of each gallery. Like the other shelters, Shelter 5 has escape hatches in the link corridor and chemical/water closets at the north end of each gallery. The link corridor features a fitting for a switch unit in the same location as that found in Shelter 4 (Plate 51).
- 5.20 The construction of the shelter is slightly different to that of the previously recorded shelters. Although Shelters 2-4 are constructed predominantly from brick, with concrete ceilings, Shelter 5 is constructed with reinforced concrete walls, 0.22m thick. Only the surviving section of the west gallery is brick-built. The shelter also differs from the others in that it has a noticeable change in floor level. The floor level of the west gallery is about 0.4m above that of the link corridor and east gallery. The ceiling height of the link corridor is c.2.8m however the tops of the walls forming the rest of the shelter have been partially demolished and the ceiling height could not be measured.
- 5.21 A significant difference in Shelter 5 is the position of the chemical/ water closets. Accommodation is made for a chemical/water closet on the east side of the
-



shelter at the junction of the link corridor and the gallery, in a similar fashion to the other shelters; however, the layout differs on the west side which has a space attached to the west side of the gallery which probably served as a chemical/water closet (Plate 52).

- 5.22 It can be assumed that the ventilation system and the layout of the galleries was broadly similar to Shelters 2-4; however, the loss of the majority of the galleries and of the roof has destroyed any evidence for this.

### **Service tunnel**

- 5.23 During works to dig foundation trenches in June 2017 a structure was exposed to the east of Shelter 4 (Plate 53). The structure comprises a tunnel lined with cast concrete 1.21m wide. The tunnel has been truncated at either end leaving a 7.5 m section intact. The tunnel runs parallel and adjacent to the main road running through the site. The use of cast concrete rather than brick, as well as its smaller dimensions and its position away from a factory building suggests that the tunnel was not part of an air raid shelter. It is more likely that it formed a service tunnel running with the main road.

## **6.0 DISCUSSION**

### *Shelter 4*

- 6.1 The structure forms part of a wider group of below-ground air-raid shelters formerly located beneath the Ekco Radio Products Manufactory which was established on the site by 1930. Of the three shelters previously recorded on the site (2008 and 2014), the shelter is representative of Shelters 2 and 3, providing basic facilities for the general workforce during WWII. The shelter lacks the aesthetic treatment and sophisticated arrangement of Shelter 1 with its intrinsic networks for power supply, drinking water, ventilation and filtered air systems. The absence of these features indicate that Shelter 4 was utilised as a basic shelter with no specialist gas prevention measures and demonstrates the most basic shelter form within the site recorded to date.
- 6.2 The shelter's construction is thought to date to 1938-9 during a period of factory expansion, consistent with the other shelters within the western half of the site. This date appears to be further supported by the pencilled graffiti recorded within the south-west escape hatch.
- 6.3 The shelter's appearance and plan form is not dissimilar to that of Shelters 2 and 3, comprising basic fixtures and fittings with bare unplastered brick walls and reinforced concrete construction. Although not recorded in its entirety, the assumed form and location of the northern entrances and eastern range with adjoining chemical closet are presumed to reflect the same arrangement as recorded within Shelter 2. The structure's thick blast walls and articulated layout conforms to typical air-raid shelter conventions and is likely to have been designed to accommodate 50 individuals within each gallery, with each chemical closet provided to serve 25 persons. Despite the loss of the gallery bench seating, the retained wall brackets and fragmentary timber planks within the western gallery allow an interpretation of the area similar to that within Shelter 3.
- 6.4 The shelter appears to have been utilised as a storage facility for Ecomold products following its intended war-time use, this coincides with the reuse of the other shelters for the same purpose. This change in use is indicative of the general transformation of the site during the latter half of the 20<sup>th</sup> century, with the subsequent closure of the Ekco Works and the site's transition into a specialist moulded plastic product manufacturer. Following the shelter's use for storage, the structure was infilled with earth and rubble in advance of the construction of modern extensions to the factory (FAU 2008, 3).
- 6.5 The provision of air-raid shelters for the Ekco workforce is representative of wider government guidelines during the pre-war period which required newly constructed factories (in this case those undergoing extension works) to provide sheltered accommodation for their respective workforce in anticipation of future air attacks. Their construction also highlights the significant role the works
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played in the WWII war effort; providing research and the production of developing radar and wireless radio sets to the military from 1937 onwards.

- 6.6 Unlike the other shelters, Shelter 4 retains very little in the way of original wartime décor, signage, fixtures and fittings. Those that do remain, principally in the form of air vents, electrical light fittings and a switch control panel are in a relatively poor condition. Fragmentary remains of paper notices and redundant ceiling valves are all that remain of other fixtures and fittings, such as user instructions and air vent/stink pipe locations. Despite the significantly degraded nature of the fixtures and fittings, their presence is effective in illustrating room use, intended plan form and identifying principal circulation space. Particularly notable in giving context to the structure's war-time occupation are the pencilled graffiti inscriptions found throughout the structure; discernible markings include fitting-out measurements, occupants' initials and apparently war-time dates.
- 6.7 Due to the restricted accessibility of the structure, the degree of surviving graffiti, fixtures and fittings within the northern end and eastern range of the shelter is uncertain but there is potential for items to remain beneath the rubble, which appears not to have been disturbed since the shelter's infill. However, their condition, if present, is likely to be poor if reflective of those found within the western range.

#### *Shelter 5*

- 6.6 Although Shelter 5 survives in a more fragmentary form, it is clear that it conformed broadly to the same design as Shelters 2-4. The difference in materials used in its construction suggests that the shelter may have been built at different time to the others, perhaps later in the war when building materials were scarcer.
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## **7.0 SOURCES CONSULTED**

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## **8.0 DEPOSITION OF THE ARCHIVE**

A full archive intended for deposition with Southend Museum has been prepared. A further digital copy of the report (including plans, illustrations and photographs) has been compiled for the Essex Historic Environment Record on CD-ROM in a .pdf format. The archive has been assigned the site code SSPB 15. The full site archive will be prepared in accordance with the principals of English Heritage's *Management of Archaeological Projects* (1991). The archive will comprise a hard copy of the full report, a pdf version of the report on CD, the full photographic record with registers, field notes and drawings.

## **9.0 ACKNOWLEDGEMENTS**

Archaeology South-East would like to thank Bellway Homes for commissioning this Historic Building Record and Gary Boyle for his assistance given during the recording process.

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**PLATES**



Plate 1: Shelter 4, assumed entrance passage to the north of the west gallery, facing east (11)



Plate 2: Shelter 4, west gallery following asbestos removal works, facing south (41)

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Plate 3: Shelter 4, southern passage, facing east towards the south-east chemical closet and east gallery (70)



Plate 4: Shelter 4, east gallery, facing north (74)

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Plate 5: Shelter 4, south-west corner of the west gallery, facing north-east (2)



Plate 6: Shelter 4, fitting-out diagram within the west gallery, facing west (52)

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Plate 7: Shelter 4, fitting-out measurement located within the southern passage, facing north-east (58)



Plate 8: Shelter 4, written graffiti reading '? PIGS Co. &', located within the southern passage below the south-west escape hatch, facing south-east (66)

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Plate 9: Shelter 4, dated graffiti within the west gallery, reading 28-3<sup>rd</sup>-40/45/46?, facing west (51)



Plate 10: Shelter 4, dated graffiti within the south-west escape hatch passage, reading D.S.C.N 1939/89?, facing west (65)

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Plate 11: Shelter 4, west gallery viewed from ground level, facing north (9)



Plate 12: Shelter 4, northern end of the west gallery, facing north (27)

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Plate 13: Shelter 4, western wall of the west gallery, note: combined brick and concrete construction, facing east (down) (7)



Plate 14: Shelter 4, detail of the reinforced concrete ceiling above the west gallery, facing north (30)

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Plate 15: Shelter 4, typical example of the light fittings found throughout the structure, facing west (15)



Plate 16: Shelter 4, detail of the redundant brackets formerly supporting the west gallery bench seating (no longer *in-situ*), facing south-east (23)

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Plate 17: Shelter 4, retained wall-mounted timber seating within the west gallery, facing north (27)



Plate 18: Shelter 3, example of the bench seating previously recorded within the west gallery. It is likely Shelter 4 formerly held a similar arrangement, minus the painted wall finishes (FAU 2008, 52)

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Plate 19: Shelter 4, collection of objects/materials and degraded timber planks found within the western gallery prior to asbestos removal works, facing north (28)



Plate 20: Shelter 4, example of a moulded plastic product found within the southern linking passage, presumably relating to the shelter's post-war use (77)

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Plate 21: Shelter 4, remains of a pinned paper notice located on the north wall of the west gallery, facing north (22)



Plate 22: Shelter 4, exposed baffle section of east gallery (the main part of the gallery is backfilled with rubble). Vertical scar in brickwork to the left is from chemical closet wall. Facing north-west (137)

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Plate 23: Shelter 4, partially excavated east gallery with bench marks on wall, facing south-west (163)



Plate 24: Shelter 4, excavated east gallery (left), baffle (middle) and entrance passage (right), facing west (162)

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Plate 25: Shelter 4, excavated entrance passage to east gallery, facing south (161)



Plate 26: Shelter 4, view of the north-west chemical closet, facing south (12)

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Plate 27: Shelter 4, view of the south-west chemical closet, facing north-east (32)



Plate 28: Shelter 4, view of the south-east chemical closet with timber board partition, facing north (72)

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Plate 29: Shelter 2, example of a better preserved chemical closet, identical in layout to that within Shelter 4 (north-west) (FAU 2008, 53)



Plate 30: Shelter 4, detail of the scarring left by the former chemical toilet (removed) within the concrete screed flooring within the south-west closet, facing north-east (55)

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Plate 31: Shelter 4, protruding round headed steel pin (possible door pintle) located adjacent to the north-west chemical closet, facing north-west (13)



Plate 32: Shelter 4, padlock and timber planks found adjacent to the north-west chemical closet, facing south (12)

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Plate 33: Shelter 1, example of a lightweight timber board door used to separate a chemical closet within Shelter 1 from the passage (FAU 2008, 41)



Plate 34: Shelter 4, view of the narrow passage opposite the north-west chemical closet, facing north (13)

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Plate 35: Shelter 3, typical appearance of the ventilated entrance doorway that served Shelter 3 (FAU 2008, 51)



Plate 36: Shelter 4, spring-loaded air-vent located in the corner of the north-west chemical closet, facing south-west (16)

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Plate 37: Shelter 1, well preserved example of a spring-loaded air vent within the changing area of Shelter 1. Note the instruction notices (FAU 2008, 37)



Plate 38: Shelter 2, example of the fan system providing air movement throughout Shelter 2, it is possible that Shelter 4 utilised the same system (FAU 2008, 52)

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Plate 39: Shelter 1, example of the stink trap valve unit within the chemical closets in Shelter 1 (FAU 2008, 41)



Plate 40: Shelter 4, redundant ceiling valve opening found within the north-west chemical closet that formerly held the stink trap unit, facing south (18)

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Plate 41: Shelter 4, southern passage providing access to the south-west escape hatch, facing east (33)



Plate 42: Shelter 4, south-west escape hatch with embedded metal rung access, facing east (up) (35)

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Plate 43: Shelter 4, view of the passage connecting the south-west escape hatch and central circulation area, facing north (53)



Plate 44: Shelter 4, view of the passage connecting the south-east escape hatch and central circulation area, facing north (67)

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Plate 45: Shelter 4, view of the central circulation area within the southern end of the shelter, facing south (60)



Plate 46: Shelter 4, central circulation area within the southern end of the shelter, facing south-east (61)

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Plate 47: Shelter 4, detail of the redundant valve opening within the central circulation area, formerly serving ventilation purposes, facing south-east (63)



Plate 48: Shelter 4, detail of the electrical switch unit within the southern central circulation area, facing north (64)

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Plate 49: Shelter 4, detail of the light fittings within the eastern range of the shelter, facing south-east (76)



Plate 50: Overview of remains of Shelter 5, facing east (79)

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Plate 51: Shelter 5, view of link corridor and remains of switch unit, facing south (81)



Plate 52: Shelter 5, north end of west corridor with scarring to the wall for a brick partition for chemical/water closet, facing north (87)

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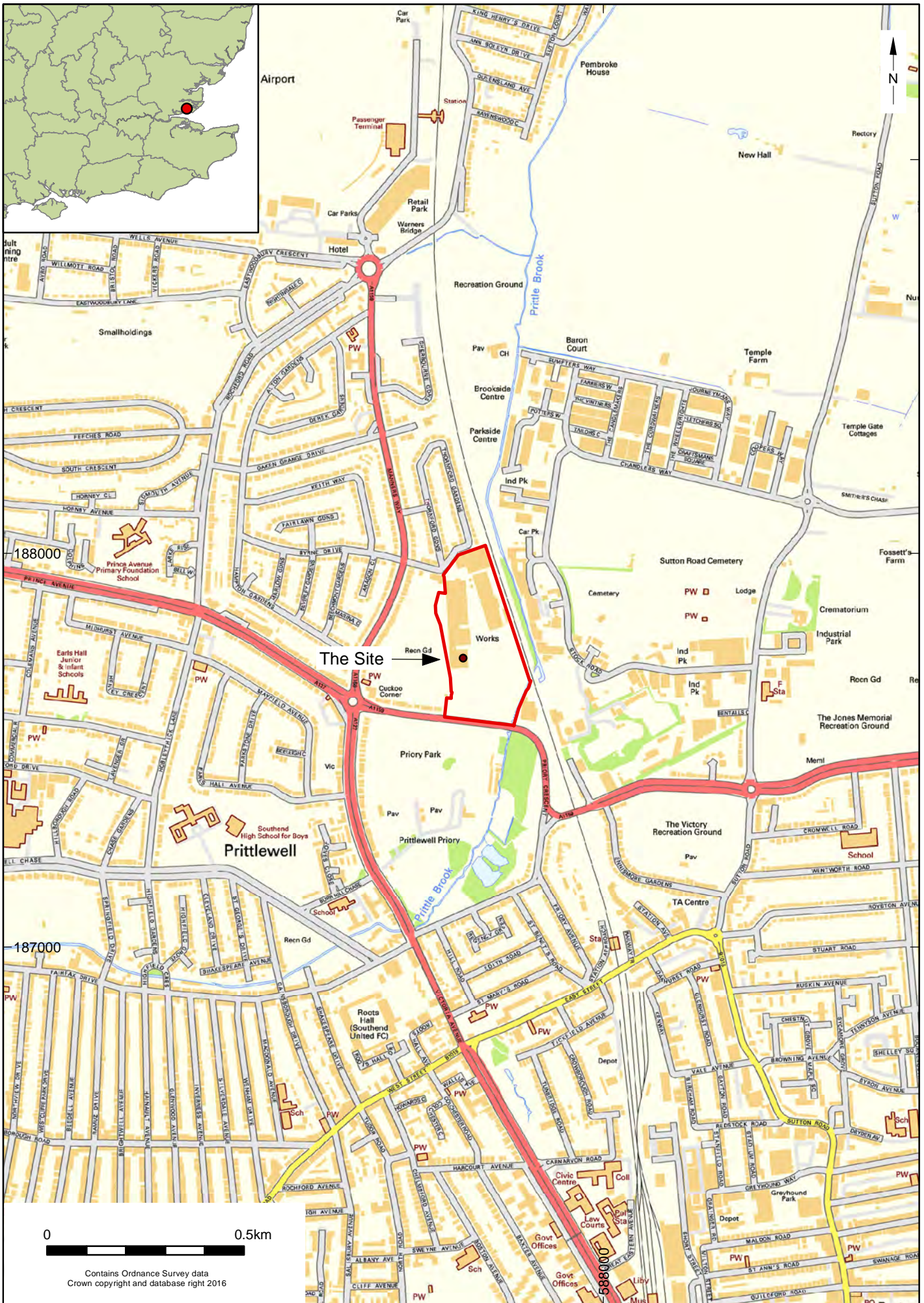




Plate 53: Service tunnel, east kerb of road to the top right of the frame, facing north-east (114)

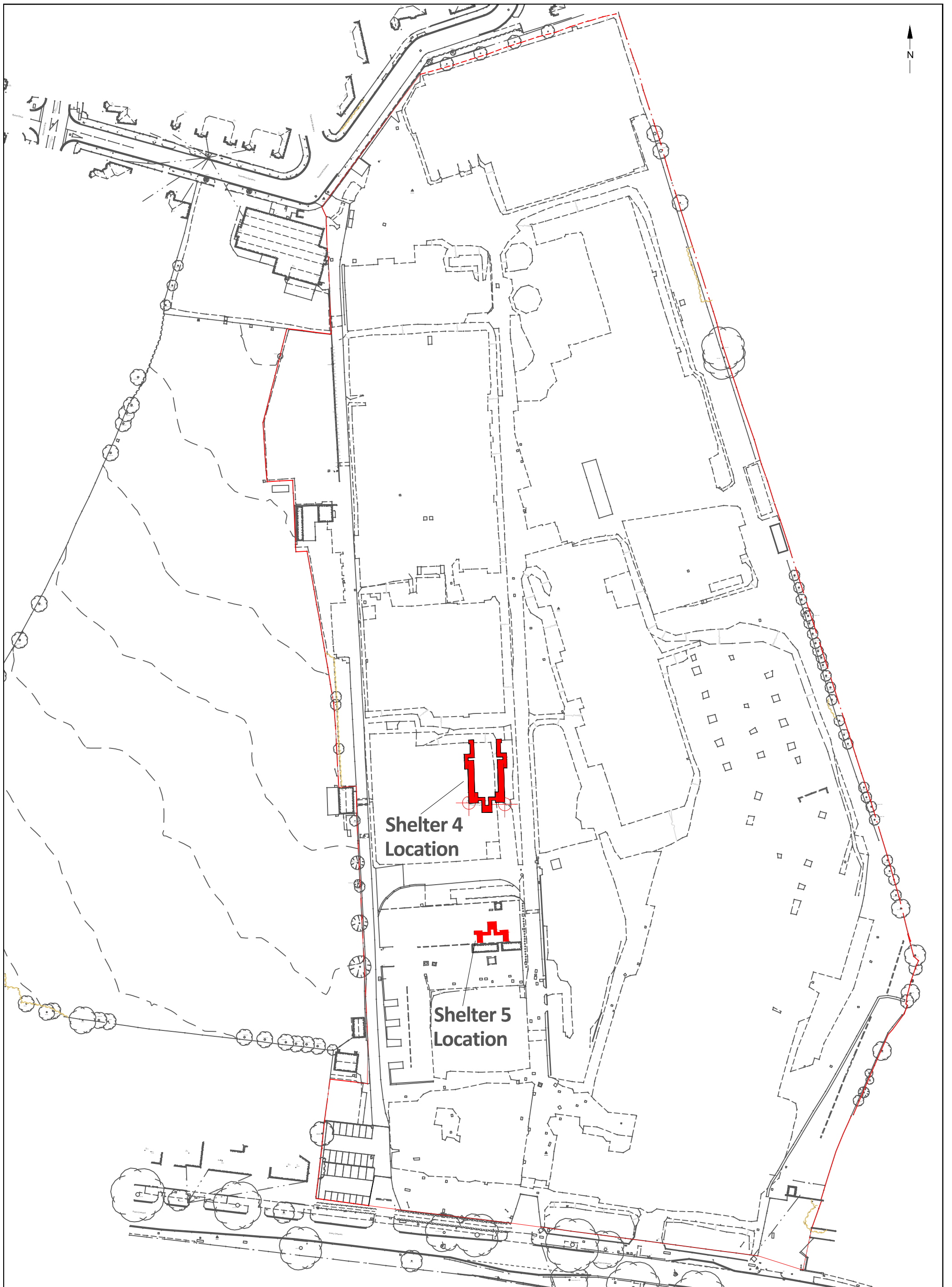
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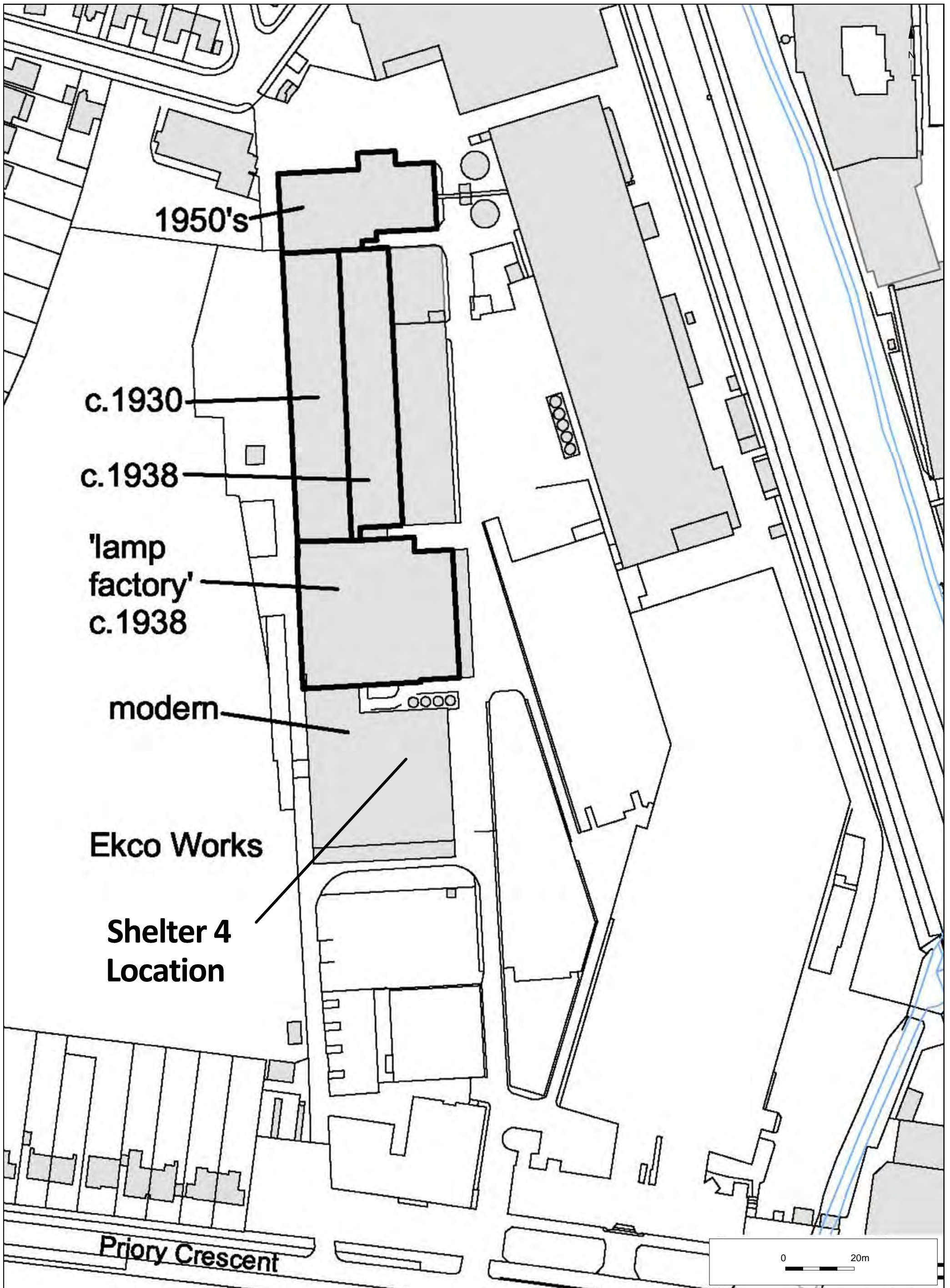


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|--------------------------|--------------|--|--|--------|
| © Archaeology South-East |              | Air raid shelter, Prittlebrook Industrial Estate, Pringle Crescent, Southend |  | Fig. 1 |
| Project Ref: 8231        | June 2016    | Site location  |  |        |
| Report Ref: 2016215      | Drawn by: HG |  |  |        |

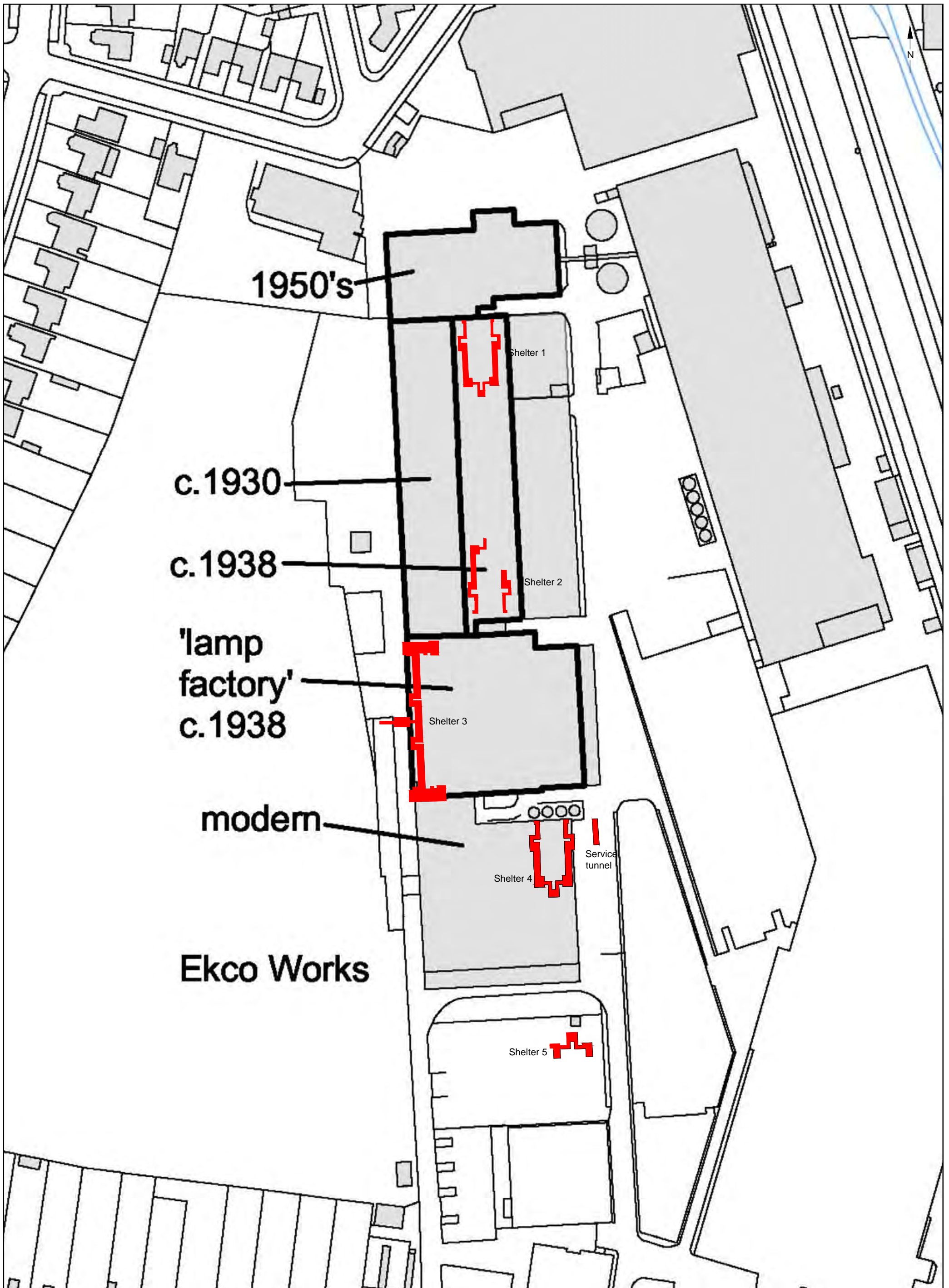












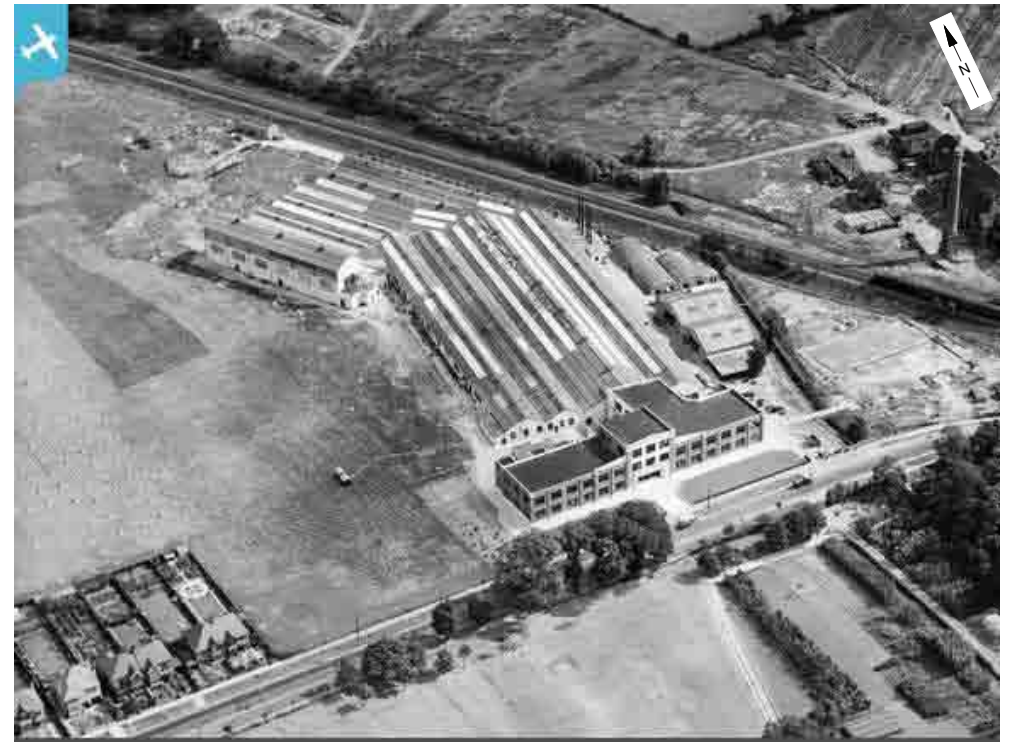






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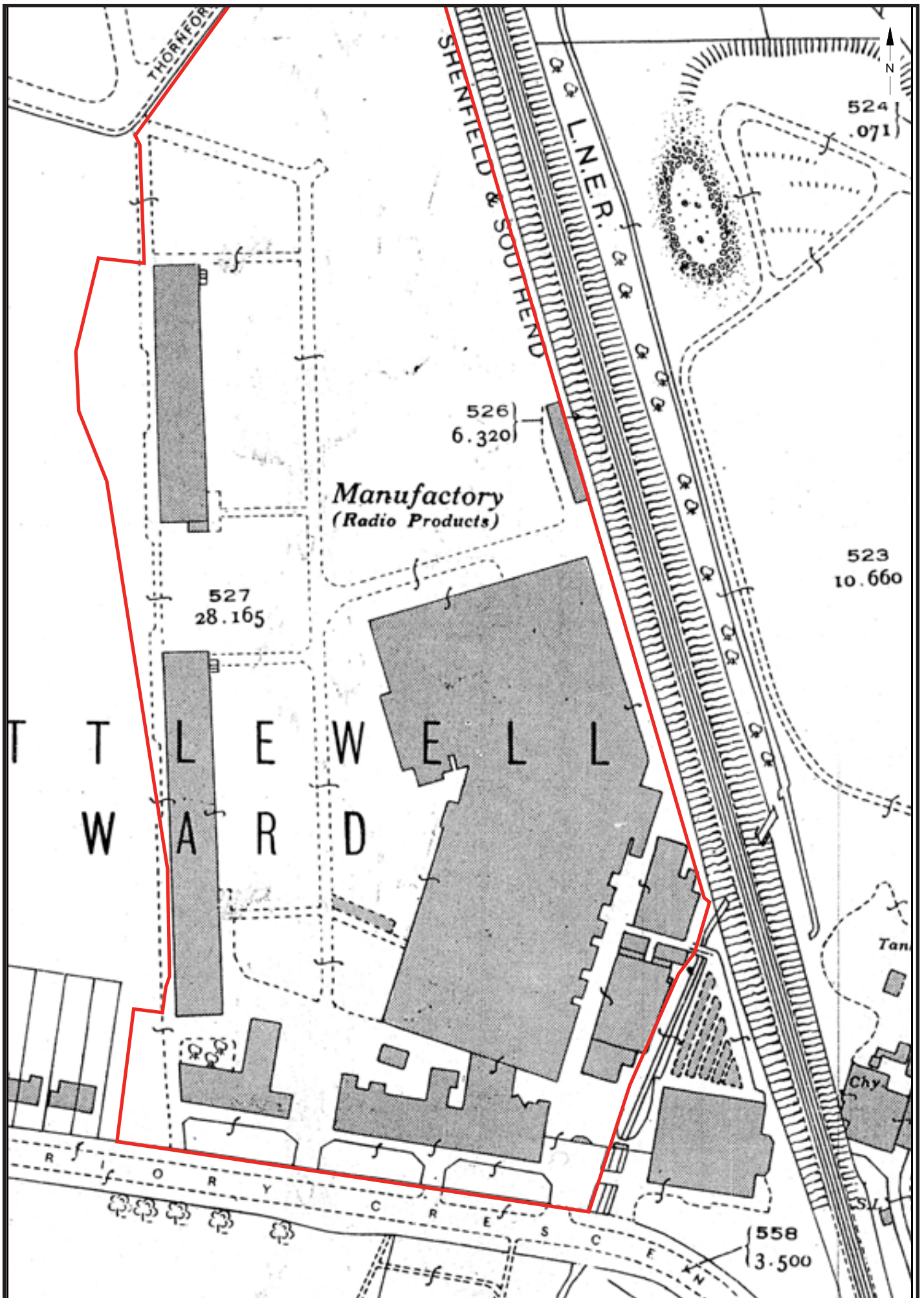
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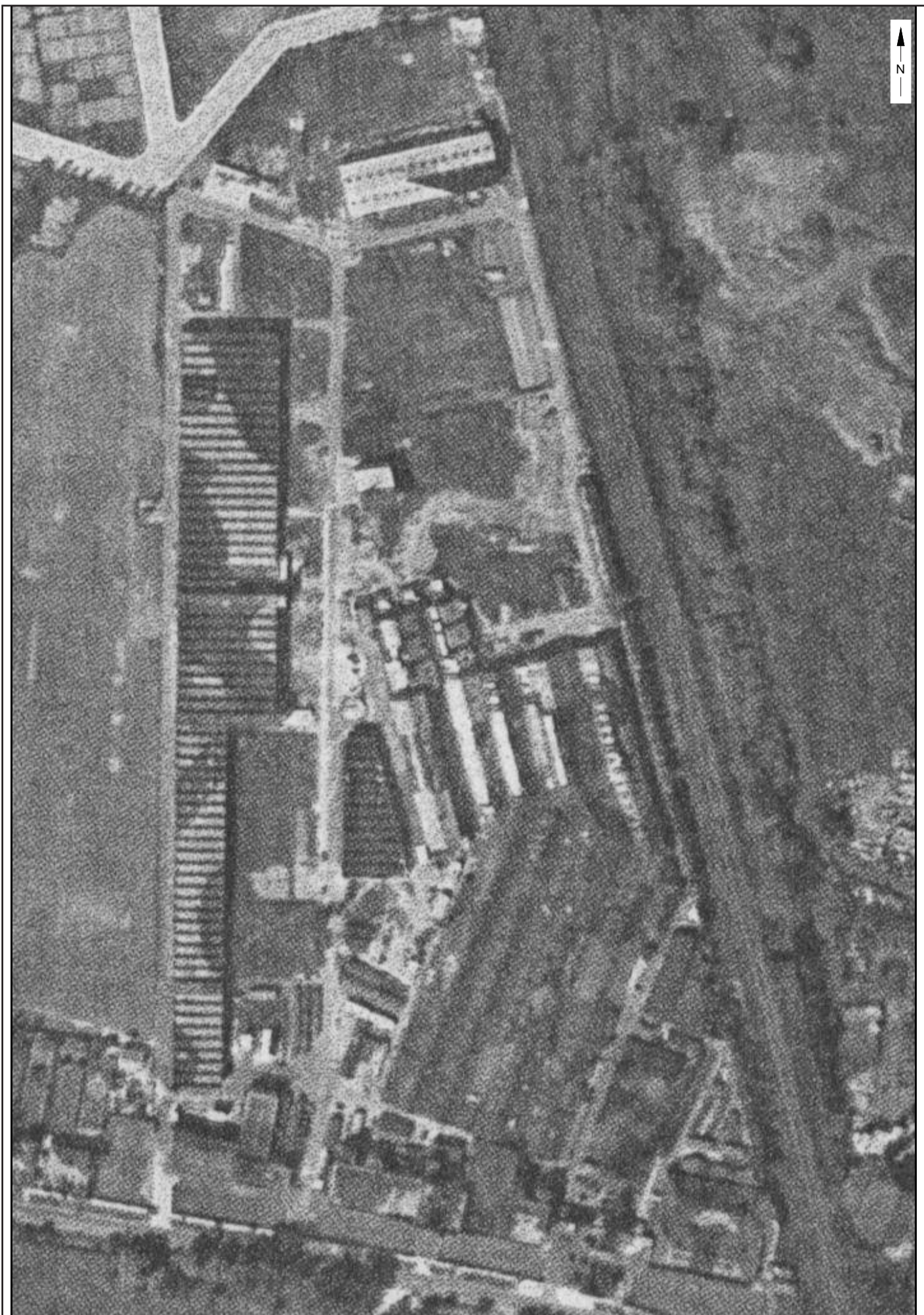
Air raid shelter, Prittlebrook Industrial Estate, Priory Crescent, Southend

Aerial view of the former Ekco Radio Products Manufacturing (July 1934)  
(Britain From Above - Ref. 045650 045654)

Fig. 6







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Air raid shelter, Prittlebrook Industrial Estate, Priory Crescent, Southend

Project Ref: 8231

June 2016

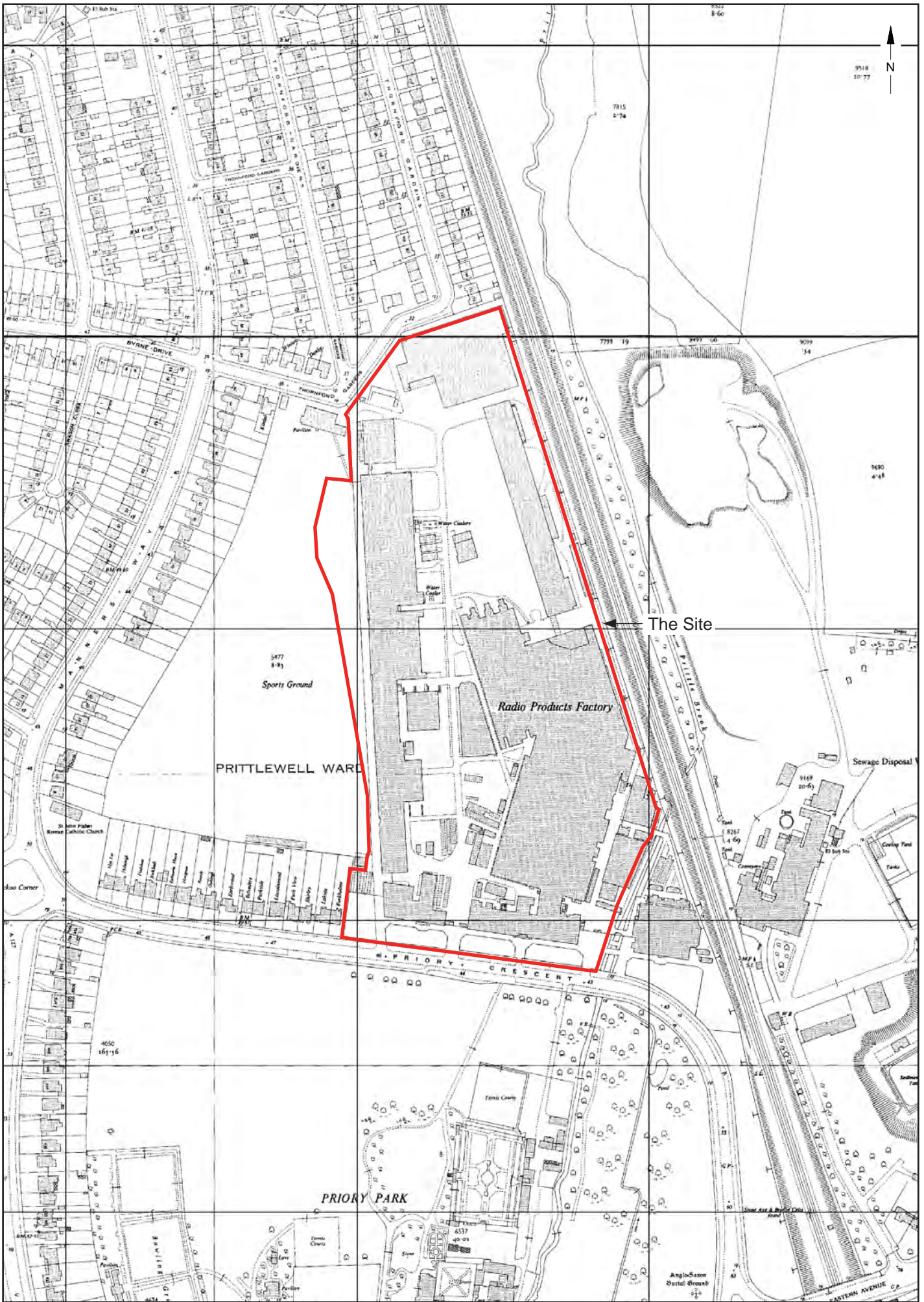
Report Ref: 2016215

Drawn by: HG

Aerial photograph of the site (1946)

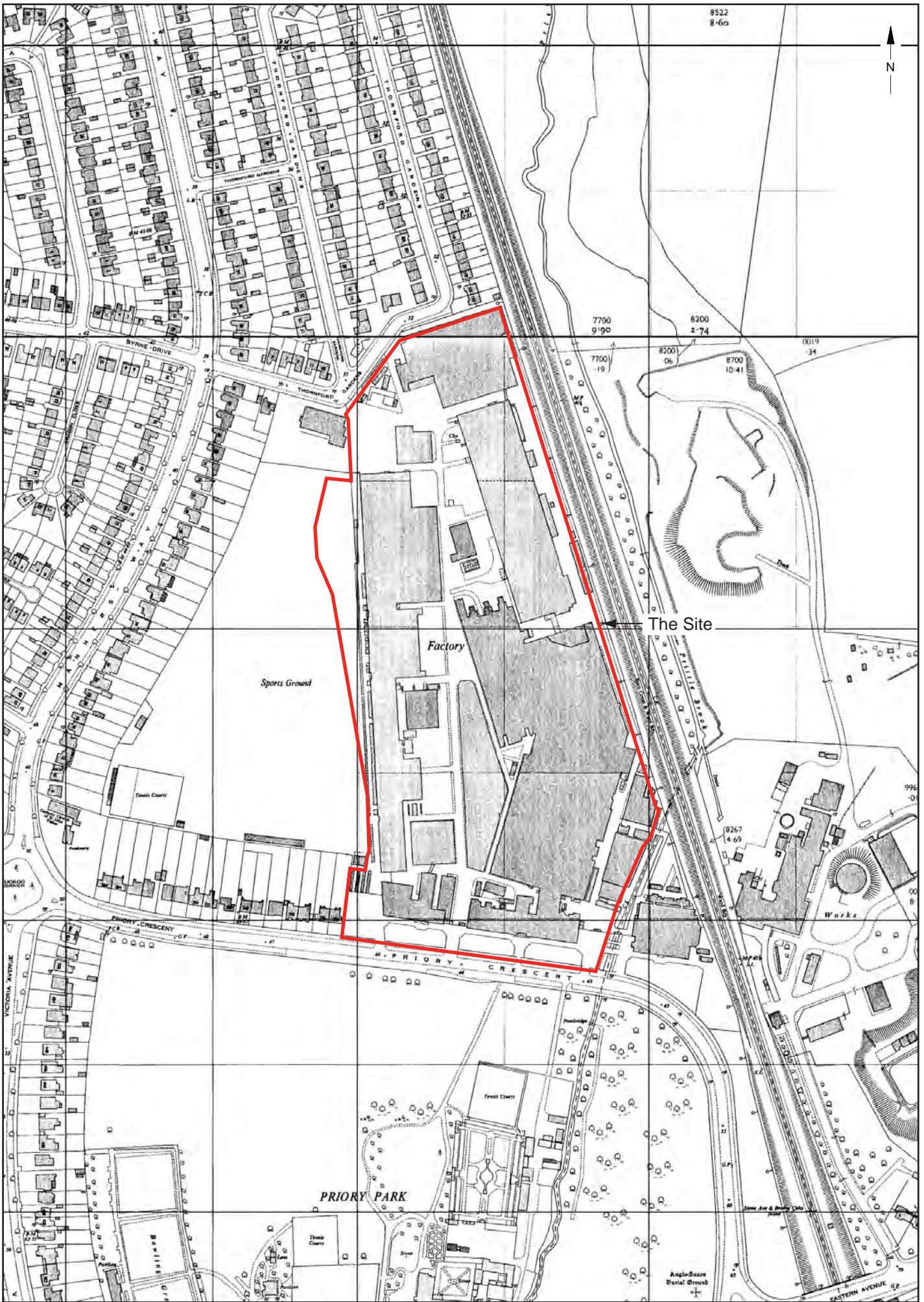
Fig. 8





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|--------------------------|--------------|---|--|--------|
| © Archaeology South-East |              | Air raid shelter, Pritlebrook Industrial Estate, Pringle Crescent, Southend |  | Fig. 9 |
| Project Ref: 8231        | June 2016    | Ordnance Survey 1:2500 (1955)   |  |        |
| Report Ref: 2016215      | Drawn by: HG |   |  |        |





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Air raid shelter, Prittlebrook Industrial Estate, Priory Crescent, Southend

Project Ref: 8231  
Report Ref: 2016215

June 2016  
Drawn by: HG

Ordnance Survey 1:2500 (1963-69)

Fig. 10



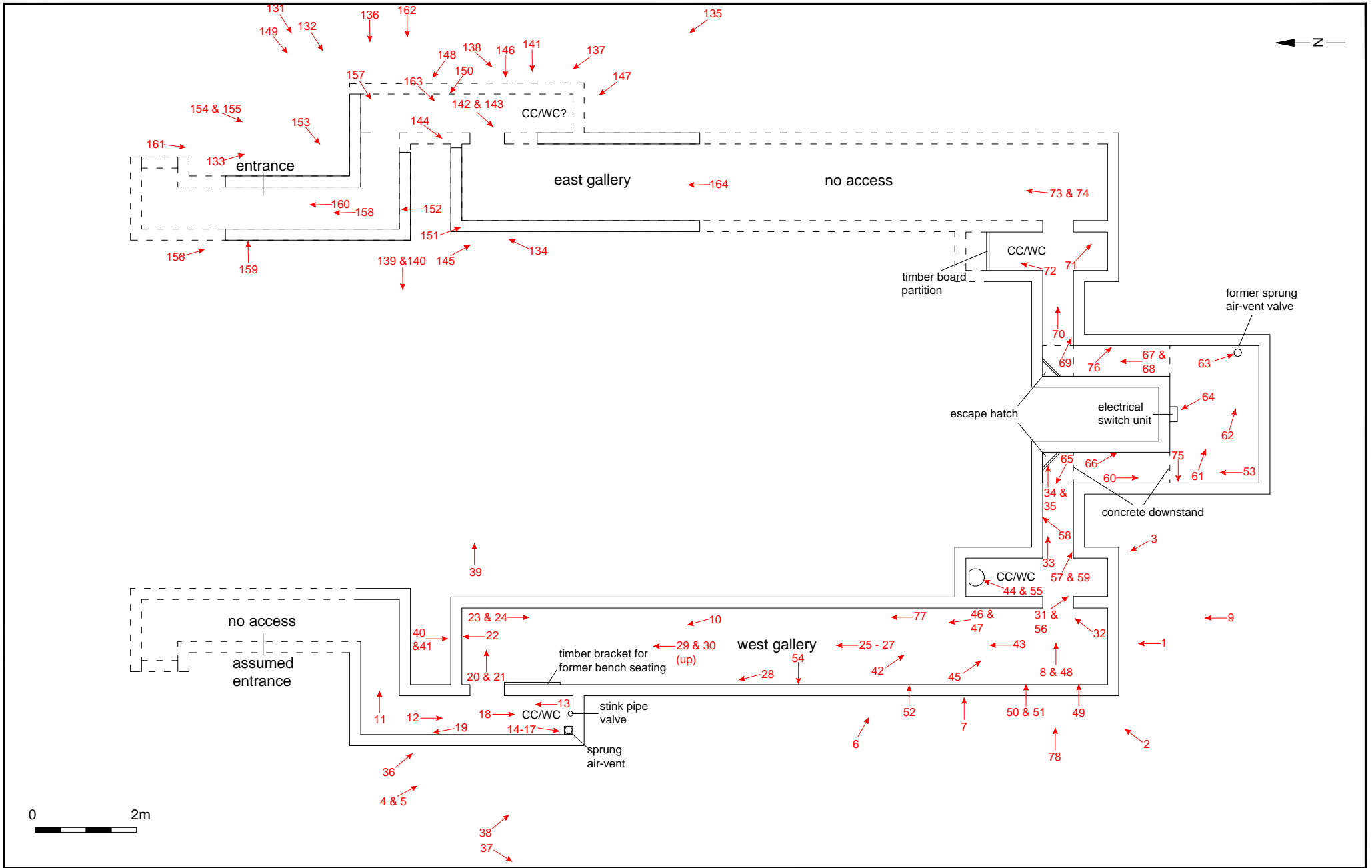




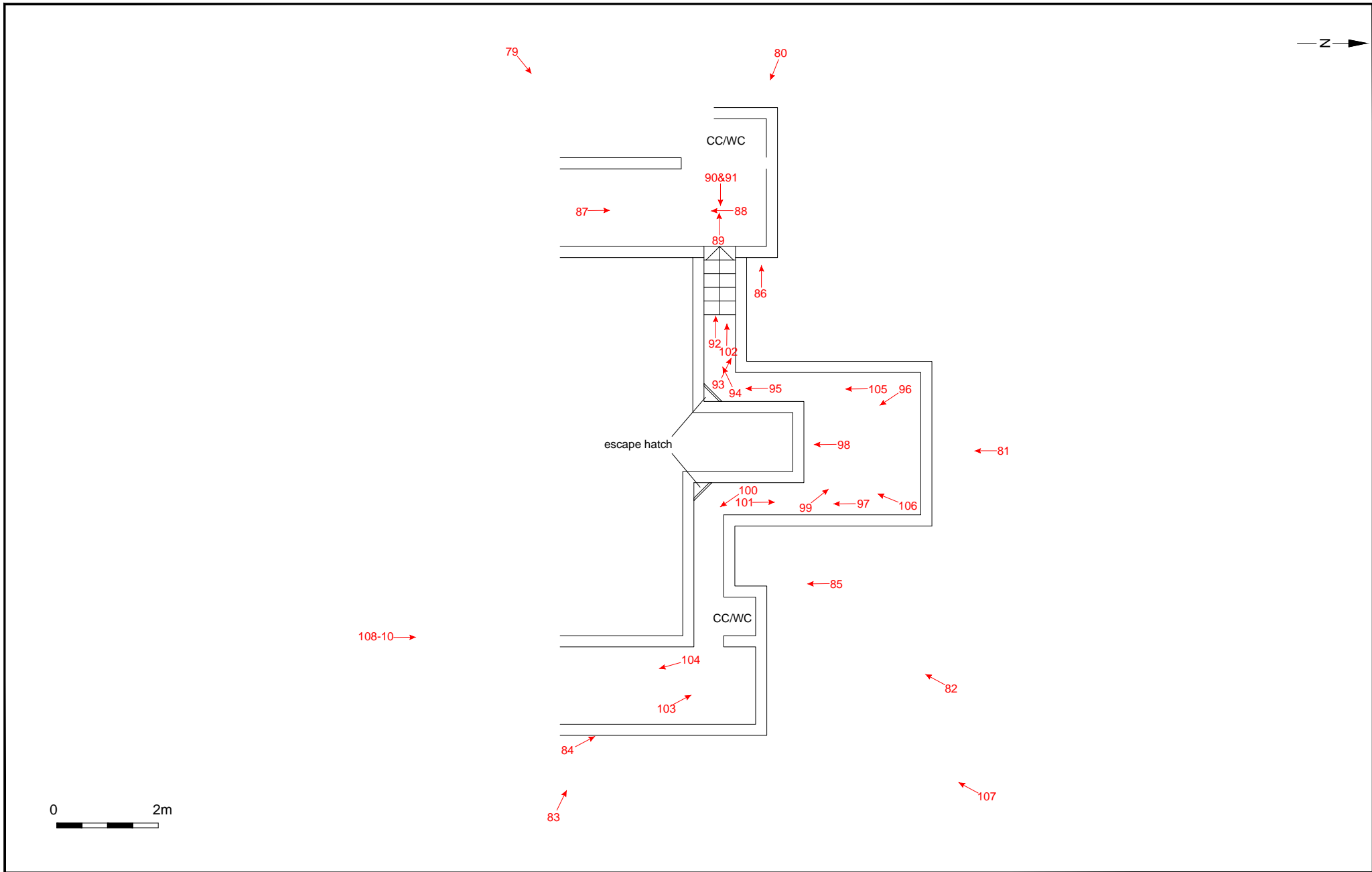


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|---------------------------------|--------------|---|---------|
| © <b>Archaeology South-East</b> |              | Air raid shelter, Prittlebrook Industrial Estate, Priory Crescent, Southend | Fig. 12 |
| Project Ref: 8231               | June 2016    | Aerial photography of the site (2016) (Google Maps)                         |         |
| Report Ref: 2016215             | Drawn by: HG |   |         |



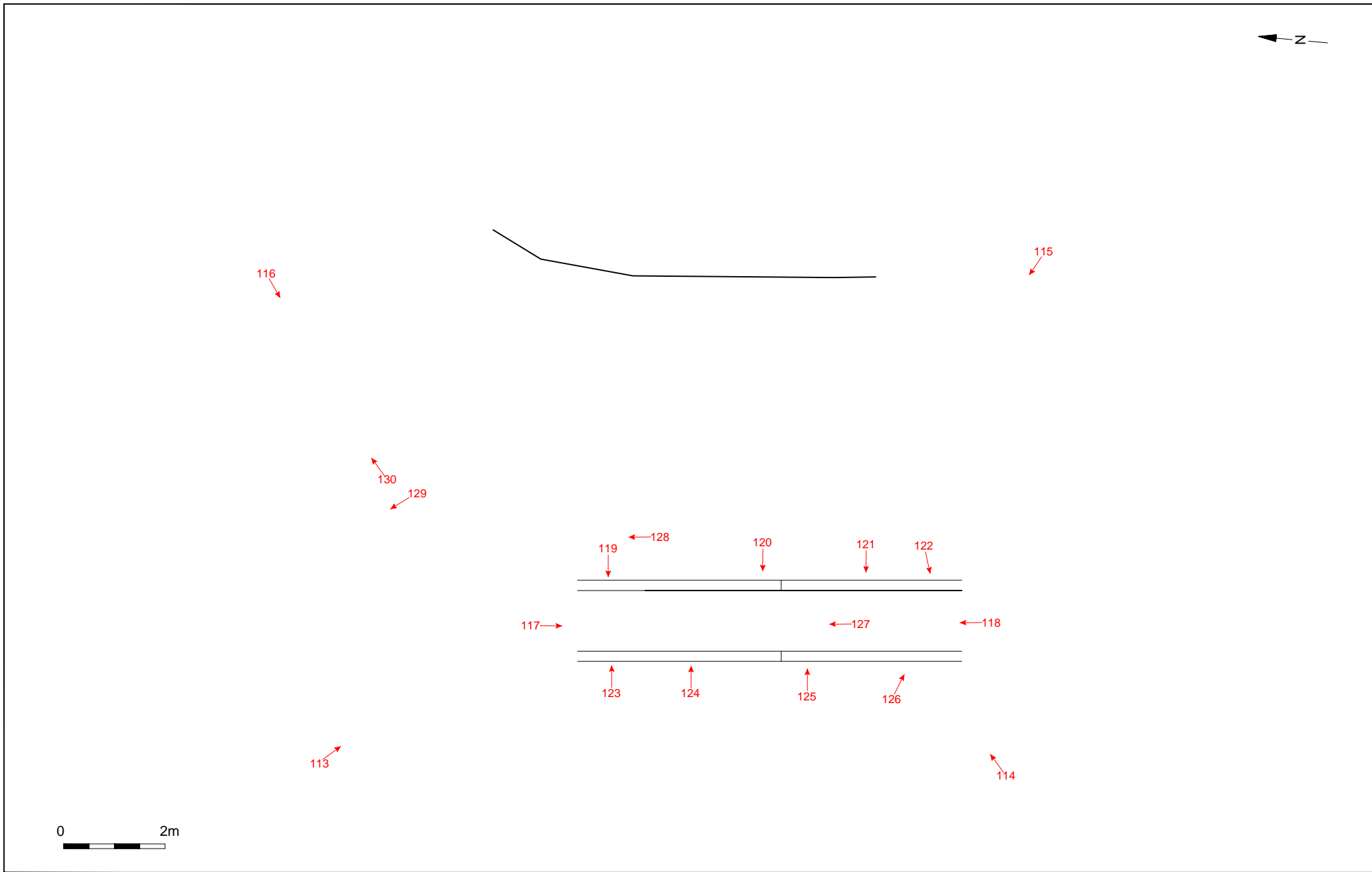


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|--------------------------|---------------|---|--|---------|
| © Archaeology South-East |               | Air Raid Shelter at the former Prittlebrook Industrial Estate,<br>Priory Crescent, Southend |  | Fig. 13 |
| Project Ref: 8231        | June 2017     | Shelter 4 - floor plan (scale 1:100)  |  |         |
| Report Ref: 2016215      | Drawn by: CPC |   |  |         |



|                          |               |   |         |
|--------------------------|---------------|---|---------|
| © Archaeology South-East |               | Air Raid Shelter at the former Prittlebrook Industrial Estate,<br>Priory Crescent, Southend | Fig. 14 |
| Project Ref: 8231        | April 2017    | Shelter 5 - floor plan (scale 1:100)  |         |
| Report Ref: 2016215      | Drawn by: CPC |   |         |





|                          |               |   |         |
|--------------------------|---------------|---|---------|
| © Archaeology South-East |               | Air Raid Shelter at the former Prittlebrook Industrial Estate,<br>Priory Crescent, Southend | Fig. 15 |
| Project Ref: 8231        | June 2017     | Service tunnel - floor plan (scale 1:100)   |         |
| Report Ref: 2016215      | Drawn by: CPC |   |         |

## **Appendix 1 Index of Digital Photographs**

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## Appendix 1 Index of Digital Photographs



SSPB15-0001



SSPB15-0002



SSPB15-0003



SSPB15-0004



SSPB15-0005



SSPB15-0006



SSPB15-0007



SSPB15-0008



SSPB15-0009



SSPB15-0010



SSPB15-0011



SSPB15-0012



SSPB15-0013



SSPB15-0014



SSPB15-0015



SSPB15-0016



SSPB15-0017



SSPB15-0018





SSPB15-0019



SSPB15-0020



SSPB15-0021



SSPB15-0022



SSPB15-0023



SSPB15-0024



SSPB15-0025



SSPB15-0026



SSPB15-0027



SSPB15-0028



SSPB15-0029



SSPB15-0030



SSPB15-0031



SSPB15-0032



SSPB15-0033



SSPB15-0034



SSPB15-0035



SSPB15-0036





SSPB15-0037



SSPB15-0038



SSPB15-0039



SSPB15-0040



SSPB15-0041



SSPB15-0042



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SSPB15-0049



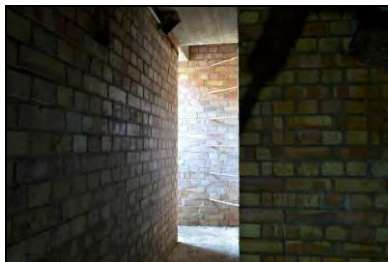
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SSPB15-0055



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SSPB15-0058



SSPB15-0059



SSPB15-0060



SSPB15-0061



SSPB15-0062



SSPB15-0063



SSPB15-0064



SSPB15-0065



SSPB15-0066



SSPB15-0067



SSPB15-0068



SSPB15-0069



SSPB15-0070



SSPB15-0071



SSPB15-0072





SSPB15-0073



SSPB15-0074



SSPB15-0075



SSPB15-0076



SSPB15-0077



SSPB15-0078



SSPB15-0079



SSPB15-0080



SSPB15-0081



SSPB15-0082



SSPB15-0083



SSPB15-0084



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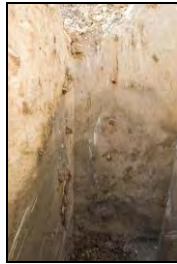
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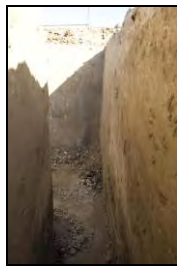
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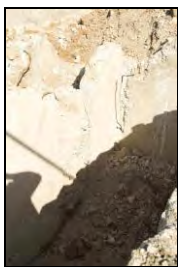
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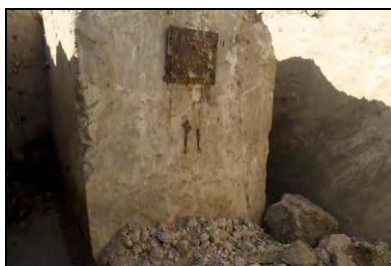
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SSPB15-0111



SSPB15-0112



SSPB15-0113



SSPB15-0114



SSPB15-0115



SSPB15-0116



SSPB15-0117



SSPB15-0118



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SSPB15-0158



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SSPB15-0160



SSPB15-0161



SSPB15-0162



SSPB15-0163



SSPB15-0164



## Appendix 2 Ekco Works Advertisement

**communication equipment**

Ekco have specialised in the production of light-weight V.H.F. communication equipment for all purposes in war and peace—complete ground and airborne installations for civil and military aircraft; pack sets; mobile receivers for car and motor cycle operation.

*Ekco also manufacture* :—Radar apparatus, cloud warning systems and other highly specialised equipment.

**Domestic Radio Receivers**  
Special export models are designed, built and life-tested for the conditions obtaining in the countries concerned; their distinguished styling studies the tastes of many nationalities, their quality and reliability have spread the fame of Ekco to the far corners of the earth.

**Car Radio**  
Ekco Car Radio, outstanding for efficiency, safety and performance, is chosen by leading British car manufacturers as standard and optional equipment on their finest cars. A new and most comprehensive range now caters for car, coach and commercial vehicle.

**Ekcovision**  
British Television leads the world and Ekcovision receivers are acknowledged leaders for quality and reliability in the British Television Industry.

STAND NO. G 51 (OLYMPIA)

**EKCO RADIO**

E. K. COLE LTD. SOUTHEND-ON-SEA. ESSEX

Ekco Works advertisement for communication equipment – dated 1949.  
(Source: [http://www.gracesguide.co.uk/E.\\_K.\\_Cole](http://www.gracesguide.co.uk/E._K._Cole))

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## Appendix 3 OASIS Data Collection Sheet

OASIS ID: archaeol6-253697

### Project details

|  |   |
|--|---|
| Project name                           | Historic Building Record (Level 3) - AIR-RAID SHELTERS AT THE FORMER PRITTLEBROOK INDUSTRIAL ESTATE, PRIORY CRESCENT  |
| Short description of the project       | In May 2016, April 2017 and June 2017, Archaeology South-East (a division of the Centre for Applied Archaeology, UCL) carried out a programme of historic building recording of two air-raid shelters on the site of the former Ekco Works, Prittlebrook Industrial Estate, Priory Crescent, Southend, SS2 6JX, prior to the proposed redevelopment of the site. This recording exercise forms a detailed survey of the most recently discovered air-raid shelters (Shelters 4 and 5) within the site to Historic England Level 3 standard. The structures form part of a wider group of shelters formerly located beneath the Ekco Works, which is now demolished. Three air-raid shelters have previously been recorded on the site, firstly by the Essex County Council Field Archaeology Unit (ECC FAU; now part of ASE) who produced a measured survey and historic building record to English Heritage Level 3 for Shelters 1 - 3, in 2008. An additional assessment was carried out by Archaeology South-East in 2014 in order to record the condition of the shelters and the degree of survival of interior fixtures and fittings since the initial recording exercise. As a result of the initial recording exercise, surviving fixtures and fittings were removed by Southend Museum for their preservation in advance of the shelters' proposed demolition / infilling. |
| Project dates                          | Start: 17-05-2016 End: 08-06-2017   |
| Previous/future work                   | Yes / Not known   |
| Any associated project reference codes | SSPB 16 - Sitecode  |
| Any associated project reference codes | 2016215 - Contracting Unit No.  |
| Type of project                        | Building Recording  |
| Site status                            | None  |
| Current Land use                       | Vacant Land 1 - Vacant land previously developed  |
| Monument type                          | AIR-RAID SHELTER Modern   |
| Significant Finds                      | NONE None   |
| Project location                       |   |
| Country                                | England   |
| Site location                          | ESSEX SOUTHEND ON SEA SOUTHEND ON SEA AIR-RAID SHELTER AT THE FORMER PRITTLEBROOK INDUSTRIAL ESTATE, PRIORY CRESCENT, SOUTHEND  |
| Postcode                               | SS2 6JX   |
| Study area                             | 7.3 Hectares  |
| Site coordinates                       | 587625 187790 587625 00 00 N 187790 00 00 E Point   |
| Project creators                       |   |
| Name of Organisation                   | Archaeology South-East  |
| Project brief originator               | Archaeology South-East  |
| Project design originator              | Bellway Homes Ltd   |
| Project director/manager               | Ron Humphrey/Amy Williamson   |
| Project supervisor                     | Hannah Green  |
| Type of sponsor/funding body           | Bellway Homes Ltd   |

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|                                  |   |
|----------------------------------|---|
| Project archives                 |   |
| Physical Archive Exists?         | No  |
| Digital Archive recipient        | Southend Museum   |
| Digital Archive ID               | SSPB 15   |
| Digital Contents                 | "none"  |
| Digital Media available          | "Images raster / digital photography","Text"  |
| Paper Archive recipient          | Southend Museum   |
| Paper Archive ID                 | SSPB 15   |
| Paper Contents                   | "none"  |
| Paper Media available            | "Aerial Photograph","Correspondence","Drawing","Notebook - Excavation","<br>Research"," General Notes","Photograph","Unpublished Text"      |
| Project bibliography 1           |   |
| Publication type                 | Grey literature (unpublished document/manuscript)   |
| Title                            | Historic Building Record (HE Level 3) - Air-raid shelters at the former Prittlebrook<br>Industrial Estate, Priory Crescent, Southend on Sea |
| Author(s)/Editor(s)              | Green, H.   |
| Author(s)/Editor(s)              | Curtis, C.  |
| Other bibliographic details      | 2016215   |
| Date                             | 2016  |
| Issuer or publisher              | Archaeology South-East  |
| Place of issue or<br>publication | Archaeology South-East  |
| Entered by                       | Amy Williamson (amy.williamson@ucl.ac.uk)   |
| Entered on                       | 8 June 2017   |

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**Sussex Office**

Units 1 & 2  
2 Chapel Place  
Portslade  
East Sussex BN41 1DR  
tel: +44(0)1273 426830  
email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
[www.archaeologyse.co.uk](http://www.archaeologyse.co.uk)

**Essex Office**

27 Eastways  
Witham  
Essex  
CM8 3YQ  
tel: +44(0)1376 331470  
email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
[www.archaeologyse.co.uk](http://www.archaeologyse.co.uk)

**London Office**

Centre for Applied Archaeology  
UCL Institute of Archaeology  
31-34 Gordon Square  
London WC1H 0PY  
tel: +44(0)20 7679 4778  
email: [fau@ucl.ac.uk](mailto:fau@ucl.ac.uk)  
[www.ucl.ac.uk/caa](http://www.ucl.ac.uk/caa)

