WW2 FACTORY PILLBOX AT
BRAEFIELD PRECISION ENGINEERING LTD
HIGH LANE
STANSTED MOUNTFICHET
ESSEX

LEVEL 3 HISTORIC BUILDING RECORD

Essex County Council

Field Archaeology Unit

January 2013

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As part of our desire to provide a quality service, we would welcome any comments you may have on the content or the presentation of this report.

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WW2 FACTORY PILLBOX AT
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ESSEX

LEVEL 3 HISTORIC BUILDING RECORD

Client: Castleoak Care Developments Ltd
FAU Project No: 2643
Planning Application: UTT/310/12/FUL
NGR: TL 5146 2560
OASIS No: 140501
Date of Fieldwork: 17th December 2012

1.0 INTRODUCTION

A programme of historic building recording was undertaken on the site of Braefield Precision Engineering prior to demolition of the factory as part of the redevelopment of the site as a residential care home. The work was commissioned by Castleoak Care Developments Ltd and carried out by Essex County Council Field Archaeology Unit (ECC FAU) following a brief produced by Essex County Council Heritage Environment (ECC HE) (place Services) team and a written scheme of investigation produced by ECC FAU.

Copies of the report will be supplied to ECC HE team and the Essex Historic Environment Record (EHER) at County Hall, Chelmsford. The archive will be deposited with Saffron Walden Museum. An OASIS online record has been created at *http://ads.ahds.ac.uk/oasis/index.cfm*.

During World War 2, the factory was used by 'Ediswan' to manufacture radio valves and light bulbs. The pillbox formed part of a secondary defence line stretching from Cambridge to Bishop's Stortford and may also have been used as a 'factory roof-spotter's post'. Although not listed, the importance of the pillbox is recognised by English Heritage as Monument 1422487 in its National Monuments Record.

2.0 BACKGROUND

2.1 Site location and description

The factory is located towards the north-east edge of Stansted Mountfichet on the corner of High Lane and Coltsfield at NGR TL 5146 2560 (fig. 1 & plate 1) and is surrounded by modern housing estates.

Both factory and pillbox appear to be contemporary and built from red brick and concrete. The pillbox is located near to the south-east corner of the factory and is three storeys high with good views on all sides from the top while the factory is generally single-storeyed apart from a 1960s extension in the south-west corner. Surrounding the structures, the ground is laid to tarmac, with car parking areas and access to the south and to the loading bay on the western end of the factory.

The site is bounded by wooden fencing, with the main gates off Coltsfield and others located in the south-east corner and to the north, leading to the yard at the back of the premises. At the time of the survey the engineering works were still in use while the company waited for new premises. The pillbox is currently used for water tanks and as access to the factory basement.

2.2 Planning background

An application for demolition of the structures and the construction of a new care home was submitted to Uttlesford District Council in March 2012 (UTT/0310/12/FUL). In view of the impact of the proposed works upon the historic integrity of the existing buildings, Essex County Council Heritage Environment team advised that an English Heritage Level 3 standard historic building record should be made prior to demolition as a condition of the planning consent. The condition was based upon advice contained in *Planning Policy Statement 5: Planning for the Historic Environment.*

2.3 Historic research

Historical background to the site was supplied by Stansted Local History Society, Peter Collins, manager of the factory and from the English Heritage monument description made as part of the Defence of Britain Project which recorded nearly 20,000 twentieth century military sites in the United Kingdom between 1995 and 2002 *(www.archaeologyuk.org › CBA Research)*. The monument description is reproduced below. The holdings of the Essex Record Office, Chelmsford were investigated and an enquiry was made to the Imperial War Museum (Duxford) for further information.

MONUMENT NO. 1422487

Description

A Second World War pillbox, built in concrete and brick onto the top of a factory in north-west Stansted Mountfichet. An alternative interpretation is that it was a roof spotter post, used to detect incoming air raids and reduce time-wastage through false air-raid alarms at the factory.

Detailed description

Pillbox, built onto the top of a factory. Slight alterations have taken place to the factory, but the pillbox survives intact. There are small embrasures in each side which are now glazed.

Bernard Lowry suggests that this is in fact a 'factory roof spotters post'. Roof spotters were employed at some factories to warn of the approach of enemy aircraft (as opposed to air raid warnings). Too much production had been lost due to false alarms - so roof spotters were employed to warn of approach of aircraft so staff could go to shelters (often within the factory buildings). These features are found on other WW2 factories and ammunition storage areas (www.pastscape.org.uk).

The land to the west of High Lane was open farmland up until the arrival of the factory in WW2. During the war 'Ediswan' used the factory to manufactured valves for radio sets, etc and the pillbox formed part of a secondary defence line stretching from Cambridge to Bishop's Stortford along the river valleys (R. Philips pers. comm.). Most of these pillboxes are now obscured by trees (P. Collins pers. comm.).

The 1946 Ordnance Survey map depicts the factory along with a second, larger probable industrial structure to the south that appears to occupy the same plot (fig. 2). The nature of this second structure is unknown but its absence on maps both preceding and succeeding the 1946 map suggests this was also of wartime construction, perhaps only temporary, and is therefore likely to be associated with the factory.

The company became Edison Mazda in the 1950s and later on became Edison Swan Electrics Co. In later years the factory was taken over by Husquarva to manufacture sewing machines (P. Collins pers. comm.). A two-storey reception/staff room/stores/office was added in the 1960s (fig. 1) (factory employee pers. comm.). A smaller extension for a new boiler house was added to the south-east corner at a later stage.

Braefield Engineering has been in operation for 35 years (*www.braefield.net)* and is expecting to vacate the site and move to new premises in Great Dunmow some time in 2013.

3.0 OBJECTIVES

The purpose of the survey was to record the pillbox to English Heritage Level 3 standards (English Heritage 2006). This entailed the creation of an external and internal descriptive record addressing materials, architectural elements, historic fixtures and fittings and original internal layout, plus a colour and black and white photographic record as outlined in the FAU written scheme of investigation (2012). A drawn survey was produced of the pillbox depicting floor plans and a cross-section drawn at 1:50, and are reproduced as figures in this report.

4.0 DESCRIPTION OF WORKS

The survey was undertaken prior to the closure of the factory, on a normal working day. Access was possible around the site and inside the pillbox. A basic external record of the factory was required to place the pillbox in its historic and architectural context, but no internal record was required. As part of the survey, external and internal architectural descriptions were made and plans and cross-section were drawn and which are annotated in the report to show structural changes and surviving historic features.

A series of photographs (digital and 35mm black & white print) were taken internally and externally. Specific shots were taken of any areas of important architectural detail, fixtures and fittings. A representative selection of these photographs is reproduced at the back of the report as plates 1-16. The remainder can be found in the archive

In the following section, the factory is described first to provide context, followed by the pillbox, which is the main subject of the report.

5.0 BUILDING DESCRIPTIONS

5.1 General description

The site is a broadly rectangular area of c.82m by 45m extent, whose perimeter is largely defined by modern wooden fencing apart from the eastern side that is open-sided except for the gates to the northern yard. Much of the area is occupied with the factory building, which remains essentially unaltered apart from some additions to the south-west and south-east corners. The main entry point into the factory is located on the south side, with other gates standing to the north, all of which are modern and plain in form.

5.2 Factory

The 1940s valve factory is a large single–storeyed brick structure with factory-style roofs (i.e. with north lights) and a large two-storeyed extension on the south-west side, believed to have been built in the 1960s. There is a smaller extension to the south-east which contains the boiler room. Other more minor additions appear to have been made on the north side, but were not examined closely.

The factory is constructed in hard, roughly-textured red bricks arranged in stretcher/cavity wall bond with headers and three-quarter bricks every three stretchers, the reasoning for which is unknown. The other unifying factor is a continuous concrete lintel above the windows found on all but the western elevation, where the loading doors are positioned. Original metal-framed Crittalls windows survive on all but the west elevation and there is little doubt that the factory is contemporary with the pillbox.

The south elevation contains the main entrance, which has been overbuilt by the 1960s extension (plate 2). Between the entrance and pillbox are the staff toilets/washrooms that contain small top-opening windows typical of their function. Originally there was a flat roof over this part, indicated by the blocked roof doorway from the pillbox (plate 3). The pitched roof is likely to be contemporary with the south-east corner extension and continues round to the east elevation, which was also originally flat-roofed (plate 4). Drawing offices are located on this side (fig. 1) and so is the east (workers) entrance that leads onto the main corridor and factory area, which retains its porch and doors. The windows on this side have been replaced. The factory elevation on the north side (plate 5) retains its multi-pane metal factory windows with very little sign of later alterations. The contrast between the modern extension and the 1940s loading bay is clearly seen on the west elevation (plate 6).

As far as can be seen, the original internal layout contained the main open-plan factory area with stores/dispatch areas to the west end and toilets to the south and offices to the east linked by an L-shaped corridor. It is a functioning building typical of mid-20th century factory design and contains no architectural embellishments of note or historic fixtures and fittings.

5.3 Pillbox

The pillbox was built as an integral part of the wartime factory and using the same materials, in rough-textured red brick with concrete dressings and concrete floors. At its largest it measures 5.25 by 2.7m and stands to a height of approximately 7.15m. The main elevation faces the south and the likely direction of airbourne attack either from the coast and/or the nearby airfields at Easton Lodge and Stansted (R, Phillips pers. comm.). Internally there are three floors (figs. 3-5), the most important being the second floor look-out area that commanded good views on all sides. A chimney at the back is integral to the build and probably served a boiler down in the basement but also provided some warmth inside the pillbox.

The main part of the tower is built in English bond, which is a much stronger form of brickwork suitable for its purpose, while the remainder, over the stairs, is built in 14-inch stretcher or cavity wall bond. Whether such changes in brick bond indicates repair, is unclear.

All floors and ceilings are made of concrete and the ceilings are supported on 5-inch concrete ribs reinforced with iron rods.

5.3.1 External description

Externally the ground floor forms the south-east corner of the factory, indicated by the ending of the concrete brick band and change in brickwork here (plate 7). The pillbox tower extends from the ground floor/first floor landing, which is lit by the rather prominent Crittalls casement window on the south side, up to the top floor (plates 7 & 8). It is interesting to note the retention of the post-war outside light on the corner that pre-dates the extension.

On the way to the top floor, the roof slopes from the low parapet over the front over the stair. Sloping roofs such as these were often bomb-deflecting measures, though in this case their effectiveness would be minimized by the parapet at the front. The parapet walls are capped with concrete slabs and felt covers the roof, probably added later. The two side elevations are very similar in form and contain minimal features. On the west side is a blocked doorway

(plate 8) leading onto what was originally a flat roof over the front of the factory, where the spotter would have had a less limited view.

Pre-cast concrete rifle loops on the second floor incorporate splayed reveals and sills on all sides that ensured all-round coverage and vision across the corners of the building (fig. 5). Above is a flat concrete roof and no evidence for access from below or for a gun having been mounted on the top. The chimney to the rear is plain in form apart from a concrete band at the top, matching that along the top of the factory walls. It is now redundant.

5.3.2 Internal description

The interiors are largely empty and unused by the factory apart from providing access to the basement and to hold water tanks on the first and second floors. Given the relative height of the building and nearby toilets, those on the first floor probably represent earlier header tanks, etc, but there were clearly none on the top floor during the war.

The interiors have changed very little and retain white-painted brick walls and a few general WW2 fixtures and fittings such as lights and electricity cable conduits. There is no evidence for other more temporary features such as furniture, wartime posters, stenciled signage, etc.

Ground floor (fig. 3)

Entry is via the main factory corridor through a four-panel glazed door and semi-glazed boarded partition (plate 9). The room has a concrete floor and ceiling (plate 10) and is empty apart from a metal cabinet and large Perspex sheet against the west wall. On the east wall is a Crittalls casement window the same as that on the south elevation, with a concrete sill and lintel and wide handles, which is now enclosed by the boiler room (plate 11). The doors leading to the first floor and basement are post-war replacements or insertions into previously open doorways (plate 10).

The ground and first floors are linked by a dog-leg concrete stair. Above the south window is a WW2 light fixture (plate 12).

First floor (fig. 4)

At the top of the stair is the blocked doorway onto the roof, now adapted to serve the roofspace, which is a modern alteration (plate 13), probably because flat roofs require more maintenance. The main area contains water tanks and a modern immersion heater cylinder, which inhibited access in the survey but given its height probably reflects original usage on this floor.

A quarter-turn concrete stair links the first and second floors.

Second floor (fig. 5)
The main functional space of the building occupies a floor area of only 3.42m² and has a 2.00m high ceiling. The inclusion of the narrow safety wall against the side of the stairs makes the area quite cramped and with the modern water tanks occupying most of the floor area (fig. 5) there is no access around the room at all.

Concrete rifle loops are fitted on all sides, central to each wall apart from the southern one, which is off-centre to allow for the stairs (plate 14). They are 1.45m from the floor to allow firing from a standing position and each embrasure has a splayed sill and angled reveals like the loopholes on the outside, to allow greater manoeuvrability (plate 15). Each is now glazed with small glass panes to keep out the elements.

The top ceiling is made of shuttered concrete with no access to the flat roof above. Its thickness is unknown.

Plate 16 shows the factory basement that is partly located beneath the pillbox. Since its association was primarily with the factory rather then the pillbox, the basement was not drawn, but it may have been used as an air-raid shelter during the war.

6.0 DISCUSSION AND CONCLUSION

As far as can be seen, the 1940s Ediswan factory survives to a large extent as Braefield Engineering works and there is no doubt that the factory and pillbox were constructed together. The form and style of brickwork and concrete dressings of the factory matches that of the pillbox and the factory-style Crittalls windows and north lights are typical of pre- and post-war 20th-century industrial architecture. The only major changes to have occurred are two extensions on the front. Since the exterior is largely intact, it is assumed that the existing internal layout of the factory has not changed appreciably in basic terms, with the main open-plan factory area occupying much of the ground plan with stores/dispatch areas to the west end, toilets to the south and offices to the east linked by a corridor.

Externally and internally the appearance and fabric of the pillbox has changed very little. The most noticeable changes have been the later extension built onto its south-eastern corner and the infilling of the former roof door on the western side. Internally the pillbox has been

largely redundant since the war, except as access points to the basement and roofspace of the factory and siting of water tanks. The most important part of the pillbox was the top floor and the lower floors were primarily a means of getting there. From the top floor there were views on all sides and gun loops for rifles with an angled range of fire to sweep in front, protect the corners, and fire downwards towards the ground. However, the main function would appear to have been as an observation point, since it was not equipped to carry guns larger than rifles, which at this height would have been more effective than machine guns which would more likely be sited in the ordinary, land-based and more heavily-armoured concrete pillboxes.

Being built in wartime, reputably on or augmenting, an existing line of pillboxes, it was probably a requirement of the time to utilise the building as a vantage point within that line. Whether or not 'roof spotters' were employed by the factory is unknown, but they were commonplace on factories, e.g. their employment at the Crittalls factory in Braintree (A. Lewsey pers. comm.). The extent to which the pillbox was manned during the day and night and by whom, by either volunteers or perhaps the Home Guard, is not known. Nor are the everyday details of factory working during wartime, though doubtless there are local residents who hold such information. Were there to be an invasion this would be the second line of defence in a land-based assault, but were the invasion to be led by aircraft carrying paratroopers, which was a growing concern through the war (Nash in Letch 2009), this could have been on the front line. Regardless of invasion, the factory, which was probably operating both day and night, was an enemy target and a roof spotter would be a good way of ensuring effective evacuation of workers during an air raid.

The pillbox at Braefield Engineering is a rare and important survivor from WW2 that retains its historic context with the factory that it served and it is difficult to cite similar examples from the area. It commanded a significant position as part of a line of pillboxes that reportedly remain in the surrounding fields and countryside and which were a very real line of defence in wartime. The value of structures such as these is not always appreciated, but they illustrate the wide diversity of defensive and anti-invasion structures that go beyond the more commonly known pillboxes and gun emplacements. Now surrounded by modern development, the factory has come to the end of its useful life and is to close, losing a link to an important era in 20th century history.

ACKNOWLEDGEMENTS

Thanks are due to Castleoak Developments Ltd for commissioning the survey and to Peter Collins and staff at Braefield Engineering for facilitating the survey. Thanks also to Paul Embleton and Ralph Phillips of the Stansted Local History Group for their valuable information. Fieldwork, recording and photography were undertaken by the author. Illustrations were prepared by the author and produced by Andrew Lewsey of ECC FAU. The project was managed by Mark Atkinson and monitored by Richard Havis of the ECC HE team, on behalf of the Local Planning Authority.

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Appendix 1: Contents of Archive

Site name: WW2 Factory pillbox at Braefield Precision Engineering, High Lane, Stansted Mountfichet

Project no.: 2643

December 2012

Index to the Archive:

Document wallet containing:

1. Introduction

1.1 Client/archive report (bound & unbound copies)

1.2 ECC HE brief

1.3 ECC FAU written scheme of investigation (method statement)

1.4 CD containing digital photographs & copy of report, pdf-formatted

2. Site Archive

2.1 Photographic record (digital & monochrome prints)

2.2 Photographic registers

2.3 Site notes and survey drawings

Appendix 2: EHER Summary Sheet

Site Name/Address: WW2 Factory pillbox at Braefield Precision Engineering, High Lane, Stansted Mountfichet	
Parish: Stansted Mountfichet	***District:*** Uttlesford
NGR: TL 5146 2560	***Site code:*** n/a
Type of Work: Building recording (level 3)	***Site Director/Team:*** Andy Letch ECC FAU
Date of Work: 17th December 2012	***Size of Area Investigated:*** N/A
Curating Museum: Saffron Walden	***Funding Source:*** client
Further Work Anticipated? no	***Related HER Nos.*** EH monument no. 1422487
Final Report: Summary in EAH	***Oasis No.:*** 140501
Periods Represented: mid-20th century	

SUMMARY OF FIELDWORK RESULTS:

A level 3 building record and drawn survey was made of a pillbox attached to Braefield Precision Engineering, High Lane, Stansted Mountfichet, prior to demolition and the construction of a residential care home on the site.

The factory was built during WW2 by *Ediswan* to manufacture valves for radio sets, etc as a contribution to the war effort. The exact date is unknown at present. A second contemporary structure observed on 1940s maps to the south seems to have been related, but its function is unknown. The pillbox was part of the original fabric of the building and probably formed part of a secondary line of defence along the valley alongside more common concrete pill boxes.

The pillbox was built in brick and concrete on the south-west corner of the factory and consisted of three levels, the topmost fitted with concrete gun loops for rifles and affording good observation on all sides.

Not only was the pillbox important in its general observation role as part of the defensive network but also to protect the factory during a land-based attack. In a more specific role, it is believed to have housed an 'aircraft spotter' to warn the workers of air-raids. Very little information is recorded about the daily life of the factory at the time.

Previous Summaries/Reports: none	
Author of Summary: Andy Letch	***Date of Summary:*** 8th January 2013

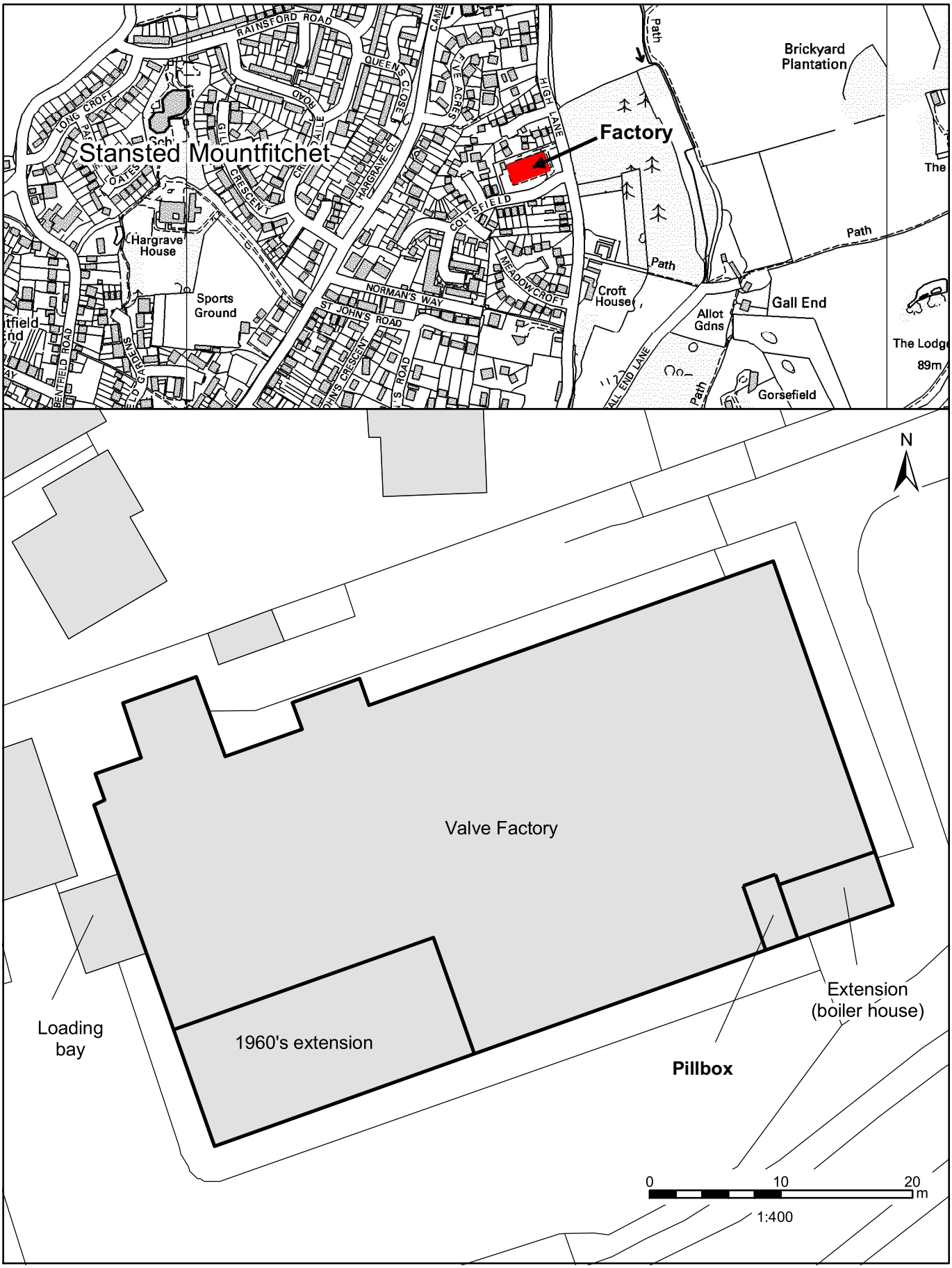

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Fig.1. SIte location and phase plan

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Fig. 2 1946 OS map (sheet 23)

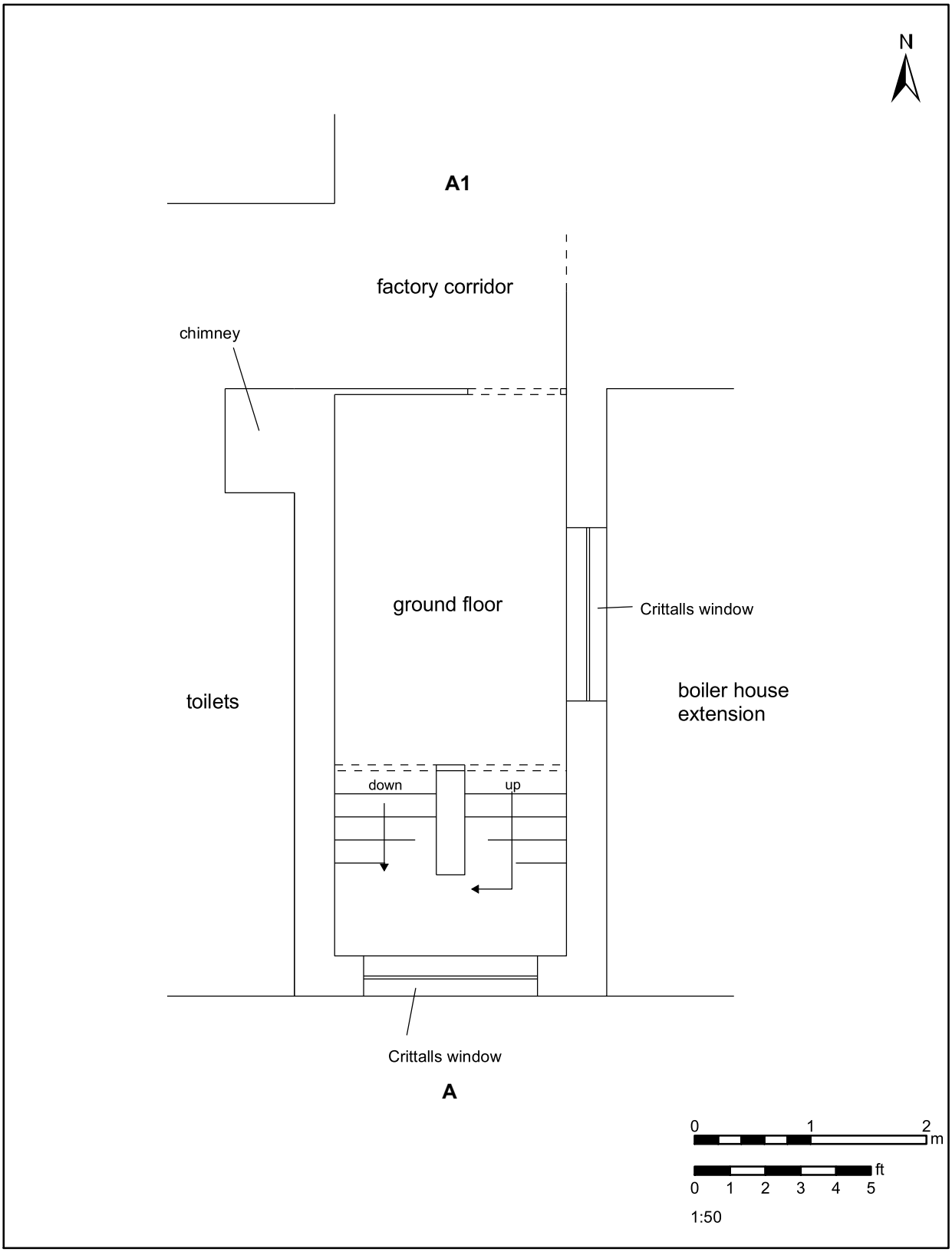

Fig.3. Ground floor plan of pillbox

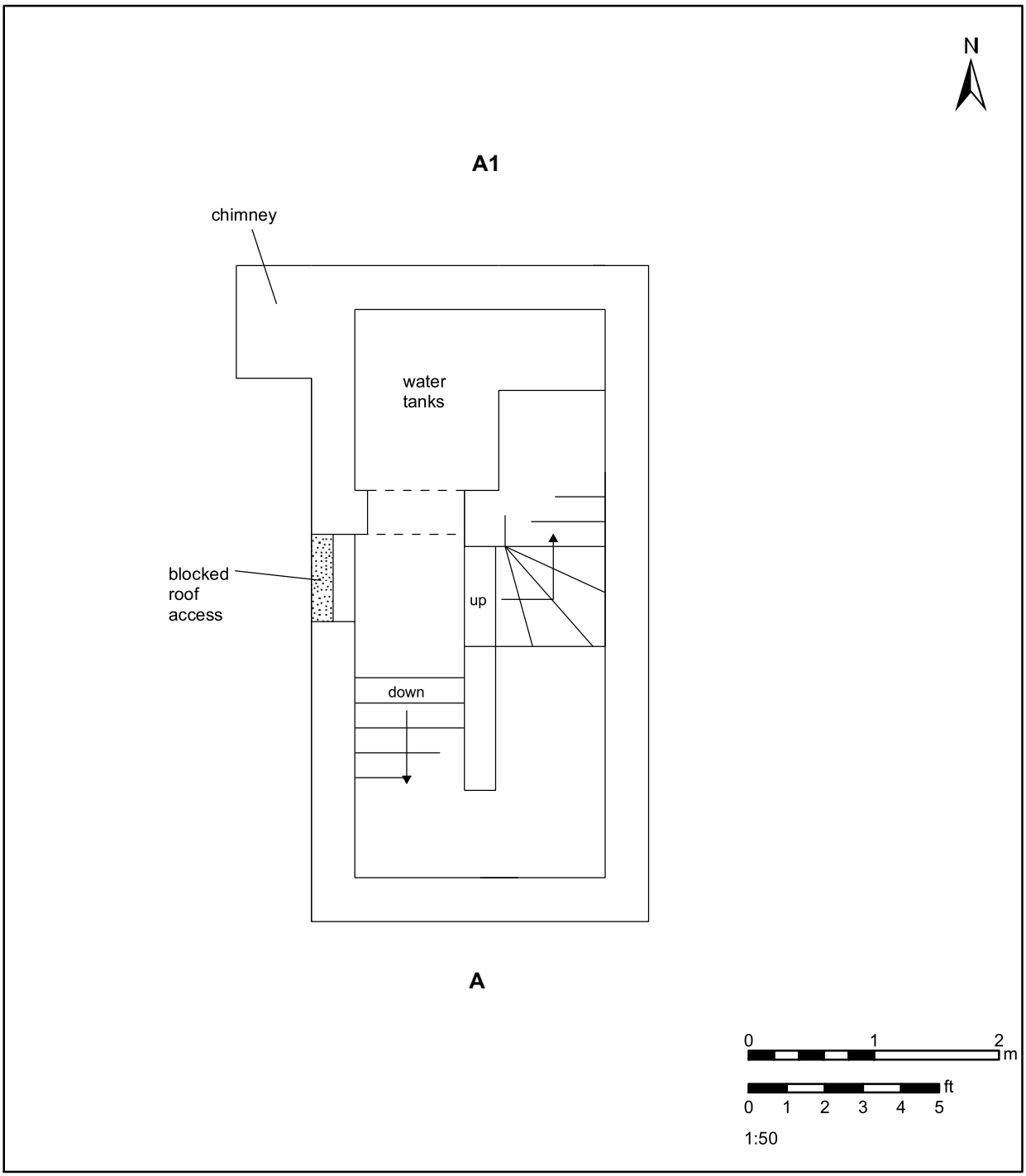

Fig.4. First floor plan

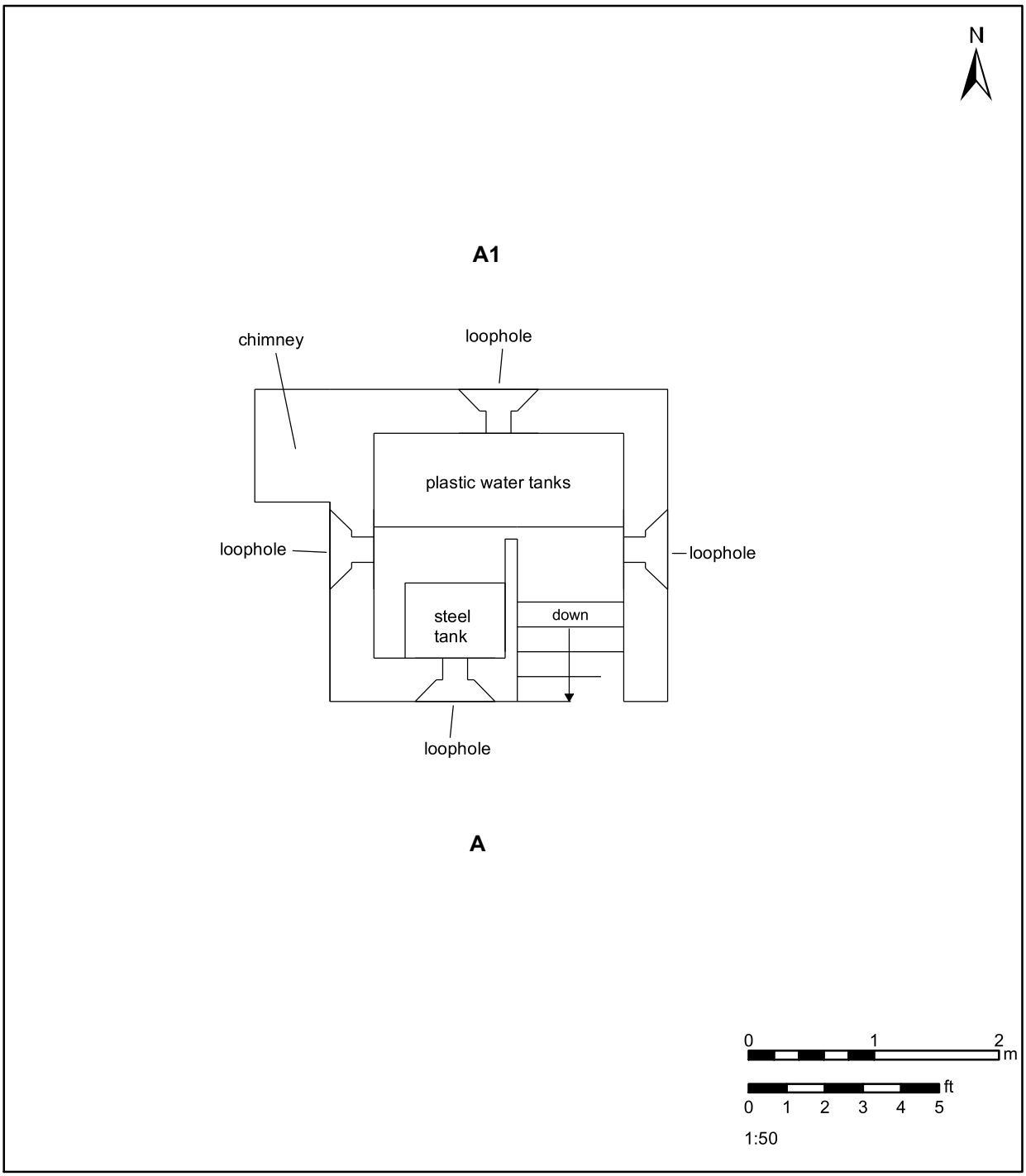

Fig.5. Second floor plan

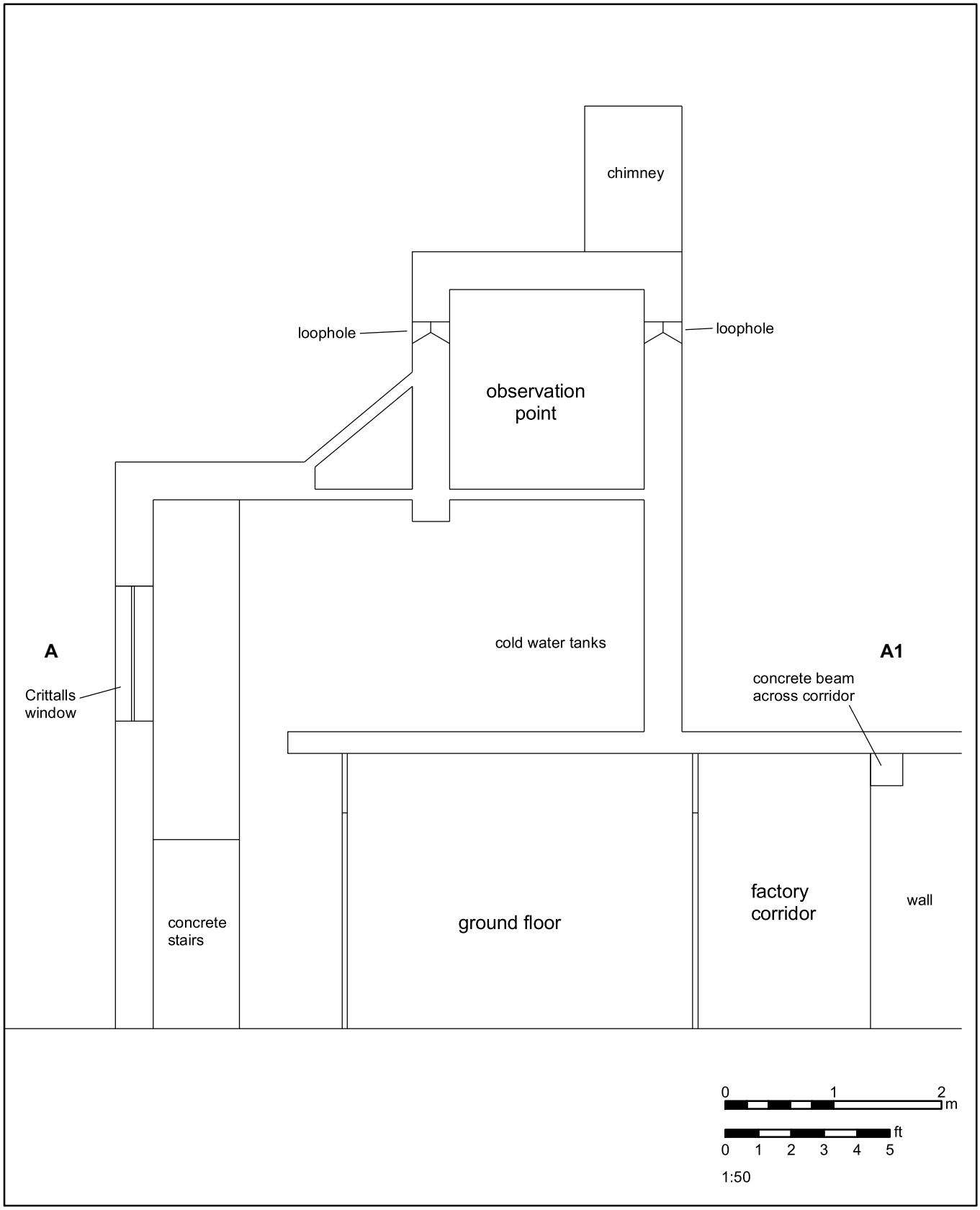

Fig.6. Cross-section A - A1

Plate 1 Aerial view of factory taken in 2006 (Google earth)

Plate 2 South elevation

Plate 3 South elevation with pillbox

Plate 4 Factory viewed to north-west

Plate 5 East and north elevations

Plate 6 West and south elevations

Plate 7 Detail of pillbox and south-east corner of factory

Plate 8 Pillbox viewed to north-east (courtesy of R. Phillips)

Plate 9 Access into pillbox from factory

Plate 10 Ground floor viewed to south

Plate 11 Original window and factory corner enclosed by boiler house extension

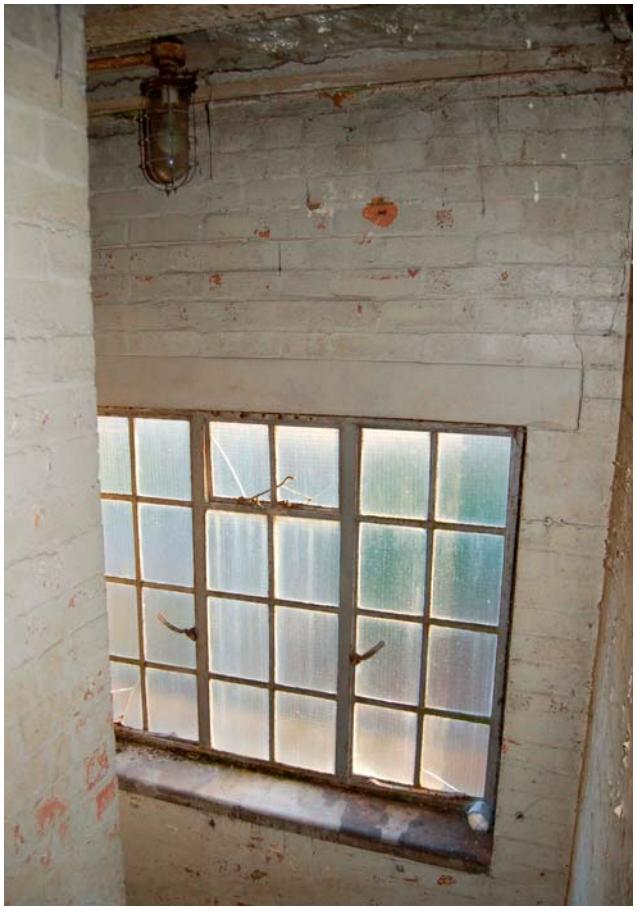

Plate 12 WW2 light fitting and Crittalls window

Plate 13 First floor roof access and tank room

Plate 14 Second floor viewed to south-west

Plate 15 Detail of gun embrasure

Plate 16 Basement viewed to north-east