PN 2119

ARCHAEOLOGICAL OBSERVATION OF A WORLD WAR II AIR RAID SHELTER, EDGBASTON CAMPUS, THE UNIVERSITY OF BIRMINGHAM

Project No. 2119

September 2010

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SUMMARY

Birmingham Archaeology was commissioned by the University of Birmingham, to undertake an archaeological watching brief in respect to an air raid shelter, exposed during ground works.

The watching brief found the remains of two air raid shelters. The first (known as AR1) was known and was used as a store room. The second (AR2) was unknown and lay adjacent to the first. Both were located in the terraced back that runs along the side of the University Rugby Pitch on the southern side of the campus (NGR SP 0464 8335). Shelter AR2 was of aggregate concrete construction and 1.8m high by 1.8m wide, extending to a length of at least 15m. It had been sub-divided. The interior of shelter AR1 remained unrecorded. Both appeared to have blast entrances consisting of an entrance that led directly out onto the rugby fields but had been dog-legged to prevent blast from explosions directly entering the shelters. These appeared to have been protected by the bank of the terrace.

The air raid shelters probably acted as shelter for the employees of the University Campus but also importantly for the employees of the adjacent Westley Richards Gun Factory that produced the Enfield Rifle standard issue rifle of servicemen during both the First and Second World Wars.

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1. INTRODUCTION

1.1.1. Birmingham Archaeology was commissioned by the University of Birmingham on to undertake an archaeological observation of remains uncovered during pipe trench excavation work for service runs on the Edgbaston Campus of the University of Birmingham. The trenches are located within the embankment on the northern edge of the University Rugby Pitch (NGR SP 0464 8335, hereinafter referred to as the site). During the excavation of the service runs the sides of two air raid shelters were exposed. The first, located to the western side was existing and already known. The second was unknown and discovered during the work.

1.1.2. This report outlines the results of the watching brief carried out in August 2010 and has been prepared in accordance with a Written Scheme of Investigation (Birmingham Archaeology 2010) which was approved by the Local Planning Authority prior to implementation, in accordance with guidelines laid down in Planning Policy Schedule 5 (PPS 5; English Heritage 2010). The project conformed to the Institute for Archaeologists Standard and Guidance for Archaeological Watching Briefs (IFA 2008).

2. LOCATION AND GEOLOGY

2.1.1. The site is located adjacent to the Rugby Pitches on the University of Birmingham's Edgbaston Campus lying 250m north-west of the Bristol Road, Selly Oak, and is centred on NGR SP 0464 8335 (Fig 1).

2.1.2. The underlying geology of the area is defined by the faultline between the keuper marl sandstone ridge north-west of the site and the mercia mudstones to the south-east that define the basin of the Rea valley. This is locally overlain by alluvial drift deposits associated with the course and flood plain of the Bournbrook.

2.1.3. The topography of the site drops sharply from a ridge of land on which stands the Aston Webb Buildings and the centre of the Edgbaston Campus to the valley floor of the Bournbrook. The present character of the site has been redefined by stepped terracing associated with the campus that has resulted in a drop from the north-west ridge to the valley floor involving a slope with an intermediary terrace. The valley floor has been landscaped to form the University's sporting facilities of the Rugby Pitch and Hockey Pitches.

3. AIMS AND OBJECTIVES

3.1.1. The principal aim of the archaeological recording is to determine the character, extent, date, state of preservation and the potential significance of any buried remains.

3.1.2. More specific objectives were to:

- Produce a full record of the air raid shelter to allow future research.

- Place the remains in the context of the University of Birmingham contribution during World War II.

4. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1.1. The site lies on the south-western edge of the University Campus and as such has a archaeology and history that is derived both from its presence within the University and the area outside. First occupation along the Bournbrook can be traced back to the Bronze Age by the presence of burnt mounds on the Rea tributaries including Cob Lane on the Griffiths Brook (Hodder 2004, 28-44) and more recent discovery of a burnt mound on the Bournbrook off Harborne Park Road (excavated by The University of Birmingham 2008). The area was extensively occupied by the Romans at the fort of Metchley 300m west of the site, that has seen repeated excavations over a 40 year period starting in the 1960s by the University of Birmingham, Archaeology department and field team (Jones 2002; 2004). The medieval period saw reduced activity as the area was extensively agricultural, with recent environmental evidence suggest a slow process of woodland clearance from the Anglo-Saxon period and an increase in open land by the medieval period as seen at sites on the Bournbrook in Selly Oak (Dalwood *et al* 2009, 45-72).

4.1.2. The industrial development of Birmingham resulted in the proliferation of mills along the Rea valley from the 16th century, accelerating into the 18th century as new mills were built to provide water power for industries as diverse as wire production, thimble-making, metal-rolling and gun-barrel boring of the Birmingham gun industry (Stephens 1964). Selly Oak was no exception and specialised in gun-barrel manufacture with two mills establishing in the area at the Harborne Mill, on Harborne Park Road housing Spurriers Silver Rolling Mills, and Millington's Steel Rolling Mills at Harborne. (HER ref 03205) and directly to the east of the site on the Bournbrook (HER 03206). The Bournbrook site was short-lived and survived only as pools and leats by the 19th century.

4.1.3. By the early 20th century industry had begun to develop in the Selly Oak area. Westley Richards gunmakers established their factory on land adjacent to the Bournbrook. The design was in Arts and Craft inspired industrial building by Charles Edward Bateman built in 1898 (Ballard 2009, 438-9). The site continued to trade as William Westley Richards and continued in use as a Gun Works until it was demolished in 2009 to make was for the Selly Oak relief road. William Westley Richards, aged 22, started a gun and pistol manufactory behind 82 High Street, Birmingham, overlooking the old Bull Ring and parish church of St. Phillips in 1812. At the outbreak of the First World War, Westley Richards was a profitable public company and during the war they produced government orders for the conversion and rebarrelling of thousands of rifles. They were the producers of the Enfield rifles, the British Army standard for many generations. During the inter-war years pressure on the firm, investment in new machinery and staff meant in peacetime, however, it became impossible to maintain the large workforce, and by the time of the Second World War the company was forced into voluntary liquidation, although it continued to trade. In 1946 Captain E.D. Barclay bought the firm from the liquidators and subsidised the gun-making business with profits made from whale harpoons and tool-making. Even these efforts did not prove satisfactory and in 1957 he disposed of his shareholding to the young and enthusiastic Walter Clode who remains Chairman of Westley Richards today (www.westleyrichards.co.uk).

4.1.4. In comparison the land to the north-west of the Bournbrook was part of the Edgbaston Campus and remained undeveloped for a number of years. The area of the playing fields was used as a rifle range of the 1st Volunteer Battalion Royal Warwickshire Regiment. Wooden towers were placed north of Edgbaston Park Road.

These towers were used by the old Volunteers (1855—60) in connection with the adjoining Rifle Range, which now forms the University playing fields, for practice at 100, 200, 300, 400, 500, 600, and 1,000 yards. By means of these towers, the marksmen were able to use the longest range possible, shooting' over the heads of any persons who might be passing down Edgbaston Park Road (Leonard 1933, 7-9). The area was also adopted as a pleasure area around the extant pools of the mill and staged one of the games of the first cricket tour by the Australians versus The Pickwick Club (now Wake Green Road, Kings Heath) in 1878 (*ibid.*).

4.1.5. The University grew out of the vision of the first Chancellor, Joseph Chamberlain. Founded in 1900, Birmingham represented a new model for higher education. This was England's first civic university, where students from all religions and backgrounds were accepted on an equal basis. The University of Birmingham was established by Queen Victoria by Royal Charter in 1900 and was the UK's first civic or 'redbrick' university. The initial 25-acre (100,000 m^2) site was given to the university in 1900 by Lord Calthorpe. The first phase of building work on the campus was completed in 1909 under the auspices of the esteemed architect Sir Aston Webb. The university underwent a major expansion in the 1960s due to the production of a masterplan by Casson, Conder and Partners. The first of the major buildings to be constructed to a design by the firm was the Refectory and Staff House which was built in 1961 and 1962 (Foster 2005).

4.1.6. During the First World War parts of the university were converted to the 1st Southern Military Hospital. This included the Great Hall within the Aston Webb building which was the infirmary. Space was provided for 800 beds and the first casualties were received on the 1st September 1914 (Jones *et al* 2008, 129-30). During the Second World War it was again pressed into action as a gymnasium. The university was also home to research programmes involved in particular with elements of radar defence and in the later years of the war the development of the A-bomb.

5. METHODOLOGY

5.1.1. It is proposed to preserve the remains 'by record'. This will involve the production of a written, drawn and photographic record in accordance with standards laid out in English Heritage's *Recording Historic Buildings* (2006). This will comprise;

5.1.2. **Written** - written description of the character, extent and preservation of the remains. The written description should also place the monument in the context of its local, regional and national significance.

5.1.3. **Drawn** - production of a location plan and detailed plan of both interior and exterior of the air raid shelters. This should be suitably annotated to allow interpretation of the monument. This should be located with reference to the national grid.

5.1.4. **Photographic** - production of photographs using black and white monochrome and digital photography to include location shots, general shots and detailed shots of both exterior, and where possible interior, of the air raid shelters.

5.1.5. The paper archive will be deposited with the Birmingham City Council subject to permission from the landowner.

6. RESULTS

6.1.1. The work involved the excavation of a slot trench 0.4m in width that ran along the central terrace of the slope above the university sports fields (Fig. 2). This was excavated to an approximate depth of 1.2m throughout. The trench was excavated the entire length of the terrace but remains of the World War II Air Raid Shelter were only uncovered in the far south-western end of the terrace.

6.1.2. The terrace was constructed of yellow-brown sand-silt gravels (1000). These overlay the construction of the air raid shelter although it was unclear if the construction of the air raid shelter had been cut down into the terrace or subsequently covered over as insufficient of the construction was exposed.

6.1.3. Two air raid shelters were encountered during the work (Figs. 3, 4 and 5). The first (AR1) was previously known about and had been used as a store for material by the Chemistry department. The shelter was orientated along the line of the terrace in a direction west-south-west to east-north-east. The entrance to the Air Raid Shelter survived *in situ* (1001). It consisted of a steel-reinforced surround in high aggregate mix concrete, to a height of *c.* 1.6m by *c.* 0.8m. A plywood sheet covered the entrance. The concrete was badly decayed throughout. To the east of the door the concrete continued for a short distance possibly suggesting the doorway was in fact protected by a blast wall. The rear of shelter AR1 was uncovered within the service trench as exposed concrete (1002). This revealed that the shelter was *c.* 2m in width and an estimated 7m+ in length but was not fully exposed.

6.1.4. The second air raid shelter (AR2) was not previously known about. It followed the same orientation as the previous air raid shelter. The trench exposed its southern side for a distance of *c.* 15m (1003). The elevation was only exposed to a height of *c.* 1m. The elevation was again constructed of high aggregate mix concrete, skimmed on its outer surface suggesting that it had been laid and then finished suggesting the area was open and exposed prior to the bank being constructed against it.

6.1.5. Within this elevation at the eastern end were the remains of a single window, 0.50m wide by 0.30m high, with a steel casement frame (1004). Further along the elevation, centrally placed within the air raid shelter were the remains of an entrance, 0.60m and of unknown height (1005). The entrance appeared to extend to the rear of the air raid shelter but had been infilled with refractory bricks from an unknown source (1006). To the west of this the shelter had been sub-divided by a later insertion wall of red brick (1009).

6.1.6. The entrance was surrounded by a series of walls that suggested a blast wall construction (1007). These had been cut through by the service trench but the remains were visible in section as low-grade reinforced steel high aggregate mix concrete. These formed a straight-entrance that appeared to have been covered over that led directly out to the south, in a similar manner to shelter AR1. In addition a side entrance allowed access along from the west, protected by a further concrete wall (1008) and the terrace bank. The entrance bore similarities to that exposed in shelter AR1 suggesting that the real entrance was via a blast door to the west as opposed to a straight entrance.

6.1.7. The interior of air raid shelter AR2 was visible through the window as a plain concrete construction. The interior had been sub-divided by an inserted brick wall in stretcher bond (1008; see above). The interior of the western chamber had been filled in but the interior of the eastern chamber was open and revealed a plain skimmed concrete surface to the walls. The floor was likewise of concrete and the

ceiling appeared to have been constructed of reinforced concrete with the side walls chamfered to take presumed steel-girder supports. The cross-section was 1.8m high by 1.99m wide, the surviving length of 9.35m.

7. CONCLUSIONS

7.1.1. The Air Raid shelters represent one of only a few exposed in Birmingham to date and recorded. They represent a still under appreciated monument in the archaeological landscape in no small part due to their proliferation, but also due to the recent nature of their construction. This should not be used to under estimate their significance as they represent a valuable part of the archaeological landscape in particular as they tie in closely to significant events in the history of this country, and contribute to our immediate social history and the contribution World War II and the bombings had on the psyche of the British people. They are also extensively at risk due in no small part to the fact they are poorly documented.

7.1.2. Examples recorded in the West Midlands are overall urban study has not been undertaken although overall surveys of World War II defence mechanisms have been done generally for the West Midlands (Jones et al 2008) and Warwickshire (Carvell 2007). Standard issue domestic air raid shelters were sunken semi-circular sections of corrugated iron, covered over with soil known as Anderton Shelters (Jones *et al* 2008, 84). A second design of sunken shelter was the Stanton Shelter. It was stronger and made of pre-cast concrete sections, designed to form a semi-circular arch (*ibid.*, 84-5). Often shelters adopted existing cellars and reinforced these with concrete and rigid steel joists. These were particularly common in industrial settings or in public buildings such as pubs. Examples have been recorded at the Lion Works in Witton, a munitions manufacturer and at The Albion Inn on Sheepcote Street adjacent to much of the Brass manufacturing sector of the city (Hodder 2004, 165-6) with a further example recorded at Fazeley Street (Helen Martin-Bacon pers. comm.). An alternative was the free-standing surface air raid shelters of brick and concrete roofs examples of which were located in Croombe Park, Worcestershire (Jones *et al* 2008, fig.9.2), Clifton-Upon-Dunsmore, Warwickshire (Carvell 2007, 88-9) and several of which were investigated at Rhydymwyn, North Wales (Bone *et al* 2006).

7.1.3. The closest geographical parallel for the air raid shelters comes from a single unrecorded example on the University Campus to the rear of Horton Grange, Edgbaston Park Road, believed to be the Vice Chancellor's personal Air Raid Shelter (but unconfirmed; Kirsty Nichol and Jo Adams pers. comm.). A series of tunnels are also believed to be present beneath the Aston Webb building but the date, style and construction of these are not researched (author unconfirmed recollection).

7.1.4. With so few parallels in the West Midlands it is difficult to make too many analogies on design but the shelter appears to follow the design of Blast air-raid shelters adapted for an earthen bank. These had doors protected by dog-leg entrances and were surrounded by earthen banks. An example is located at RAF Stratford (Carvell 2007, 90; AR07, NGR SP 218 515). The Blast Shelter design appears to have been adapted to accommodate the pre-existing slope.

7.1.5. The fact they were designed to prevent blast explosions, as blast entrances appeared to be present on both suggests that a greater than average risk was present in the area. Birmingham was bombed more than 50 times during the period from 1940-1943 causing the deaths of over 2000 people (Jones *et al* 2008, 86). Birmingham was an industrial city and the principal targets were industrial. these may have been adopted for University employees but as suggested above the presence of tunnels

beneath the Aston Webb building may negate their neccesity. However, a far more likely target for bombing raids would have been the gun factory to the south of the site. The shelters were a short and direct sprint from the Westley Richards gun factory entrance over the foot bridge onto the University Campus. The Westley Richards factory was the manufacturer of the Enfield Rifle, the principal rifle used by servicemen in World War II, and would have been a valid target for German bombing sorties. The fact that the entrances faced towards the factory would support the idea that they were in used by the factory and not necessarily by the university.

7.1.6. The area of the two shelters has a noticeable bulge in line with the expansion of the roadway and this may suggest that they are the only two shelters in this location. However, it may be that further shelters exist along the line of the terrace. No remains were visible on the surface but it opens the possibility that student survey of the terrace using such techniques as Ground Penetrating Radar survey may be able to reveal further remains.

8. ACKNOWLEDGEMENTS

The project was commissioned by the University of Birmingham. Thanks go to Mike Hodder, who monitored the project on behalf of Birmingham City Council. The assessment was undertaken by Chris Hewitson who produced the written report which was illustrated by Nigel Dodds.

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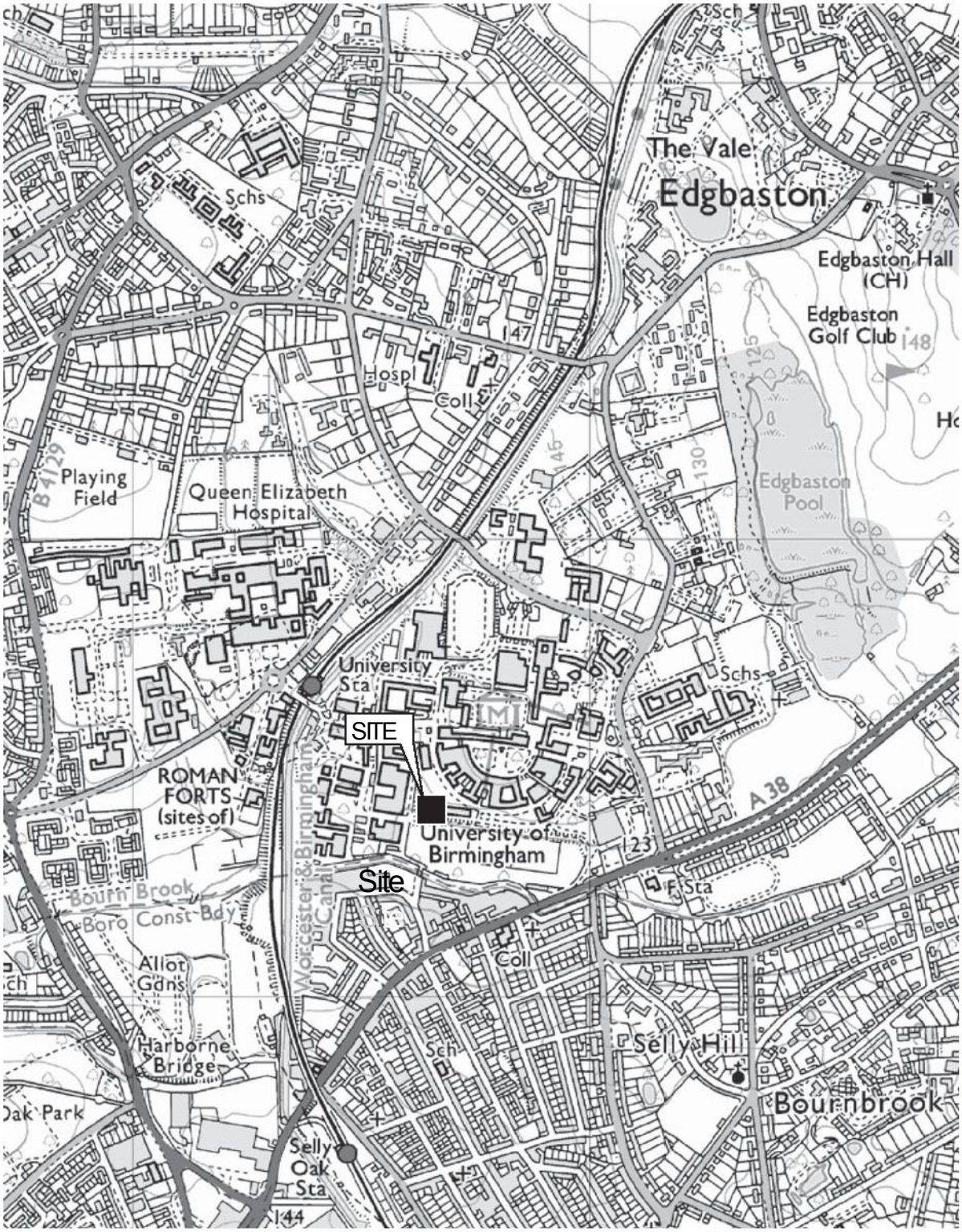

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Figure 1: Site Location

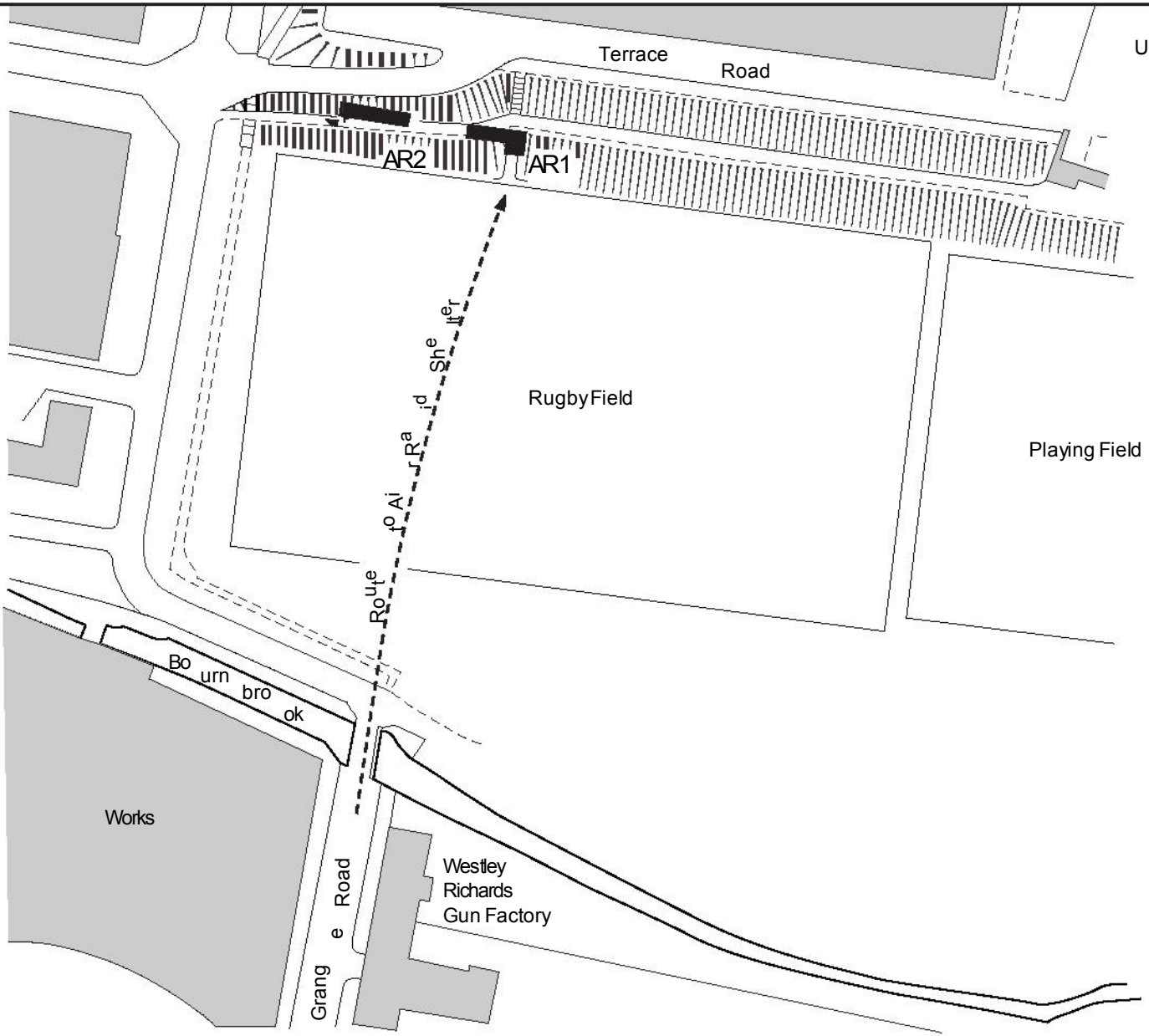

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Figure 2: Location of Shelters

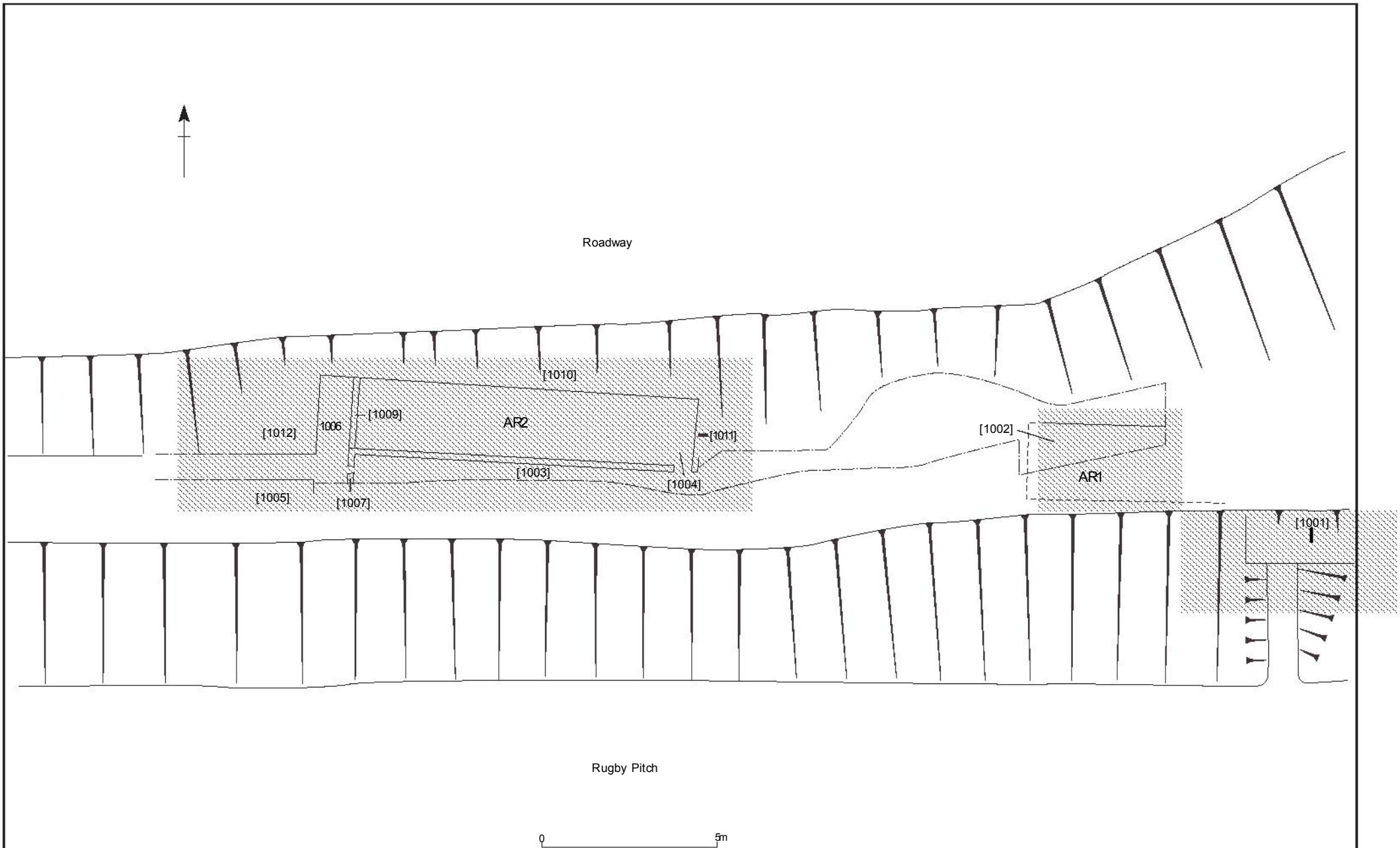

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Figure 3: Plan

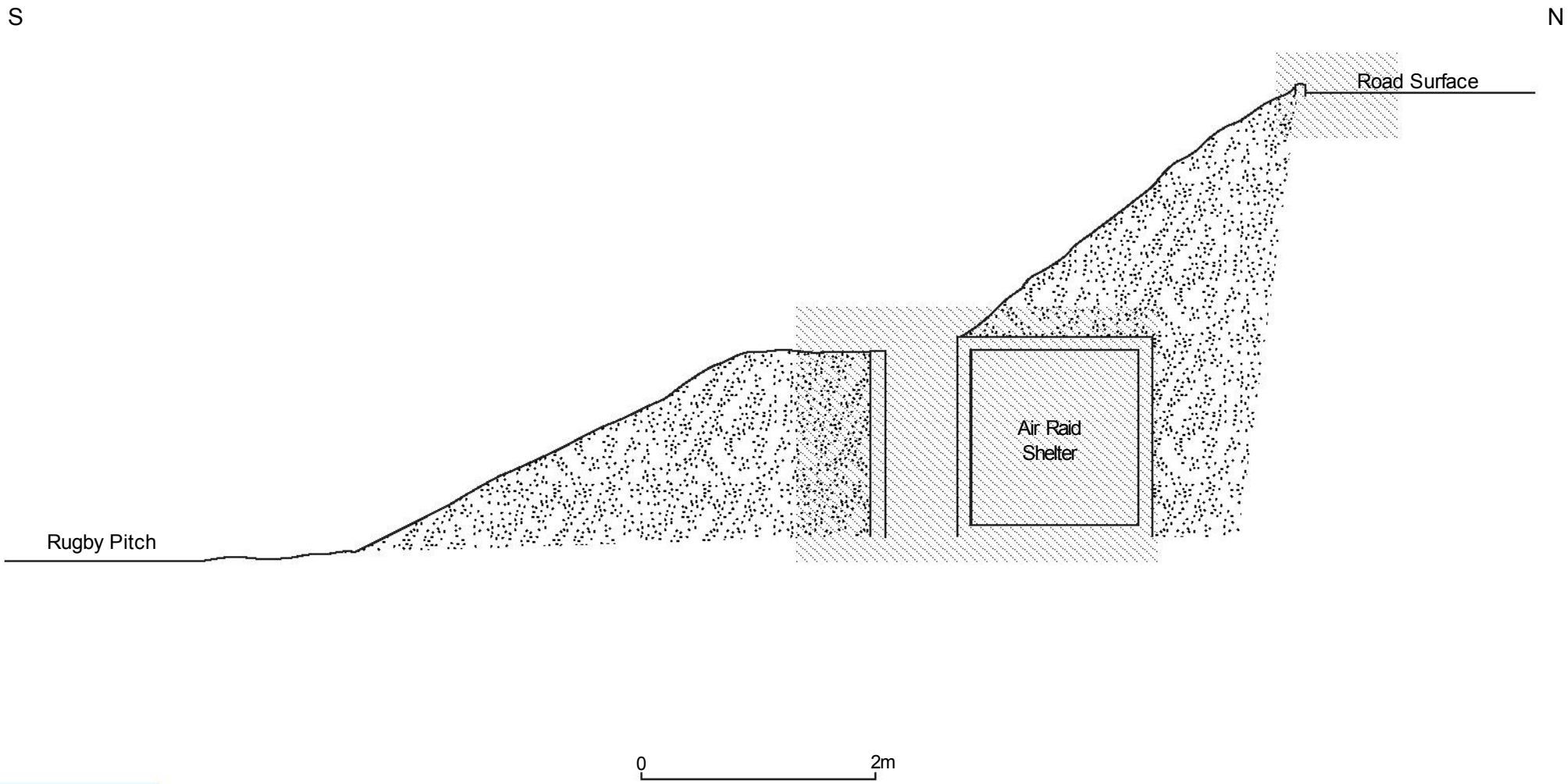

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Figure 4: Section

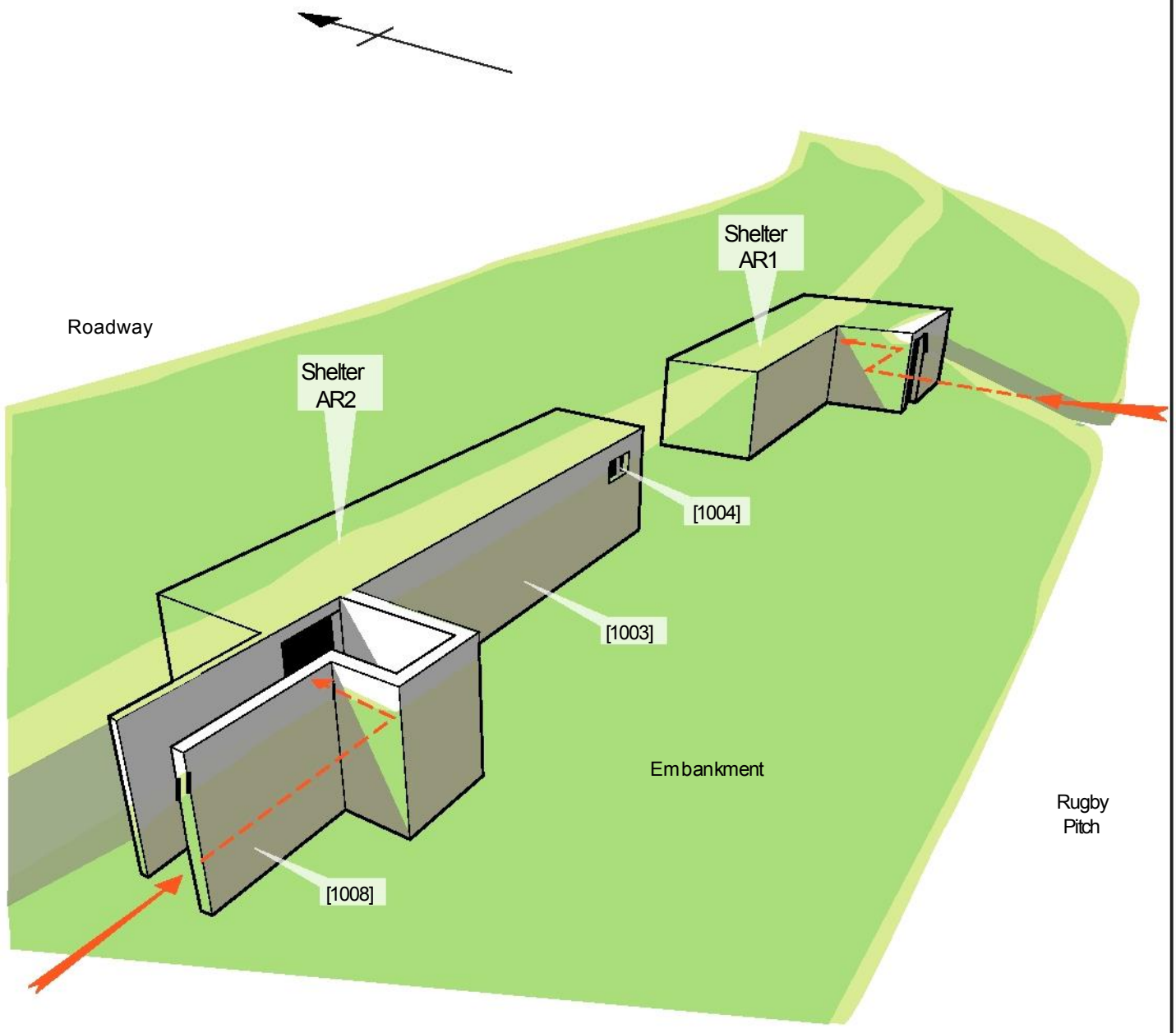

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Figure 5: 3D image of shelters

Plate 1: Entrance to Shelter AR1 north-west facing

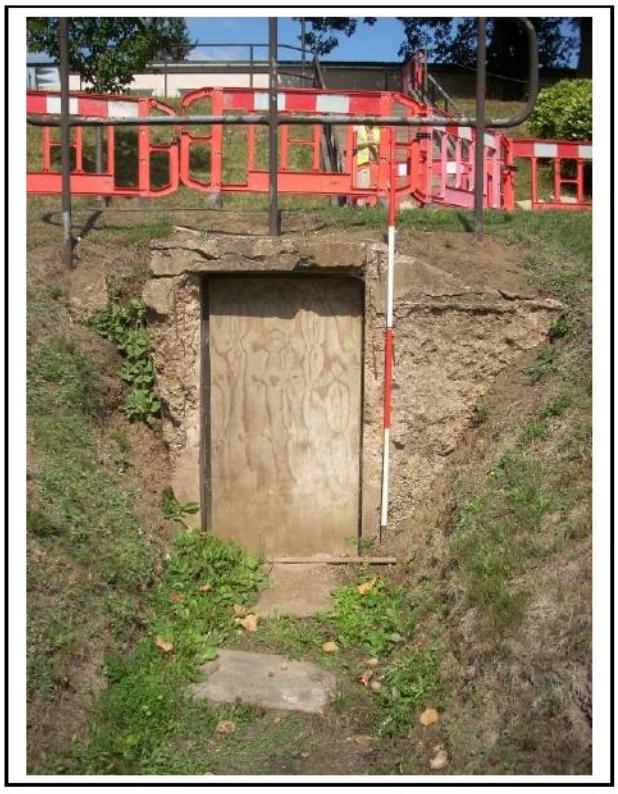

Plate 2: Entrance to Shelter AR1

Plate 3: Excavated rear (north) wall of Shelter AR1

Plate 4: Excavated service trench, west facing

Plate 5: Shelter AR2 Blast Wall in Section south-east facing

Plate 6: Entrance to Shelter AR2, north facing

Plate 7: Window in Shelter AR2, north facing

Plate 8: Internal Shot of Shelter AR2, west facing