

**Recording of an Air Raid Shelter
at the Upper Green,
Tettenhall, Wolverhampton,
Black Country (BCSMR 9455)**

Project No. 1321

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Black Country (BCSMR 9455)**

By

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SUMMARY

An air raid shelter located on the Upper Green, Tettenhall (NGR SJ 8870 0017) was recorded in June 2005 by Birmingham Archaeology for the City Council. The shelter was L-shaped in plan, with two entrances, and completely subterranean, taking advantage of the steep natural slope of the Green. It was constructed using corrugated iron shuttering with internal braces, and was reminiscent of wartime tunnels surviving below Dover Castle. The shelter had been provided with electricity, with a backup supply, and had been fitted out with toilets. Unfortunately documentary research could not provide a confident date for the monument, and there is anecdotal evidence that it was never used. This, and photographic evidence, suggest a late date of construction, post 1943, which is unusual.

Recording of an Air Raid Shelter at the Upper Green, Tettenhall, Wolverhampton, Black Country (BCSMR 9455)

1.0 Introduction

This report describes the results of building recording carried out on an air raid shelter situated on the Upper Green, Tettenhall, Black Country (Fig. 1, hereafter referred to as the site). Birmingham Archaeology undertook the work reported on here in June 2005, on behalf of Wolverhampton Borough Council.

In accordance with guidelines laid down in Planning Policy Guidance Note 15 (DoE 1990) a recommendation for a programme of archaeological work was made by the Black Country Archaeological Officer, to inform the future management of the site. The archaeological work was undertaken following consultation with the Black Country Archaeologist for the City Council.

The site and its setting

The site is situated at the north-eastern corner (Fig. 2) of the Upper Green, at its junction with Wergs Road (centred on SJ 8870 0017). Today the area is open parkland at the heart of the village (BCSMR MBL 1165).

Aims

The aim of the survey was to make a full descriptive, drawn, analytical and photographic record of the structure.

2.0 Methodology

The structure was recorded by means of plans and details of elevations. Drawings were supplemented by written notes and monochrome and colour print, and colour slide and digital photography. Slides were also taken for presentation purposes.

The work followed requirements set down in the Institute of Field Archaeologists' Standard and Guidance for the Archaeological Investigation and Recording of Standing Buildings or Structures (IFA 1999) and, more specifically, the relevant parts of the definition of Level 4 recording in Recording Historic Buildings (RCHME 1996). The work also adhered to guidance notes issued by the Association of Local Government Archaeological Officers (ALGAO 1997).

Notes and photographs from an earlier site visit undertaken by Sue Whitehouse in 1996 were also be consulted, as well as records held by Wolverhampton Archives and Local Studies, and local history sections of local libraries.

3.0 Historical Background

Following air raids made during the First World War, and the development of better aircraft and bombs, the Air Raid Precautions (ARP) committee was created in 1924 to safeguard civil defense (Brown 1999, 1). In 1937 the Air Raid Precautions Act was passed which compelled local authorities to provide protection from air raids and gas attack for the local civilian population (Burridge 1997, 61). The most common type of shelter was the ubiquitous *Anderson shelter*, the first of which was produced by the end of February 1939 (Dobinson 2000, 61), and records held by the Wolverhampton Archives records that over 1500 were constructed around the Tettenhall area of Wolverhampton.

Shelter construction was at its peak in Britain during the immediate pre-war period, with more appearing in response to heavy bombing by the Luftwaffe during the Blitz in the autumn and winter of 1940-41. Across the country many factories and foundries were given over to the production of munitions and war material. The industrial nature of the Midlands meant that there was a concentration of these so-called *arms towns* which made the region a major target for bombing raids.

Targets in the vicinity of Tettenhall included four aerodromes: Perton, Bobbington, Pendeford and Cosford. All were under RAF Training Command, and came under the aegis of the 24th Staffs (Tettenhall) Battalion of the Home Guard (Parkes 1946, 46). Other possible enemy targets in the vicinity included the Wolverhampton Water Works located in Tettenhall and Dimmingsdale, and the Boulton-Paul Aircraft Ltd factory at Pendeford. During April, May and June in 1941 there were four raids over Tettenhall resulting in the deaths of two civilians and just over two hundred houses being damaged (*Ibid.* 52).

Archival records depict a village that was very much at the centre of operations for the district. A village that was pivotal in the wartime administration of the area as well as being the district HQ for the Home Guard. There are reams of correspondence referring to governmental guidelines regarding persons made homeless by enemy action, and the local authority went so far as to produce their own community leaflet (as they had done in Wolverhampton) at a cost of £6.9.0 for a print run of 2500 (Plate 1).

Further to this there are many documents, as well as plans, relating to the conversion of a range of stables and outbuildings at The Towers, Tettenhall, into an emergency mortuary. There are applications for funds to make repairs to the roof so that the building could be made water tight and safe, and lists of equipment to be purchased for the morgue to become fully operational. This included, amongst other things, the purchase of hose pipes with spray nozzles, a pair of trestle tables, 10lbs of Carboloc Soap, the same of Soda, 2 fluid gallons of disinfectant, as well as protective clothing for the morgue technicians.

There are also detailed records surviving of what was held in the district emergency stores, and notes recording what had been used from the stores, and what was returned to the national Emergency Stores Branch in 1943. At the close of war there continued to be accounts and paper records kept, such as general correspondence regarding the decommissioning of army buildings, and the requisitioning of housing for homeless families, and demob soldiers. Thus, given the quantity and quality of information held in the archives regarding the war effort in the Tettenhall district, it is highly surprising that there is no reference to an air raid shelter on the Upper Green. An undated document, marked confidential, is annotated as being the key to a 'Master map of Buildings and Roads'. One of the symbols in the key is the symbol for a public shelter, however the map has not survived and it remains unclear as to whether the key definitely refers to a map of wartime Tettenhall.

The problem regarding the date of construction of the shelter is further compounded by two photographs published in Parkes' *The Record of the 24th Staffs (Tettenhall) BN. HG. 14th May 1940-3rd December 1945* (Plates 2 and 3). The photographs are dated in the text to 1943, and depict the home guard marching down an unnamed road. The rise in the background, and the low retaining wall surrounding it, is highly reminiscent of early photographs of the Upper Green. The problem here lies in the date of the photograph (1943), as one

would have expected the shelter to have been constructed and in use by this period, and there is no sign of the entrance in the photograph.

4.0 Shelter Description

Location and plan of the shelter

The shelter was built into a natural bank at the northeast corner of the Upper Green in Tettenhall (Plate 4). It was L-shaped in plan (Fig. 3) with two blocked entrances, one from Wergs Road and the other from Upper Green road. A modern manhole cover set into the grassland cover of the Upper Green marks the location of the original emergency escape hatch, positioned at the junction of the two tunnels. There was some evidence for a third tunnel having run to the south of the junction of the two tunnels possibly making the original plan more of a T-shaped one. It may have led to another entrance from the Upper Green, or, alternatively formed a closed tunnel of unknown length. However, in all probability it corresponds to the small recess depicted on the site plan accompanying the site visit made by Sue Whitehouse of Wolverhampton M.B.C. in 1996 (Fig. 4). Unfortunately this area is in shadow on a photograph taken at the time (Plate 5) and it is not possible to say for certain that what is shown was part of the original build. This possible third opening has since been blocked with cinder-type blocks, of which there were three distinct builds represented by vertical breaks in the masonry (Plate 6). These may have been the result of the difficulty of fitting the blocks against the curving sides of the shelter, although an alternative is that the blocking conformed to the apparent wall stubs located here which were marked upon the 1996 plan. These may have supported a ladder to the escape hatch, but this is supposition as no physical evidence of this had survived.

Construction and design of the tunnels

The north-south tunnel from the Wergs Road entrance was the wider of the two (Fig. 3), measuring c. 2.3m, or seven foot six inches, in the specification that it would have originally been built to. Although this tunnel was slightly shorter, measuring 18.5m in length from the modern front entrance to the recent blocking of the third tunnel, it was clearly the primary tunnel. This was indicated by the fact that the second east-west tunnel was only five feet six inches (or c. 1.7m) wide, although it was longer, measuring 18.5m from the modern entrance to the junction with the main tunnel (Plate 7). Both tunnels were six feet six (or 2m) tall (in-set, Fig. 3). Before the construction of the later entrances in brick (see below) both tunnels would have been 2m shorter.

The tunnels were lined with sheets of corrugated iron that had been painted a regulation wartime green. The corrugations were two and a half inches wide and the sheeting was heavier duty than normal. Each sheet was overlapped with the next, both vertically at the apex of the tunnel, and also horizontally behind each frame. The frames were placed at three feet intervals along the tunnel, and so the sheeting is likely to have been between four and six feet in length and eight to ten feet in height to allow for a reasonable overlap between sheets. The frames were prefabricated from three-inch-square steel I-beams. These were curved to form the tunnel roof and the two sections were jointed together with a fish plate secured by a pair of three quarter of an inch bolts that were five inches long (Plate 8). Each frame was designed with a pair of mortices cut into the I-beams through which rectangular steel tension rods were passed in order to provide the frame with more lateral stability. These rods measured one and three quarters by one quarter inches and were held in position with simple wooden chocks. The corrugated sheets were further tied to the frames using angled steel ties (Plate 9) in a method reminiscent of that outlined in field manuals providing instruction on

the revetment of trenches dating back to the Great War. There were commonly two of these ties on each side of the trench and one at the top. A steel conduit for the electrical supply was generally sited at the apex of the tunnels and a pair of drains ran down each side of the tunnel. The drains were designed to funnel away condensation from the walls of the shelter and had been formed after the concrete floor had been poured (Plate 10).

Probable sequence of construction

The original sequence of construction is likely to have been as follows. Firstly, the trench to accommodate the tunnels would have been excavated, either by hand or using a machine. Then the steel frame was erected, the corrugated shuttering fitted and the concrete floor poured. At this point the shuttering for the concrete blast walls and escape hatch was also probably formed. The whole assembly would then have been buried, either using concrete for the roofing and reinforcing, as per the official guidelines, or, more simply a cut and cover technique whereby earth excavated from the trench was mounded up over the shelter. Following this, the finishing touches, including the building of the brick walls, the fitting of wooden doorframes and doors, and the installation of the electrical supply and lighting would have been carried out.

The original entrances

Both original entrances consisted of a poured concrete blast wall with a secondary doorway behind (Plate 11). These doorways had wooden frames to which rubber tubing had been nailed to help with the blackout (Plate 12). The characteristic imprint of the wooden shuttering for the concrete walls showed that the roughly sawn planking used was seven and a half inches (or 19cm) wide. The original brick walls forming part of both entrances were made of orange, but irregularly-fired brick that were laid as part of a conventional one brick-wide wall. The dimensions of the brick were nine by four and three-eighths by three inches. The quality of the concrete work was rough, typical of so called 'economy concrete' of this era, that used a greater proportion of aggregate than normal in order to conserve the limited supplies of Portland cement. The escape hatch was twenty six inches square, and looking up it, it could be seen that the concrete roof was at least one foot thick at this point. Four courses of original brickwork survived, but the upper part of the escape hatch had later been adapted to fit a modern drain cover (Plate 13).

Internal details

Just inside the Wergs Road entrance two small rooms had been built on either side of the tunnel (Plate 14). The bricks of these walls had been laid on edge, which was a common way of economising when constructing non-load bearing walls during the war, and a staple trick of the jerry builder. These bricks were of a different design to those used in the original build and had been extruded, the pressure points being quite noticeable along with a trademark consisting of two Bs (Plate 15). This may be the mark of Baggeridge Brick, a local company that had been operating from the former Earl of Dudley's colliery in Sedgley since the 1930s. At this time the company produced bricks from Etruria Marl that were mixed with colliery shale to lower the firing temperature. Significantly, this type of brick was commonly used for internal walling (www.baggeridgebrick.co.uk). Each of these rooms still contained a pair of rusty tins (plate 16), and were probably added to provide male and female toilet facilities.

Electric lighting had been fitted and inside the Upper Green entrance was a control box and charger for a battery, presumably to run emergency lighting. The control box was manufactured by a local firm, B.J. Legg (Industries Limited) of Wolverhampton and was labelled as having an input of 200volts in one phase and 50 periods and an output of 12v in one phase and 100 periods (or cycles, Plate

17). There may have been an accidental electrical fire at some point during the life of the shelter, as part of the ceiling near the escape hatch showed signs of fire damage.

Outer entrances

Both outer entrances were added later and consisted of brick enclosure walls supporting a quality concrete roof in which the shuttering was only five inches wide. Both entrances had originally had a door (Plate 18), although the Upper Green entrance has been closed off until c.1996, apart from a pair of air bricks to add ventilation (Plate19), this was the entrance that had latterly been open. All of these changes were probably made after the war in an effort to regulate access into the shelters, which, like other subterranean structures such as icehouses for example, may easily become magnets for anti-social behaviour.

The precise relation of the shelter to the stone walls that surround the bank to the Upper Green here is not entirely clear. They clearly predate the construction of the outer entrances, which are built over them, but the stone walls also abutt the concrete blast walls, although they may be roughly contemporary. The entrances would most probably have been further protected with walls and revetments made of sandbags, no trace of which remain.

5.0 Discussion

There is anecdotal evidence to suggest that the shelter was never used and, apart from the toilet buckets and a pile of bricks left over from the construction of the outer entrances, the shelter was remarkably clear of any other items, even graffiti. However, this in itself is fairly usual, and not altogether surprising, as items such as benches, chairs or bunks could be easily removed from what was a public, rather than a private shelter. What is clear, is that there were alterations being made to the shelter, such as the addition of the toilets, which must have taken place within some period of use, possibly during wartime. The overall quality of the construction (which is reminiscent of some of the wartime tunnels under Dover Castle for example), and the use of economy concrete, further supports this, as does the provision for short-term emergency lighting. Perhaps some local photographs of the shelter in operation may come to light which may answer questions such as these, as may the memories of any older residents of the area who lived through the war near here. In this vein it may be worth trying to initiate an oral history project with one of the local schools if this has not already been done.

6.0 Assessment

While an overall judgement on the condition of the structure is beyond the competence of an archaeological report, a few comments can nevertheless be made. It would appear that the structure has not markedly deteriorated since the report compiled by Sue Whitehouse in 1996. Any deterioration that has taken place may have been partly caused by the restriction of airflow through the shelter, caused by the fitting of the steel door to the Wergs Road entrance and the blocking of the Upper Green entrance, as it is apparent that the Upper Green tunnel has survived better, perhaps due to the presence of the air bricks here.

The main area of concern would appear to be the danger of ground subsidence should the corrugated iron sheeting fail. There is some evidence of this starting to happen close to the Wergs Road entrance, but this may merely be the result of root action. It was not possible to ascertain whether or not the shelter was

encased in concrete or if the sheeting was merely covered in earth during the survey. Clearly if concrete were used then the danger of collapse is much reduced, although it would be necessary to assess the condition and stability of that material. The steel frames, whilst rusty, still appear to be very strong and were deliberately over engineered as they had to be able to withstand potential bomb blast. Likewise, the concrete entrances and blast walls are in a good state of preservation.

To fill the structure with concrete would be an irreversible procedure. Likewise, the use of earth to backfill the shelter would further escalate the decay of the metal sheeting and frame. The use of some other inert fill may be worth consideration. Polystyrene has been used in the case of other subterranean structures (e.g. the icehouse at Aston Hall, Birmingham), and this would allow some air flow and not have the same moisture retentive qualities as soil or sand. Alternatively, a programme of remedial work to the structure may be considered. This would probably involve excavation down to the sheeting and its reinforcement, although this would involve some damage to the archaeological integrity of the monument.

If a decision was made to try to maximise the educational and display facilities of this structure, and make it safe, then a combination of the above options may be possible. If presentation is an option it is suggested that a design scheme that removes the later entrances be considered, as they detract from the overall intelligibility of the monument as an air raid shelter. One option would be to cut back the bank and recreate an entrance with sandbag revetments. If this were done then the careful use of a grille positioned at the blast wall entrance to the monument and some glass panelling (to prevent any accumulation of rubbish) would then enable a view into the structure by means of the clever use of lighting and mirrors. This would also serve to emphasise the way that the blast wall worked, and could even be done in such a way as to recreate a wartime interior view of the monument on a presentation panel even if the rest of the monument was filled in.

7.0 Acknowledgements

The project was commissioned by Wolverhampton Borough Council, and thanks are due to Mike Shaw who monitored the project for the Local Planning Authority. Thanks also go to the staff at Wolverhampton Archives, and other local libraries. Work on site was carried out by Steve Litherland and Kirsty Nichol who also produced the written report which was illustrated by Nigel Dodds.

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www.baggeridgebrick.co.uk



Fig.1

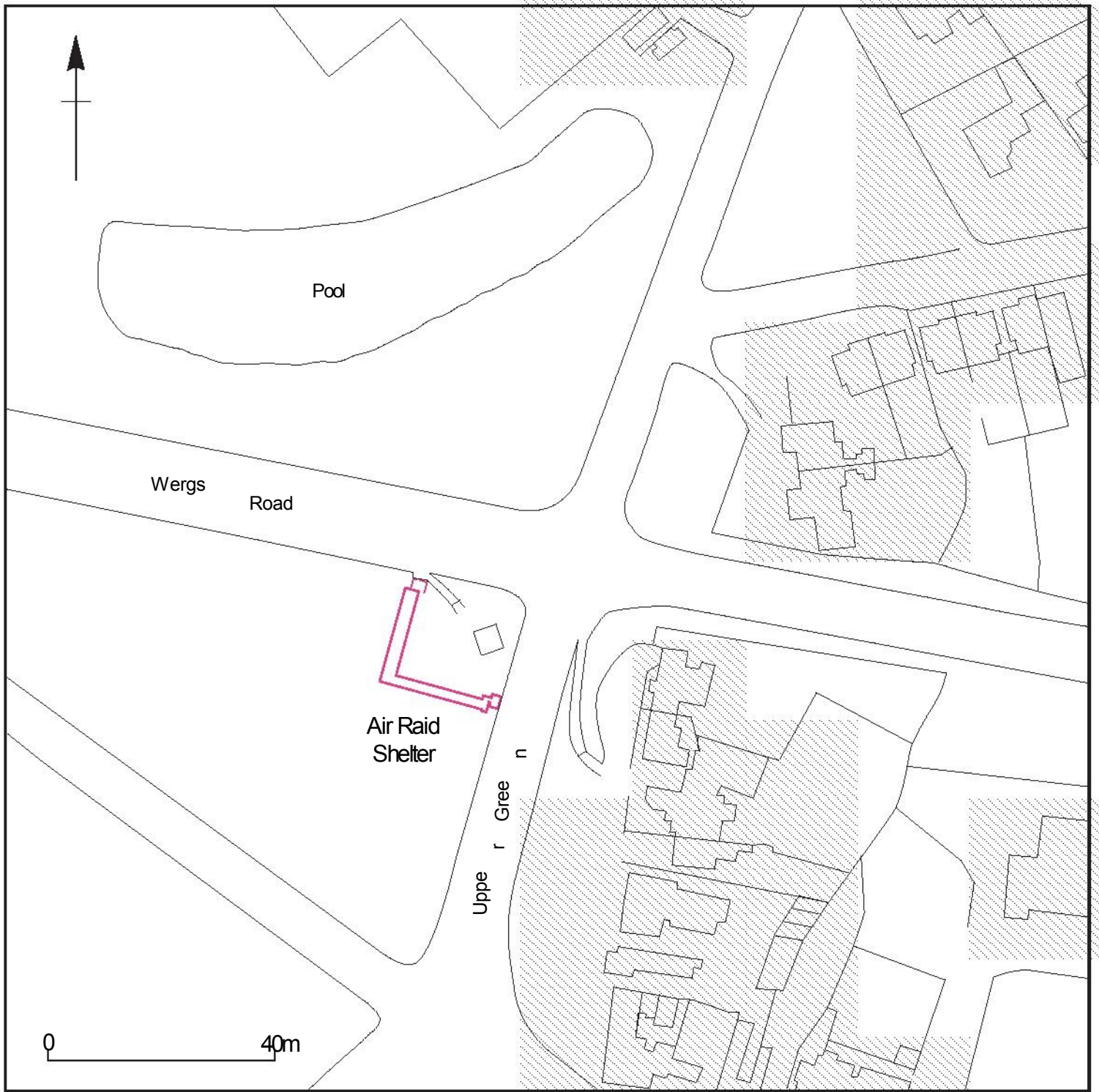
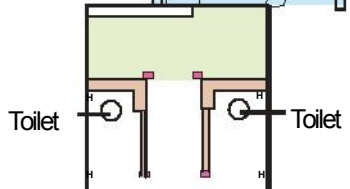
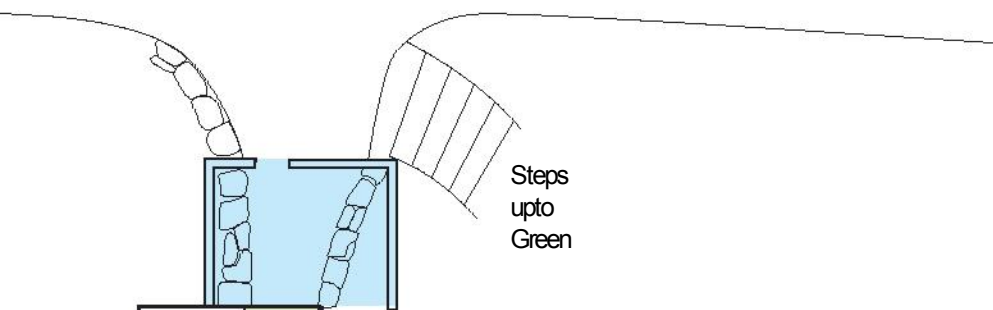


Fig.2

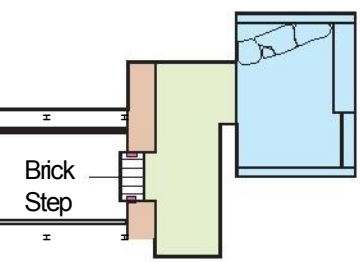
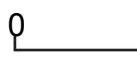
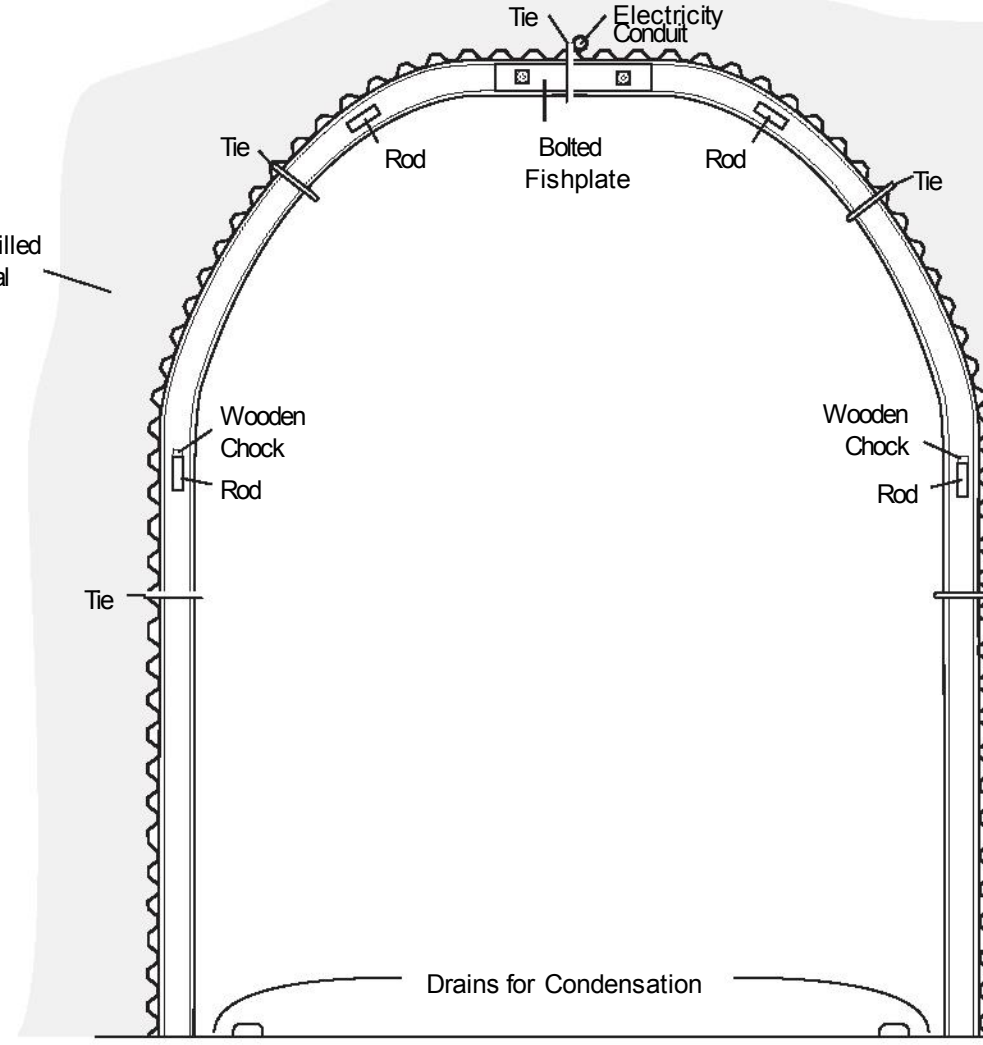


- Poured Concrete Roof
- Brick Walls Contemporary with use of Shelter
- Wooden Door Jambs
- I-Beam Braces
- Later Alterations

Emergency Hatch

Emergency Hatch

B
B



Upper Green

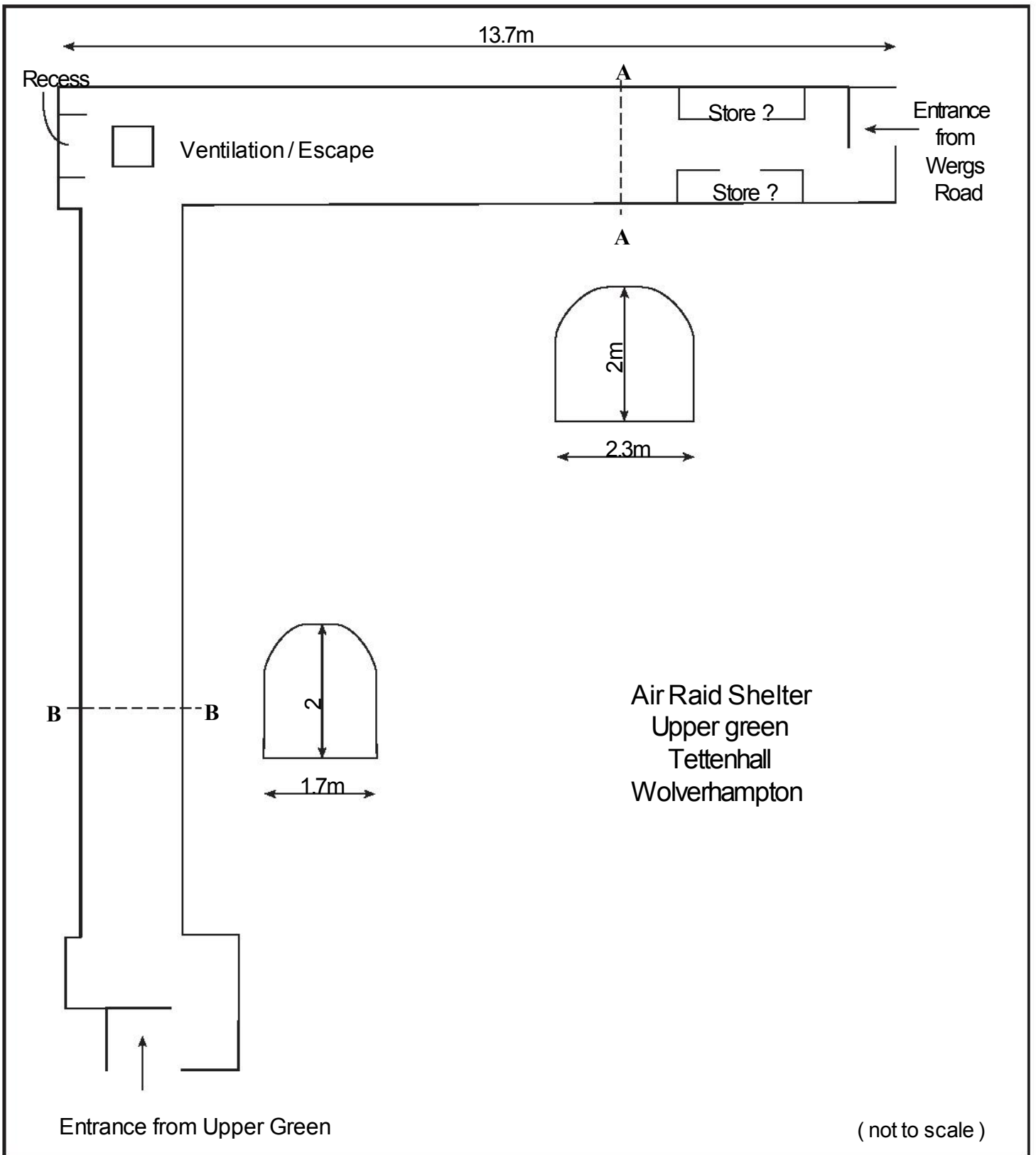


Fig.4

URBAN DISTRICT OF TETTENHALL.



WHAT TO DO AFTER AN AIR RAID

Read this now — let your family
read it—and then keep it in your
Identity Card for future reference.

Whitehead Brothers (Wolverhampton) Ltd.

Plate1 Community Leaflet



Plate 2 The Home Guard 1943 (Parkes)



Plate 3 The Home Guard 1943 (Parkes)



Plate 4 Northern Entrance with clocktower



Plate 5 Photograph taken During 1996 Site Visit (Whitehouse)



Plate 6 Junction of Two Tunnels Showing Blocking, with Emergency Exit



Plate 7 East-west Tunnel Looking back Towards the Entrance



Plate 8 Detail of Fishplate

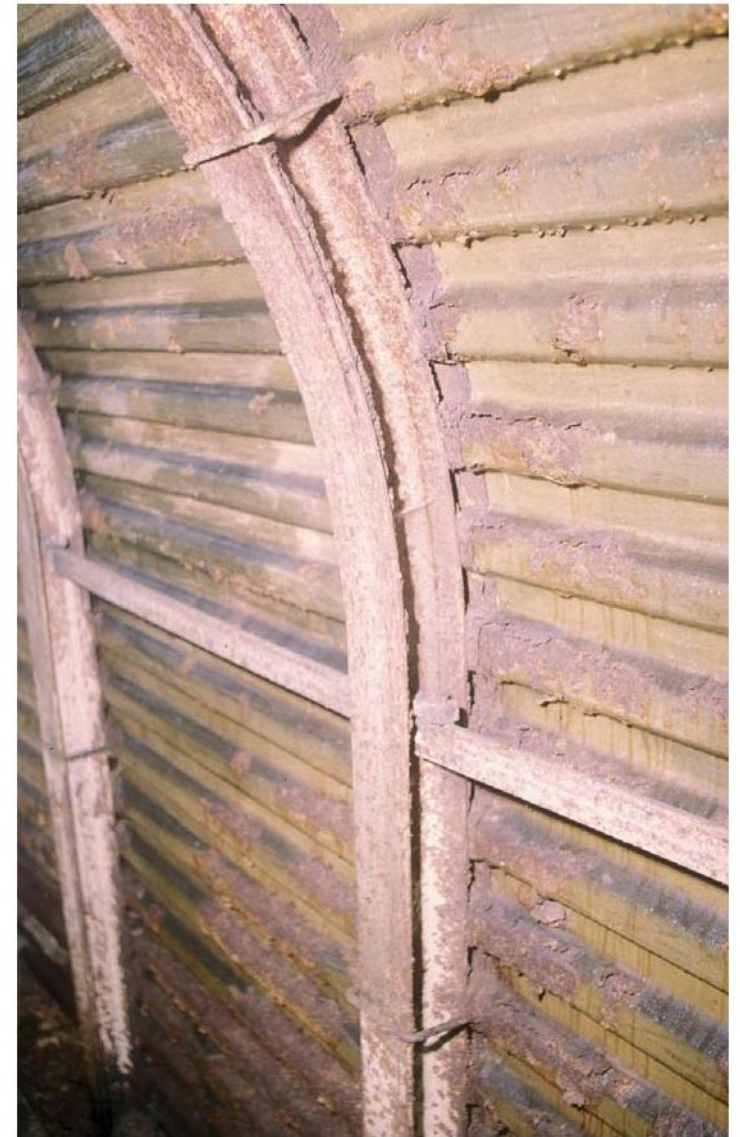


Plate 9 Detail of Steel Ties

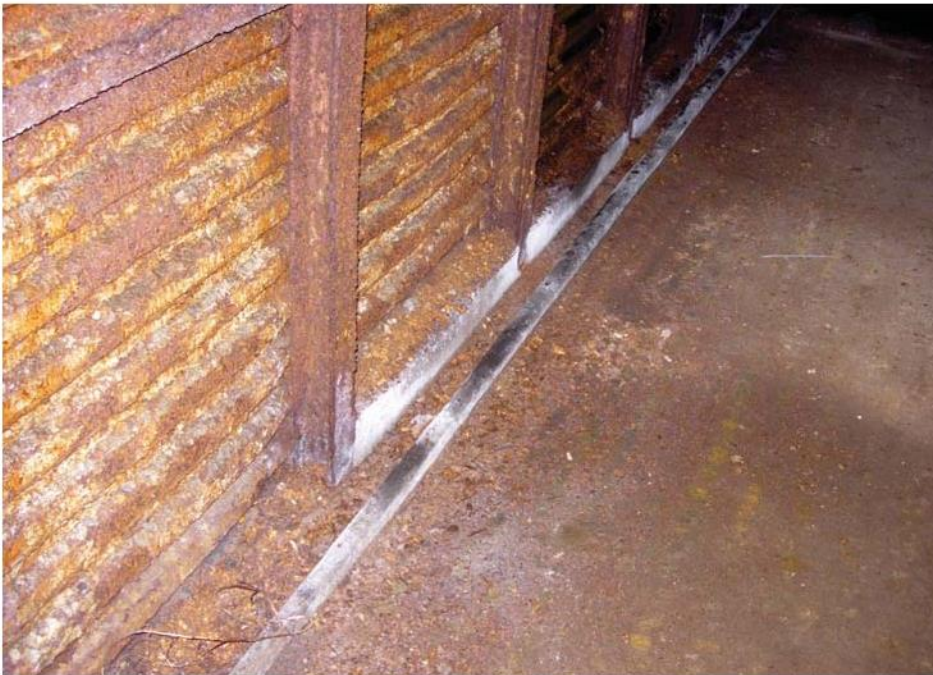


Plate 10 Detail of Drain



Plate 11 Blast Wall and Secondary Doorway



Plate 12 Detail of Door Frame with Rubber Tubing

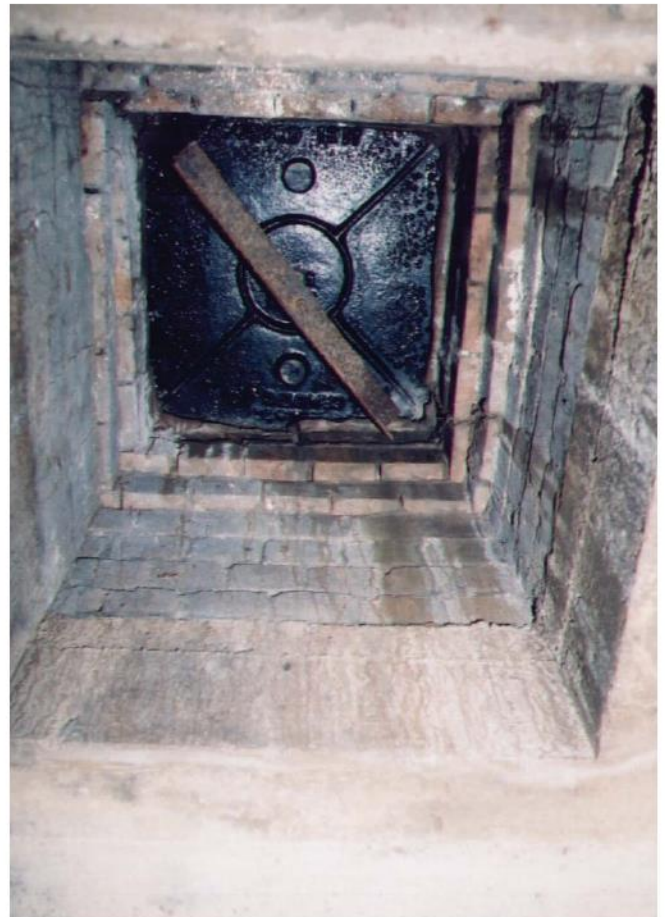


Plate 13 Detail of Later Adaption of the Emergency Exit



Plate 14 Detail Showing Extra Rooms



Plate 15 Detail of Bricks





Plate 18 Entrance from Upper Green Road in 1996 (Whitehouse)



Plate 19 Entrance from Wergs Road in 1996 (Whitehouse)

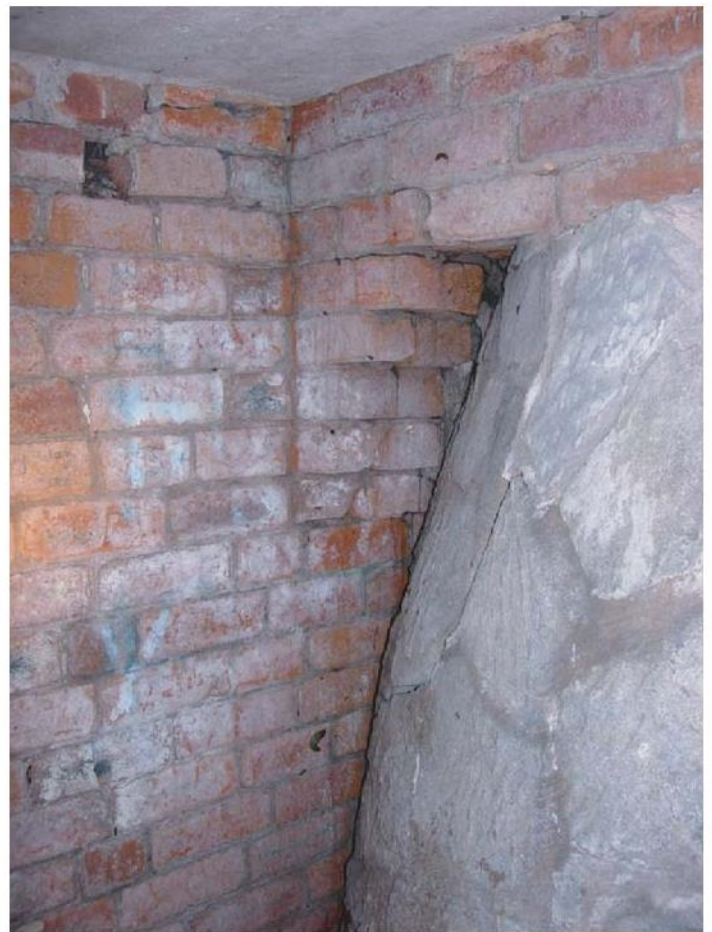


Plate 20 Detail Showing Brick Entrance Built Over Earlier Stone Walls