

Wolverhampton Archaeology Group

Projects No 3 and 4

Air Raid Shelters at St Luke' s and Warstones schools

by
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INTRODUCTION

The Conservation Officer for Wolverhampton, Sue Whitehouse, asked Wolverhampton Archaeology Group, to record the surviving air raid shelters at Warstones Primary School, Wolverhampton, West Midlands (NGR 389296) and also at St Luke's school.

There are nine air raid shelters in total at Warstones. Five are situated in a central grassed area within the school structure. A further three are set to the east of the school, slightly offset to the previous five shelters. The final shelter is different from the main body of shelters, and is to be found at the front of the school, very close to Warstones Road. At St Luke's there is only one air raid shelter set close to the boundary of the playing field.

The aim of this survey was to record the surviving air raid shelters at the two schools, and to increase our knowledge of Second World War monuments in Wolverhampton.

RISK ASSESSMENT

All WAG members on site were made aware of the following risks.

Care was to be taken while working on the external surface of the air raid shelter; the sides are fairly steep, slippery, and uneven in places, so there is a risk of ankle injury.

Access to the main body of the shelter is via a set of steps. In some of the shelters, these are not clear of obstruction, so care is needed in descent. The floor surface in some of the shelters was covered with litter, and a variety of rubbish including wood with nails, and used medical needles.

Members were advised that the shelters are a confined space, and that if they suffered claustrophobia they were advised not to enter. Visibility was also poor; torchlight was used while recording. Warm clothing was also recommended, while working inside the shelters.

Hard hats were to be worn inside the shelter, due to low entranceway, and low ceilings, with protrusions in places.

All members were up-to-date with their tetanus injection.

METHODOLOGY

Sue Whitehouse and Annie Saunders carried out an initial site inspection, prior to Wolverhampton Archaeology Group members recording the air raid shelters.

A site plan for the main body of the air raid shelters was surveyed at a scale of 1:200 (Figures 12 and 13). As all the shelters were of the same construction in this area, one was recorded by plan (Figure 14), with internal and external elevations (Figures 15 and 16). Photographs of the shelter were also taken, using digital camera, and traditional colour film photography. No excavation was carried out.

RESULTS

Warstones School

The following description of the air raid shelters is a composite of the main body of shelters, numbers 1- 8, located within the central grassed area of Warstones School.

External Features

The mound itself is 13 metres in length, 5 metres in width and 1.5 metres in height. A layer of earth covers the concrete construction, which is now grassed.

At both ends of the mound, the entrance and the ventilation/emergency exit, are clearly seen above the grassed mound. Both are constructed of prefabricated, reinforced concrete, with the concrete surface in places eroded, showing the metal reinforcement rods.

The doorway is constructed from prefabricated, reinforced concrete. The door is set at an angle of 45° , there appears to be no original solid door. The entranceway is 1.1 metres wide, and leads downwards via a set of steps, to an opening into the main body of the shelter. This is set at an angle of 90° , to the above ground door. At the base of the steps, a covered drain is present.



Figure 1 Entrance to Air Raid Shelter



Figure 2 Steps leading down

The ventilation shaft/emergency exit is also constructed of prefabricated, reinforced concrete. It is square in shape and 0.8m each side. Again some of the concrete surface has eroded away, and the metal reinforcement rods can be seen.



Internal Features

The shelter is separated into three sections. The entranceway, the main body, and an emergency exit/ventilation area.

The entranceway is orientated at 90° to the above ground doorway. The area is rectangular in shape, 0.79m x 2m, with a drain at the furthest end, covered by a metal cover (0.6 x 0.6 metres). The outer wall of the entranceway is constructed of prefabricated, reinforced concrete, which has been whitewashed. On a number of the shelters, for example number 4, little metal hooks are still in situ, and only found in the entranceway. These most likely were used to hold an electric cable, for lighting within the shelter.

The dimensions of the main body of the shelter are 7.5m x 2m x 2m, and its cross section is parabolic in shape. The doorway into the main body of the shelter is constructed of red brick, which at one time had been whitewashed. The doorway is not centrally located but is offset to one side, and its position varies between the shelters. This was probably built to act as a blast wall.

The main body of the shelter is constructed of prefabricated, reinforced concrete panels. There are 12 in number, each with a width of 0.61 m. Some of the panels abut each other, but in general, there is 0.01 m of mortar between each panel. At the apex of the arch, the panels are held together by iron staples. These can be seen in shelter 3. The panels are covered by a thin screed of concrete, and have been whitewashed.



Figure 3 Interior of Shelter 3 showing staples in the ceiling



Figure 4 Interior showing dimensions

Protruding from the ceiling of the shelter, are large metal hooks, and porcelain electrical insulators. These were probably used to hold electrical cables, and traditional lighting (a lamp), while the shelters were in use.



Figure 5 Ceiling insulators

In the main body of the shelter, three rows of benches are found (complete in shelter 7). The seating is constructed of concrete slabs, supported by red brick columns, at the terminus of each slab. These are 0.45m in height. The concrete slabs are rounded on one edge. The benches extend the full length of the main body of the shelter; two sets of benches are located next to the outer walls, with the third, located centrally.



Figure 6 Typical interior of an Air Raid Shelter

A second red brick wall marks the terminus of the main body of the shelter. The doorway is central, and 0.56m in width. It leads to the emergency exit/ventilation shaft.

Behind the brick wall, is the last section of the shelter. This is rectangular in shape, 0.61 m x 2m, and extends upwards above the main body of the shelter. The area directly behind the brick wall on either side of the doorway was used as the latrine area. These consisted of large galvanized iron buckets. There may have been a screen over these two areas, indicated by the presence of a wooden lintel, situated between the outer wall of the shelter, and the brick wall.



Figure 7 Wooden lintel covering latrine recess

A ladder was placed centrally on the far wall of the shelter, for an emergency exit.



Figure 8 Ventilation shaft



Figure 9 Top of ladder

Figures 17 and 18 show isometric drawings of the exterior and interior by Graham Mogford

Solo Shelter

The grassed mound is 14 metres in length, and 10 metres in width. As with the previous shelters, there is an entranceway, and a ventilation/emergency exit.

The doorway was different from those previously described. It is not at an angle of 45°, but vertical. It appears to be constructed of a mixture of red brick and concrete. The doorway has been bricked up so no access can be gained for further investigation.

The ventilation shaft/emergency exit was constructed of red brick. It was square in shape and 0.9m each side. This was also blocked, so no further investigation could take place.

St Luke' s School

There was one air raid shelter situated on the far side of the playing field from the school (Figure 19). It was not possible to gain access to the interior as the entrance was blocked but the exterior appearance was identical to those at Warstones. A plan of the exterior was drawn (Figure 20) together with east (Figure 21) and west (Figure 22) facing elevations which showed the ventilation shaft and entrance respectively



Figure 10 General view of the Air Raid Shelter at St Luke's.

The interior of the Air Raid Shelter could be seen through some cracks in the ventilation shaft and it appeared that its construction was similar to those at Warstones.



Figure 11View of interior

DISCUSSION

During the Second World War, Wolverhampton played an important role in the manufacture of goods needed in the war effort. Being on the edge of the Black Country with many of the engineering works situated to the south of the town, many of the firms converted production from commercial goods, to those needed for the war effort.

Wolverhampton to the north was also a major target for enemy bombing raids, since this was the area of the aerospace industries and Wolverhampton Airport.

As a result of the potential bombing risk, protection for the civilian people was needed. Although Air Raid Precaution was not compulsory in the build up to the war, or even in the first stages of the war, the government advised manufacturing companies to provide air raid shelters, and prepare for possible attack. Many did not do so until it was absolutely necessary since the government was paying or subsidizing the construction of air raid shelters.

When it was realised that air attack was highly possible, the government did provide a limited number of air raid shelters. Those families who were lucky enough to have their own gardens, and earn less than two hundred and fifty pounds per year, qualified for the free issue of an Anderson Shelter (Calder 1996). It became possibly the best known of the air raid shelters, since two and a quarter million were given away free by the Government before the start of the blitz.

Another type of shelter used in the home, was a Morrison Shelter. It was designed to be used indoors, within the home itself, but when the steel shortage occurred, the Government moved to brick communal shelters.

However, not everyone was at home when the air raids occurred, and for this reason, public shelters were constructed at central places within the community, and within the confines of the work place.

Public air raid shelters, also came in a variety of different designs, and were constructed of numerous materials. The provision for air raid precautions was left to the local authority, and there were no set guidelines to the quality of these buildings. Since there was a sudden need to build these shelters, building materials like brick became in short supply, so there was a change to concrete, and so on.

As mentioned previously in the report, the air aid shelters recorded, were constructed of concrete panels, and probably arrived in a kit form at the site. A trench would have been dug in the ground and the panels placed within. These would have then been sealed by mortar between each panel, and held together at the top by a metal staple. A brick wall was constructed at either end, probably to protect against flying shrapnel. Once the construction was finished, it was grassed over. The grass provided both camouflage and helped dissipate the force of flying bomb shrapnel. These shelters were designed to be splinter proof, not bomb proof, as there was a higher risk of being injured or killed by bomb shrapnel.

The main body of shelters appears to be similar in construction to those found on military sites, known as Stanton type air raid shelters. They appear to be constructed in the same way, although military shelters did not have any latrine facilities' (Brown ET al, 1999).

The larger shelter at the front of Warstones School, as mentioned previously, appears to be larger in size, and possibly its construction may differ from the other shelters found on this site. However it is difficult to compare this shelter with the rest of the shelters on the

site, without gaining access. The position of the shelter suggests that it may have been a shelter for the general public, and could have been one in a series along the Warstones Road whilst those to the rear of the school, were for the school itself.

The single shelter at St Luke's school appears to be identical in construction to the eight found at Warstones. This shelter was in place before the school was built. Because of its position near the boundary of the playing field it is suggested that this shelter was for the use of the Sunbeam Sports Club which was next door.

CONCLUSION

The Second World War, a period in history which for many of the population can still be remembered, is a period where, while we have numerous photographs, moving images, newspapers, radio broadcasts, and a whole range of other documentation, little is recorded about the buildings constructed.

Since this period of history can be remembered, the validity of recording wartime monuments has been questioned, but they must be recorded, since they are being destroyed to make way for new developments. The time is approaching fast, that a new generation will know nothing of the Second World War, and no monuments will survive, to show how people lived during this period in our history. It is therefore of great importance that these sites are recorded, and that some are preserved for future generations.

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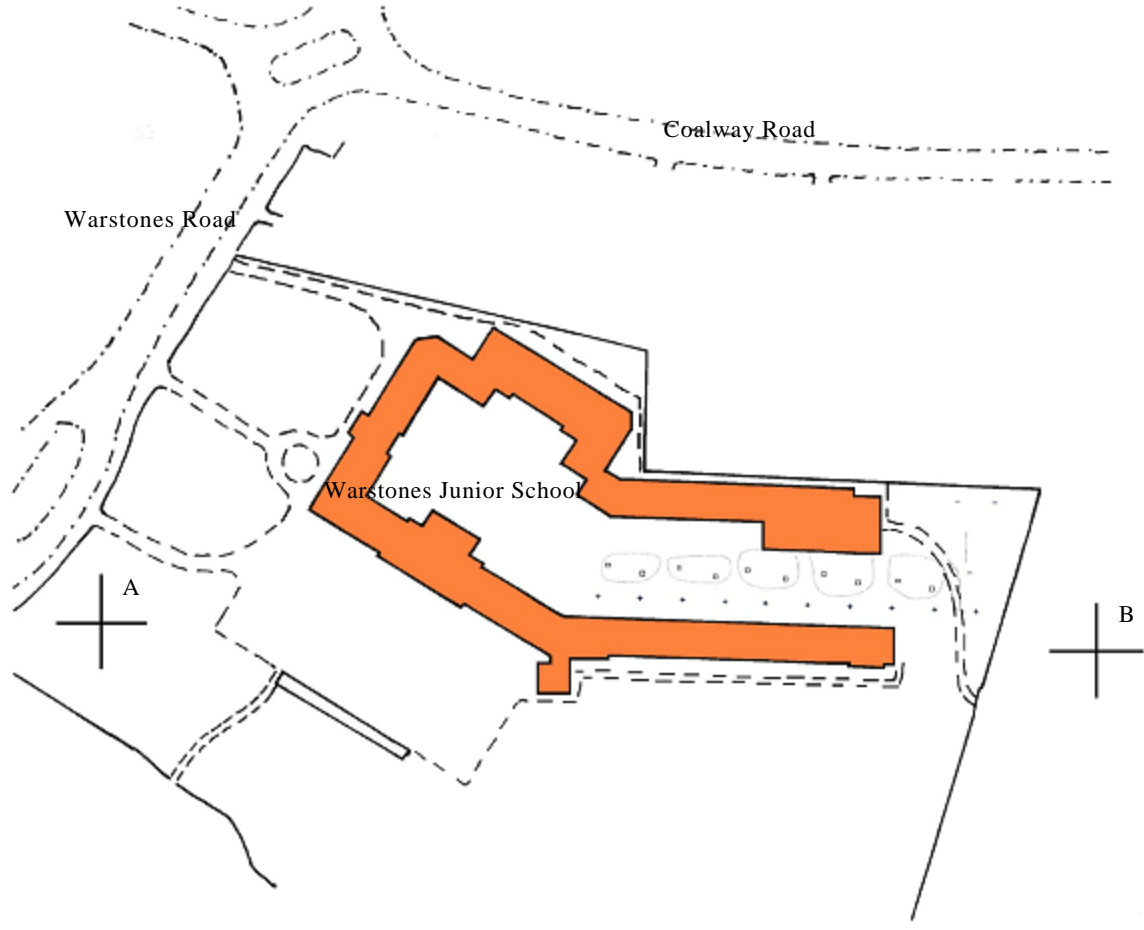
Martin Holland

Emma Hughes

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APPENDIX



ORIGINAL SCALE: 1:2500

DRAWN BY: M R HOLLAND

KEY

- SCHOOL BUILDING
- PATHS
- LIMIT OF AIR RAID SHELTERS
- - - - ROAD KERBS
- +** GRID REFERENCE POINTS
- A 389000E/298750N
- B 389250E/298750N

Figure 12 Site Plan of Warstones School

ORIGINAL SCALE: 1:200

PLANNED BY: **M HOLLAND**
E HUGHES
G MOGFORD

DRAWN BY: **E HUGHES**

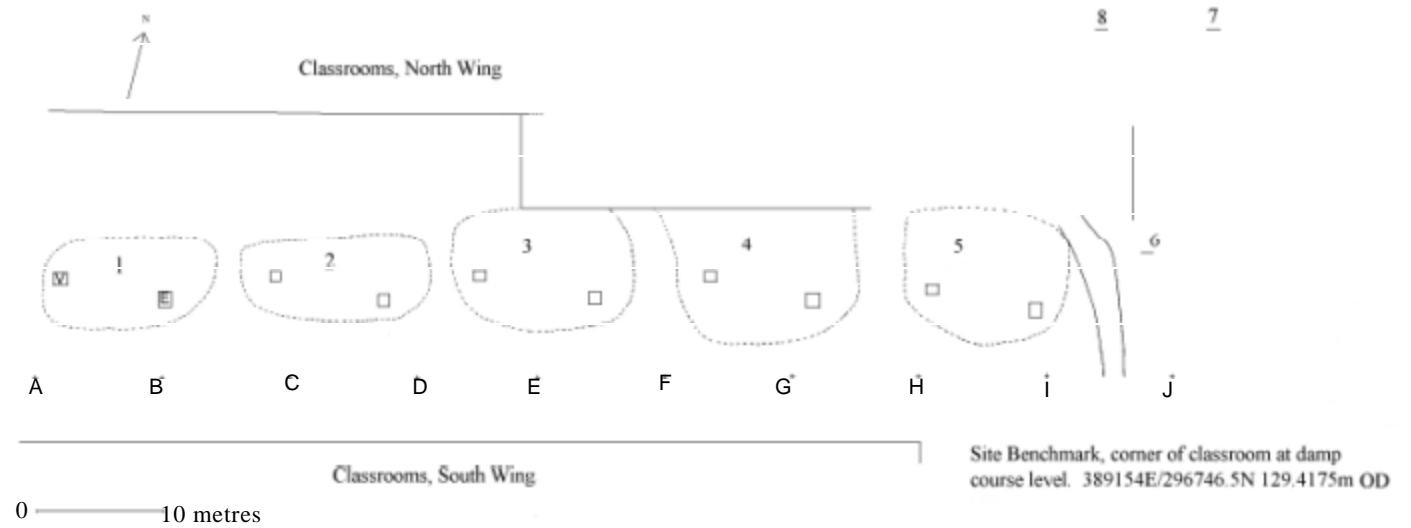
KEY

----- OUTER LIMIT OF SURFACE MOUNDS

+ GRID POINTS

A 389084E/296741.5N
B 389094E/296741.5N
C 389104E/296741.5N
D 389114E/296741.5N
E 389124E/296741.5N
F 389134E/296741.5N
G 389144E/296741.5N
H 389154E/296741.5N
I 389164E/296741.5N
J 389174E/296741.5N

SITE GRID POINT
A 0E/0N



Ventilation shaft and Entrance marked on Shelter 1. Position of Entrances only shown for Shelters 6 to 8

Figure 13 Site Plan of Air Raid Shelters

ORIGINAL SCALE: 1:20

PLANNED BY: N MCGUINNESS
M R HOLLAND

DRAWN BY: E HUGHES

KEY

----- OUTER LIMIT OF
SURFACE MOUND



DIRECTION OF SLOPE



ERODED CONCRETE
SURFACE

+ SITE GRID POINTS

A 20.00E/10.00N
B 25.00E/10.00N
C 20.00E/5.00N
D 25.00E/5.00N



TREE

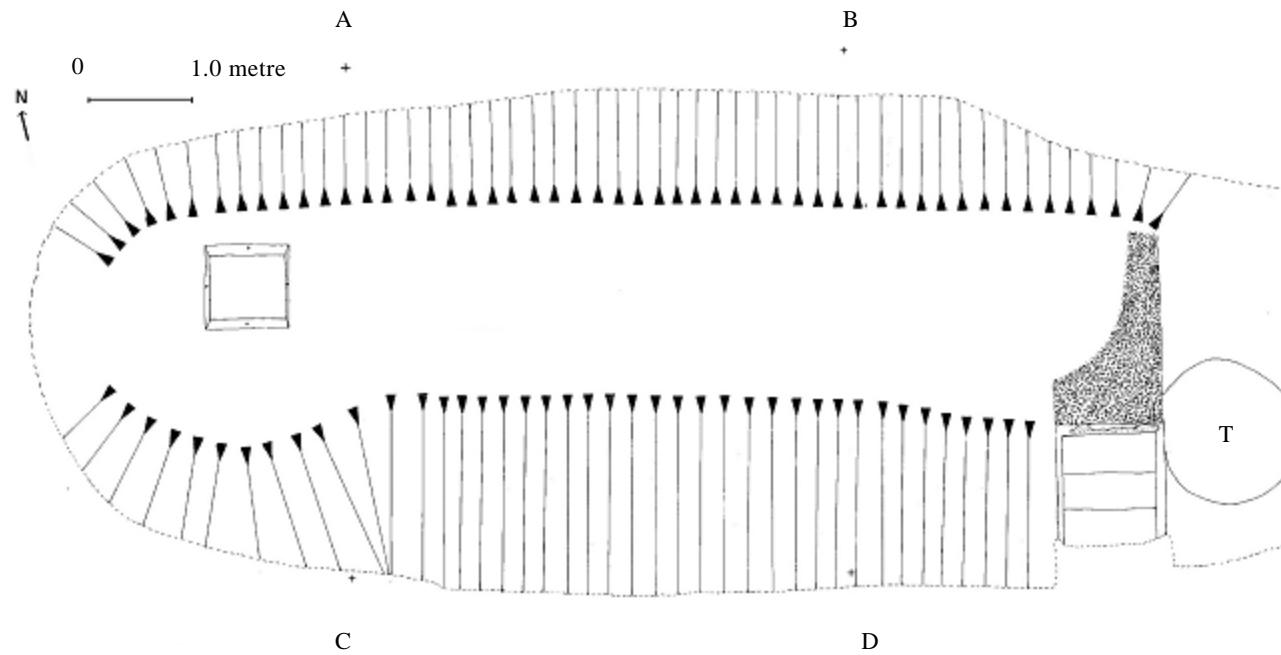






Figure 14 Plan of Air Raid Shelter 2 at Warstones

ORIGINAL SCALE: 1:10

DRAWN BY: J E HOLLAND
S B VINT

KEY

-  DIRECTION OF SLOPE
-  VOID
-  WOOD
-  BRICK

- +** DATUM POINTS
(relative to floor surface)
- A 0.97m
- B 0.97m

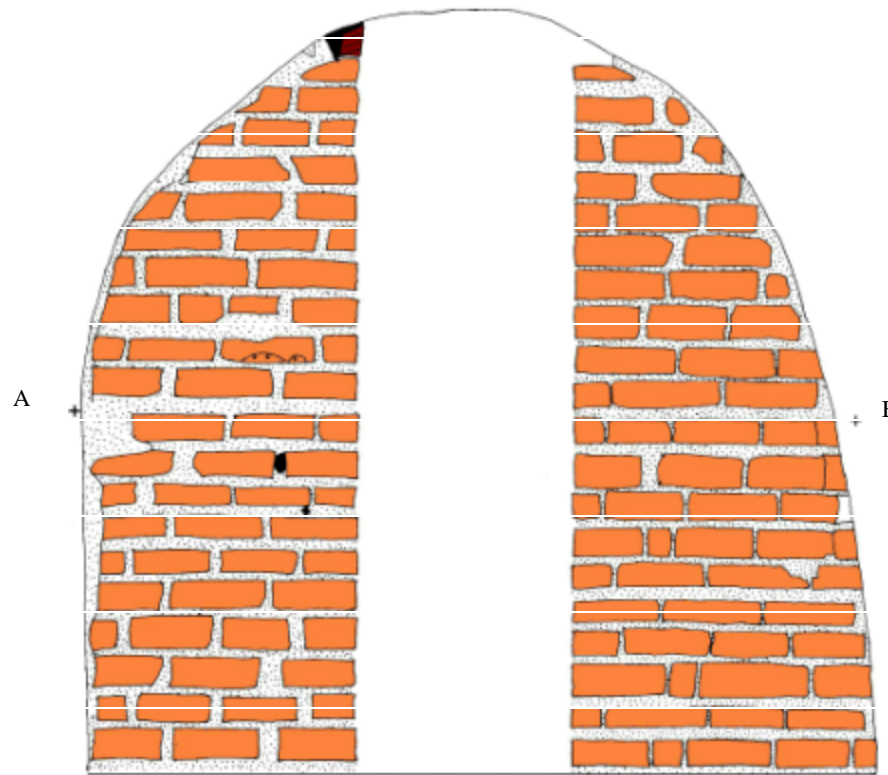



Figure 15 Internal elevation of Shelter 7

ORIGINAL SCALE: 1:10

DRAWN BY: E HUGHES

KEY

----- FEATURE CONTINUES BUT NOT EXPOSED

 ERODED CONCRETE SURFACE

 VOID

 METAL

+ DATUM POINTS
A
B

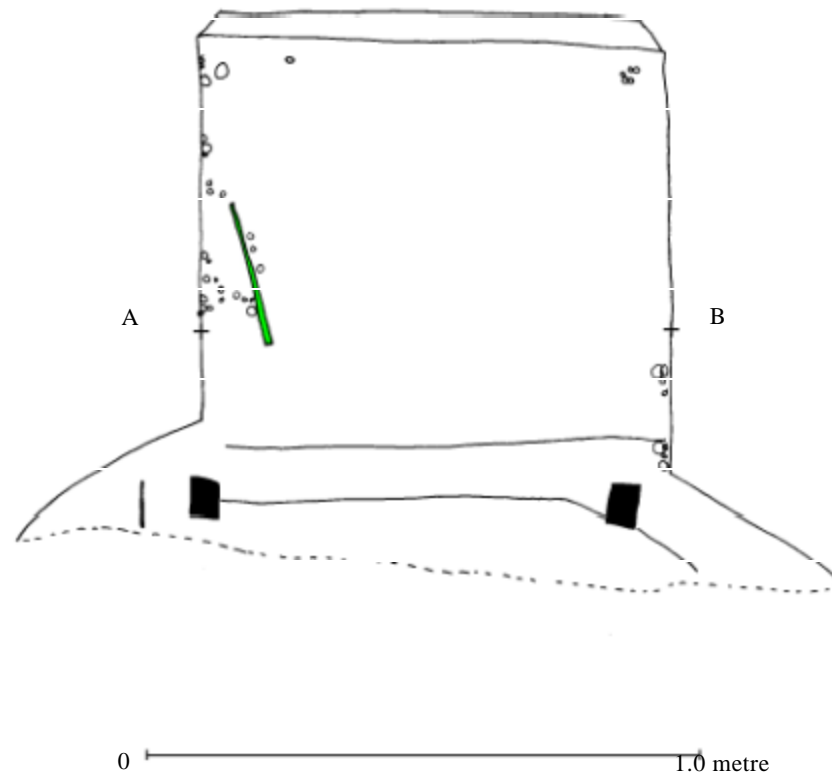


Figure 16 Elevation of ventilation shaft, Shelter 1

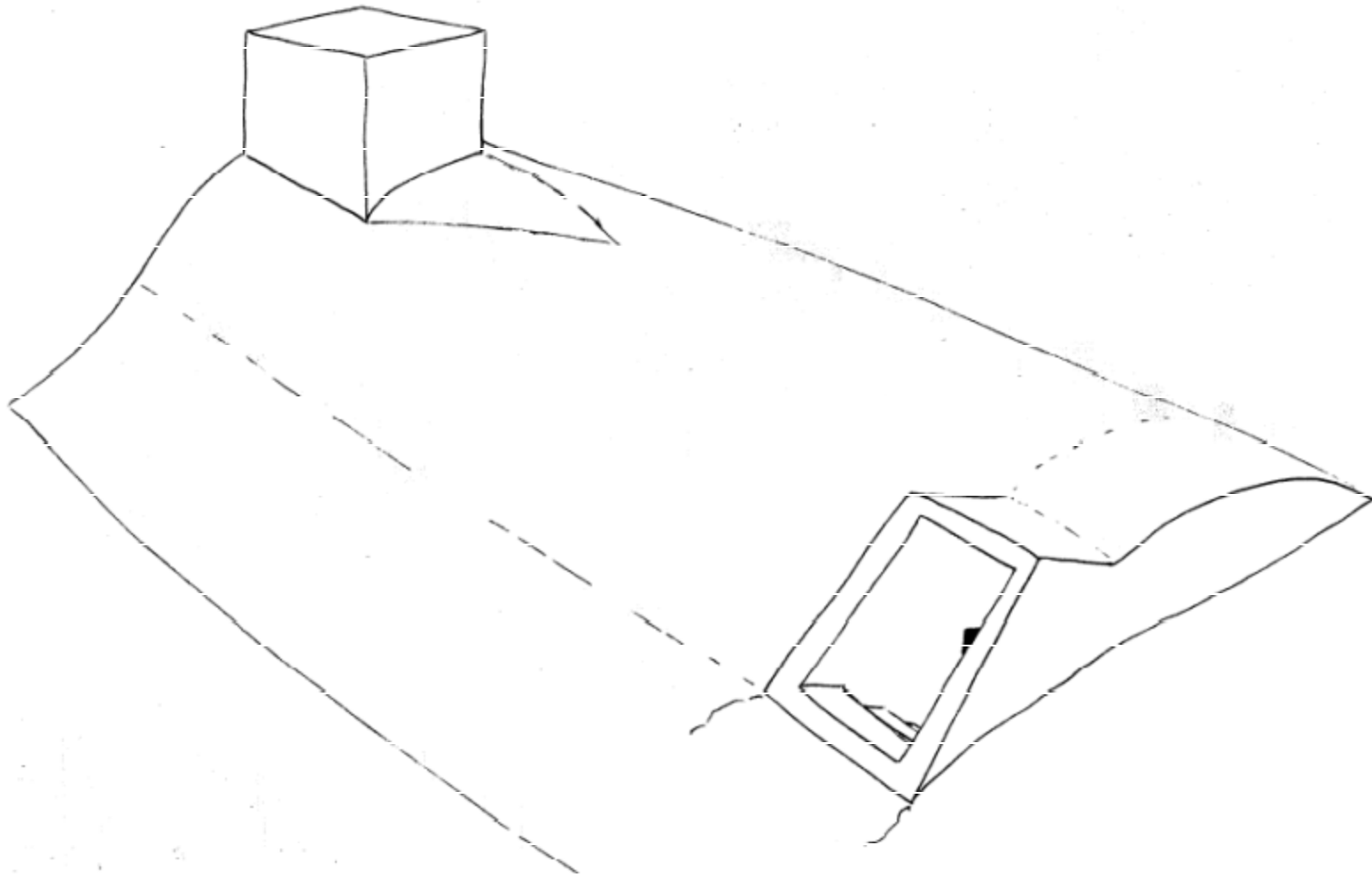


Figure 17 Isometric drawing of the exterior.

NOT TO SCALE

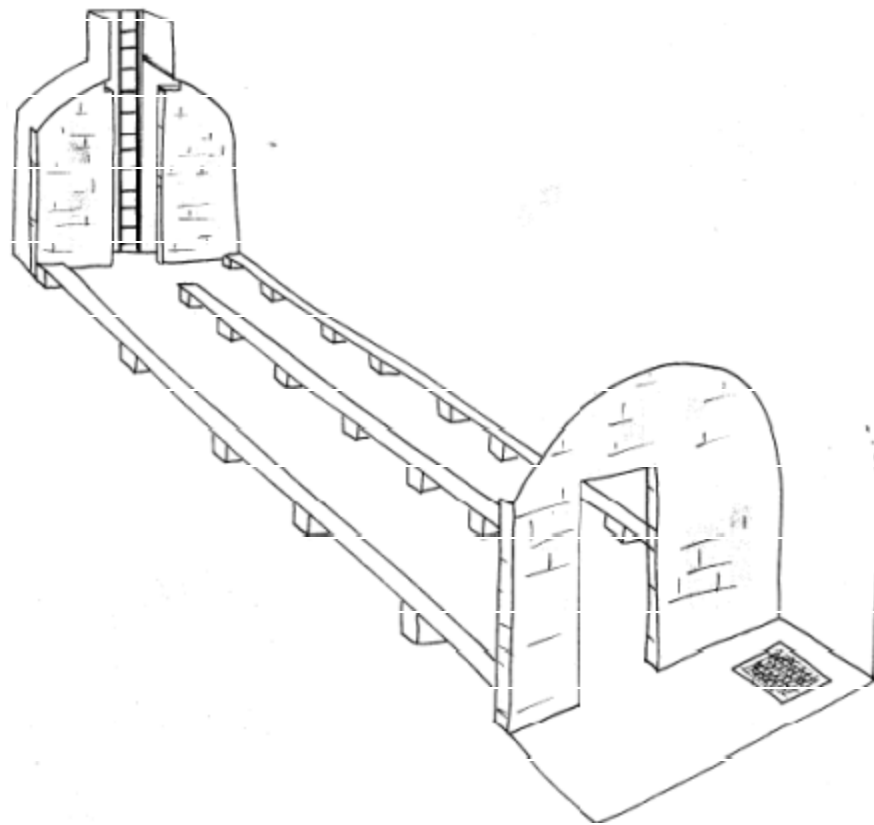






Figure 18 Isometric drawing of the interior

ORIGINAL SCALE: 1:2500

DRAWN BY: M R HOLLAND

KEY

-  SCHOOL BUILDING
-  PATHS
-  ROAD KERBS
-  GRID REFERENCE POINTS
- A 390750E/297000N
- B 390950E/297000N

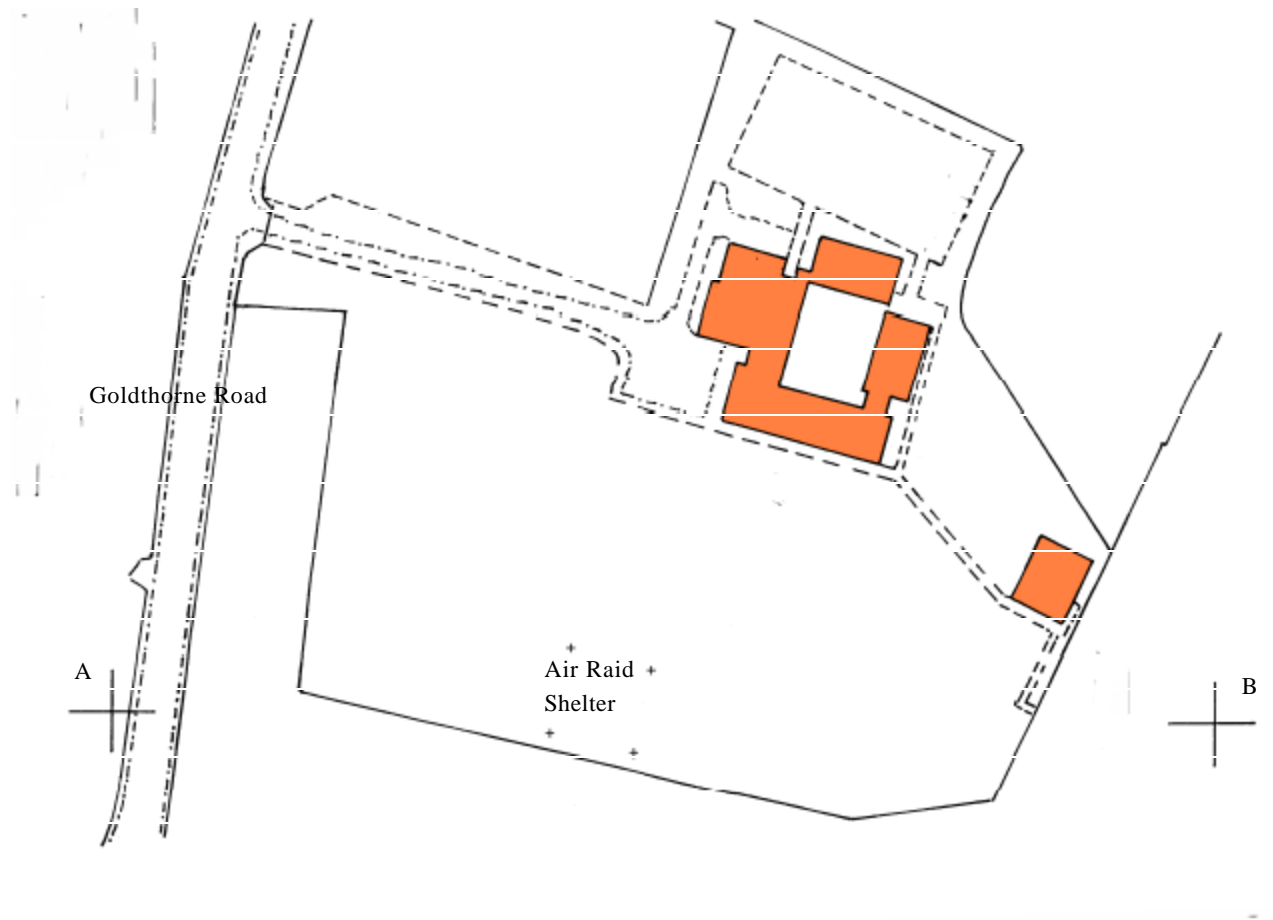


Figure 19 Site Plan of St Luke's School

ORIGINAL SCALE: 1:10

DRAWN BY: E HUGHES

KEY

----- FEATURE CONTINUES BUT NOT EXPOSED

(T) TREE

+ DATUM POINT
(relative to site grid)

A 1.6E/1.3N
B 11.14E/1.3N

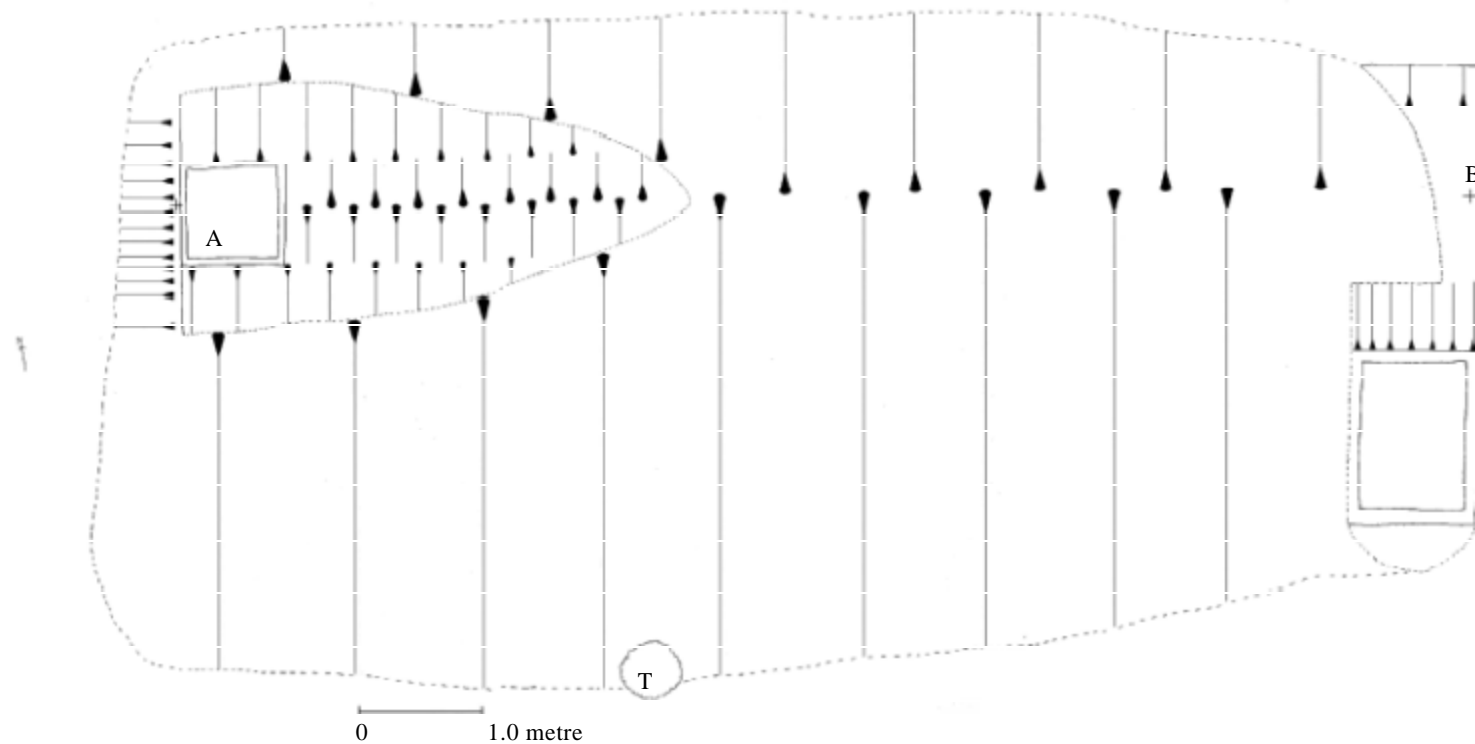



Figure 20 Plan of Air Raid Shelter at St Luke's.

ORIGINAL SCALE: 1:10

DRAWN BY: J E HOLLAND
S B VINT
E HUGHES

KEY

----- FEATURE CONTINUES
BUT NOT EXPOSED

 ERODED CONCRETE
SURFACE

 VOID

 METAL

+ DATUM POINTS
A 390866.6E/297017.4N
B 390866.6E/297016.4N
173.6mOD

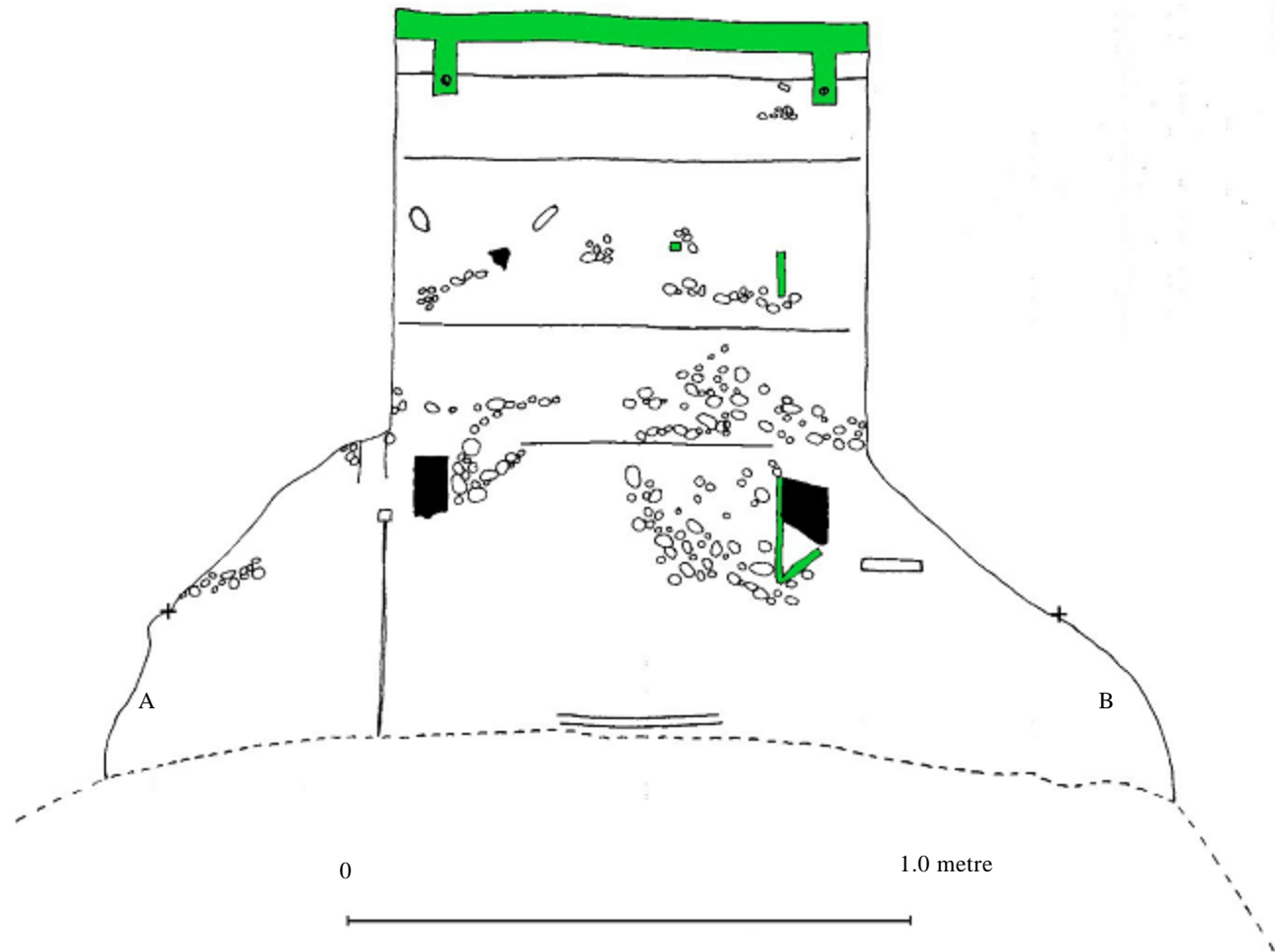


Figure 21 East facing elevation of the ventilation shaft at St Luke's

ORIGINAL SCALE: 1:10

DRAWN BY: E HUGHES

KEY

FEATURE CONTINUES
BUT NOT EXPOSED



ERODED CONCRETE
SURFACE



VOID

+

DATUM POINTS

A

390866.6E/297018.9N/ 173.75mOD

B

390866.6E/297016.4N/ 173.72mOD

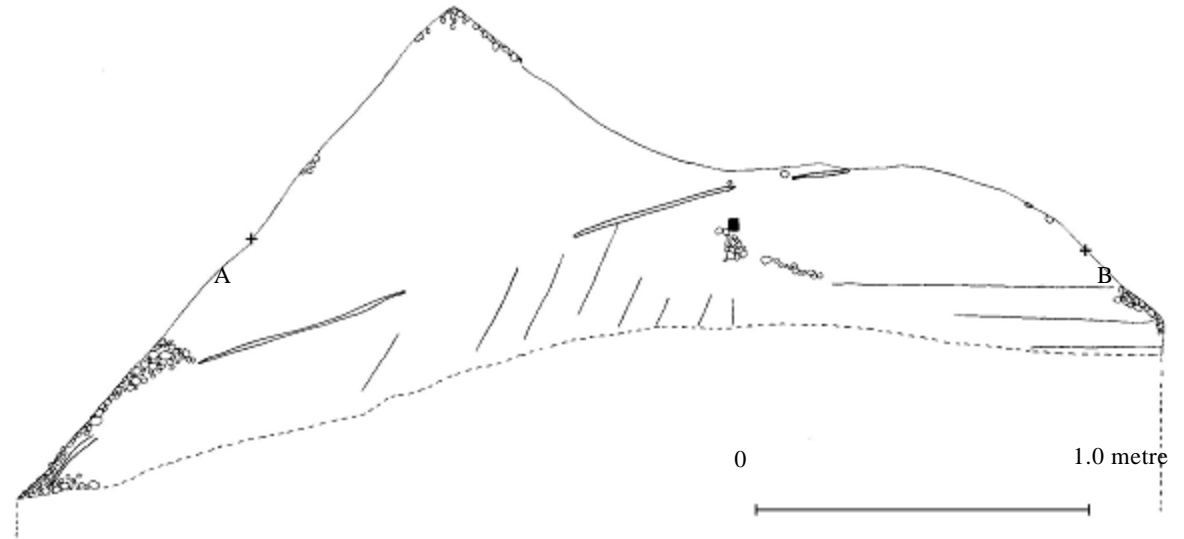


Figure 22 West facing elevation of Air Raid Shelter at St Luke's.