

**A survey of three groups of
air-raid shelters at
Areas C2, J1 and P1
of the Garrison Urban Village,
Colchester, Essex
April 2004-May 2007**

**report prepared by
Chris Lister**

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Colchester Archaeological Trust
12 Lexden Road,
Colchester,
Essex CO3 3NF

tel.: (01206) 541051
(01206) 500124
email: archaeologists@catuk.org

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1 Summary

This is the archive report on a survey of three groups of World War 2 air-raid shelters at Areas C2 (Napier Road), J1 (Le Cateau Barracks) and P1 (Berechurch Road) of the Garrison Urban Village at Colchester, Essex. The Colchester Archaeological Trust carried out this work during the course of archaeological evaluation and excavation of areas of alienated land, acquired by Taylor Wimpey for residential development.

2 Introduction (Figs 1-4)

- 2.1 The proposed development of the alienated land at Colchester Garrison involves the redevelopment, primarily for residential use, of areas of the present Garrison and adjacent farmland, which were formerly owned by the MoD. The construction of the new garrison will allow a phased decanting of the existing Garrison personnel into the new garrison, thus facilitating phased release of areas of the former Garrison for redevelopment.
- 2.2 In order to facilitate the proposed redevelopment, seven single-storey modern buildings and six World War 2 air-raid shelters were demolished at Area C2, between Napier Road and Circular Road East. Eleven World War 2 air-raid shelters were demolished at Area J1, on open ground between Butt Road and Le Cateau Barracks. Two buildings and seven World War 2 air-raid shelters were demolished at Area P1, flanked by Berechurch Road to the east, Ypres Road to the west, Poperinghe Road to the south, and the Garrison Courts Martial Centre to the north. The archaeological survey and watching brief of the air-raid shelters was commissioned by RPS Planning (RPS) on behalf of Taylor Wimpey and was carried out by the Colchester Archaeological Trust (CAT) under RPS project management. The project was monitored by the Colchester Borough Council Archaeological Officer (CBCAO) and RPS Planning.
- 2.3 Area C2 is centred on NGR TL 9975 2447 and occupies an area of 0.68ha. Area J1 is centred on NGR TL 9900 2400 and occupies an area of 11.1ha. Area P1 is centred on NGR TL 9966 2378 and occupies an area of 0.31ha. Each site was partly grassed and partly under tarmac (Figs 2-4).
- 2.4 All fieldwork and reporting was done in accordance with the Colchester Archaeological Trust's *Policies and procedures* (1999), Colchester Borough Council's *Guidelines for the standards and practice of archaeological fieldwork in the Borough of Colchester* (CM 2002) and *Guidelines on the preparation and transfer of archaeological archives to Colchester Museums* (CM 2003), the Institute of Field Archaeologists' *Standard and guidance for archaeological field evaluation* (IFA 2001a) and *Standard and guidance for the collection, documentation, conservation and research of archaeological materials* (IFA 2001b). The guidance contained in the documents *Management of archaeological projects* (MAP 2), and *Research and archaeology: a framework for the Eastern Counties 1. Resource assessment* (EAA 3), *Research and archaeology: a framework for the Eastern Counties 2. Research agenda and strategy* (EAA 8), and *Standards for field archaeology in the East of England* (EAA 14) were also followed.

3 Archaeological background

- 3.1 Map evidence suggests that all three areas were farmland in the 17th and 18th centuries. The triangular plot of Area C2 was defined by at least 1876, with the area shown as open ground with trees on the OS 1st Edition of 1874-1876 and on the 2nd Edition OS of 1893-c 1904. The area appears to contain a single structure by 1921, but was still largely open ground. A Royal Engineers (RE) map of 1949 (see 1949 RE map; CAT Report 97, fig 35) shows the area now heavily built over, with four structures (Army Welfare Offices or AWO) dominating Area C2, but the remainder of the area is shown as open ground (CAT Report 97). Area J1 is shown as open ground or grass paddocks within Le Cateau Barracks on the OS 1st Edition of 1874-1876, and this is still the case on the 1949 RE map. The OS 1st Edition of

1874-1876 shows Area P1 as open farmland. However, by the time of the 2nd Edition 1:2500 scale maps of 1893-c 1904, three barrack blocks are shown occupying the currently grassed area in the eastern part of Area P1. In addition, the Military Hospital is shown to the west of Area P1. The 1949 RE map shows the area occupied by the air-raid shelters as open ground. However, at some point after World War 2, a Garrison administrative building and Courts Martial Centre were built over the site.

4 Aims and strategy

- 4.1** The aim of the surveys was to record the air-raid shelters before demolition, including their internal and external features.
- 4.2** Work was carried out on Area C2 in three stages. In April-May 2004, five single-storey wooden buildings were demolished and shallow concrete pad foundations were removed by a mechanical excavator. A CAT archaeologist monitored this work and inspected the raft trenches for evidence of Roman burials or other archaeological features. This resulted in the recording of air-raid shelter 4. One upstanding air-raid shelter (shelter 1) was surveyed by hand and using a Total Station and another upstanding air-raid shelter (shelter 2) was recorded photographically prior to the demolition of both (CAT Report 319). During the excavation of Area C2 in July-September 2004, the remains of two previously demolished air-raid shelters (shelters 5 and 6) were uncovered and recorded (CAT Report 412 forthcoming). A final phase of works in April 2007 uncovered shelter 3. At Area J1, a dedicated search was undertaken by a demolition contractor for the purpose of removing any sub-surface structures and services, prior to redevelopment. As this group of shelters was visible on the ground, contractors using a mechanical excavator, under the supervision of a CAT archaeologist, fully exposed the shelters, which were then surveyed by hand and Total Station. This work was carried out in May 2007. The same method was employed at Area P1 in April 2007.
- 4.3** A photographic record was made of the air-raid shelters using a digital camera.

5 Results (Figs 1-21 and Plates 1-18)

5.1 Area C2: Shelter 1 (Figs 1-2, 5-6; Plates 1-4)

This shelter is referred to as CF1 in the Area C2 excavation report (Cat Report 412 forthcoming). The initial impression was of a long, low earthen mound (approx 7m by 11m) with concrete walls and entrances visible at either end, aligned north-east to south-west. The south-west entrance was made inaccessible by a concrete cover, but access was possible through the north-east entrance down a flight of six concrete steps. Extensive photography of the exterior and interior was undertaken, and hand-drawn plans were made. A Total Station survey was undertaken which produced a plan showing:

- The extent of the grass-covered mound
- The top of the grass-covered mound
- The two entrances
- A contemporary slab pathway leading to the north-east entrance
- The only surviving sub-surface exhaust vent

The earth mound stood approximately 1.2m above modern ground-level at its highest point and was partially obscured on the western side by a mature horse chestnut tree. The top of the south-west entrance was 20cm above the roof of the chamber – it was not possible to observe this calculation at the north-east entrance. A slab pathway made of 60cm by 60cm slabs was laid at an angle to the north-east entrance. No concrete cover was present at the north-east entrance and a thick layer of moss indicated that there had not been one for some time. There was, however, a 5cm deep lip around three sides of the entrance walls. Access to the shelter was down the flight of six steps on the north-eastern side, into a short

corridor. The dimensions of this entrance were 5.4m long by 1m wide in plan. The internal width of the corridor was 70cm, indicating that the entrance walls were each 15cm thick. Directly ahead was a recess (approx 87cm deep by 70cm wide) with a centrally-positioned circular hole (10cm in diameter) in the roof. This is interpreted as either an air vent or an exhaust vent for waste gases.

To the left of the corridor was a wooden door (72cm by 1.97m) set into a dividing wall and opening in towards the corridor. Eighty per cent of the external face of the door was covered by a metal plate, which was attached to the door with screws, and painted white. A simple curved iron latch was affixed to the left-hand side of the door approximately one-quarter of the way down. The door was supported on two hinges, each 30cm from top and bottom, screwed directly into the concrete wall. A painted square divided into two red and one blue upright bars with the letters 'S3 COY (U)' above it was positioned in the centre of the door at the same height as the handle.

Upon opening, it was clear that the door was set into a recess so that it could not be opened or blown into the chamber by an explosion. The internal face of the door was painted off-white and had a replacement panel covering the lower left-hand quarter. An A2 poster held in place by masking tape covered the upper part of the door. On this was printed, in upper case:

MILITARY NOTICE
NO SMOKING
NO FIRES

While the typeface suggested that this was contemporary with the shelter, there is a strong possibility that the door is a later addition to seal the shelter and that originally the internal entrance was either open or sealed by another type of door. There was no *in situ* door in the southern corridor, but iron hinges were present.

The central chamber externally measured 7.38m long by 2.45m wide by 2.45m high with an internal measurement of 2.24m at the widest point and 1.68m at its base. The sub-circular chamber was painted white and was constructed of reinforced concrete, with evidence of shuttering being clearly visible. It would appear that an internal frame of angled planks was constructed within a larger box and the void filled with steel and concrete. This produced distinct panels of concrete – 15 facets, plus the floor – around the circumference of the chamber. Twelve 60cm by 60cm concrete slabs extended down the centre of the chamber beneath which was a channel, 18cm deep by 46cm wide, and lined with wood, which was divided into five sections.

A light switch was located at the western end of the chamber with a metal-cased wire leading up the wall and along the chamber roof to a centrally mounted bayonet light fitting. It was uncertain if this was contemporary with the shelter's construction. Four more of the exhaust vents were evenly located in the roof. The whole structure, with the central chamber and two sets of stairs at either end, displayed an inverse symmetry in construction, as shown by the plan.



Plate 1 (above): Shelter 1, Area C2 – south-western corner, looking east, with shelter 2 in the background.



Plate 2: Shelter 1, Area C2 – north-eastern entrance, looking west, with former Army Radio offices in the background.



Plate 3: Shelter 1, Area C2 – north-eastern entrance, looking west.



Plate 4: Shelter 1, Area C2 – internal view, looking north-north-east towards door.

5.2 Area C2: Shelter 2 (Figs 1-2 and Plate 5)

The external mound of this shelter was planned using a Total Station. It was photographed during demolition. Detailed internal planning of this shelter was not possible as it had been converted to a boiler room and still contained all the equipment and pipe work at the time of the survey. This shelter appears to have been identical in design to shelter 1.



Plate 5: Shelter 2, Area C2 – south-western end during demolition, looking north north-east.

5.3 Area C2: Shelter 3 (Figs 1-2 and 7; Plates 6-8)

The initial impression was of a long, low earthen mound (approx 7m x 14m) with concrete walls and entrances visible at either end, aligned east to west. Both entrances were inaccessible because of a concrete cover, but the removal of the eastern cover by mechanical excavator made access possible through this entrance. Extensive photography of the exterior and interior was undertaken, and hand-drawn plans were made. A Total Station survey was undertaken which produced a plan showing:

- The extent of the grass-covered mound
- The top of the grass-covered mound
- The two entrances
- The extent of the central concrete chamber

The earth mound stood approximately 1.2m above modern ground-level at its highest point and was covered in heavy undergrowth. The stump of a freshly felled mature horse chestnut tree was rooted in the south side. This mound was removed by mechanical excavator. Access to the shelter was through two sloped entrances, one at the north-west corner, and the other at the south-east corner. Once the mound had been removed, it was apparent that the top of the western entrance was 60cm above the roof of the chamber whilst the eastern entrance was 30cm above it. Both entrances were capped by wooden planks covered in concrete sitting on a 5cm deep lip that ran around three sides of the entrance walls. The entrances were 5.4m long by 1m wide in plan and led down six steps into a corridor that ended in a recess. The internal width of the corridor was 70cm, indicating that the entrance

walls were each 15cm thick. The recess was approximately 87cm deep and occupied by a rudimentary toilet. This comprised a straight-sided metal cylinder with a hinged wooden seat and lid. The toilet had a metal pipe connected at the rear, which rose vertically through a centrally-located hole in the roof, presumably acting as an outlet for waste gases. This hole was 10cm in diameter. The floor of the corridor was of poured concrete with five 60cm by 46cm concrete slabs set into it.

The central chamber externally measured 7.35m long by 2.45m wide by 2.45m high with an internal measurement of 2.25m at the widest point and 1.7m at its base. The sub-circular chamber was unpainted and was constructed of reinforced concrete, evidence of shuttering being clearly visible. The construction technique was clearly the same as for shelter 1, producing fifteen distinct panels of concrete – plus the floor – around the circumference of the chamber. Twelve 60cm by 60cm concrete slabs extended down the centre of the chamber beneath which was a channel, 18cm deep by 46cm wide, and lined with wood, which was divided into five sections.

A light switch and junction box were located at the western end of the chamber with a metal-cased wire leading up the wall and along the chamber roof to a centrally mounted bayonet light fitting. It was uncertain if this was contemporary with the air-raid shelter's construction. Three more of the exhaust vents were evenly located in the roof. The whole structure, with the central chamber and two sets of stairs at either end, displayed an inverse symmetry in construction, as shown by the plan.



Plate 6: Shelter 3, Area C2, with Flagstaff House in the background, looking north-west.



Plate 7: Shelter 3, Area C2, with earth mound removed, looking south-west.



Plate 8: Shelter 3, Area C2 – detail of toilet in west recess, showing waste-gases pipe, looking south.

5.4 Area C2: Shelter 4 (Figs 1-2)

Five buildings were demolished and their concrete slab foundations were removed. These buildings ('AWO offices') feature on the 1949 RE map of the Garrison and are thought to date to around that time (CAT Report 97, fig 35). Building 3 was found to have been built on top of an shelter (shelter 4); therefore a hole 1.3m deep was dug to remove the remains. The CAT archaeologist did not see shelter 4, as it had already been removed by the time of the monitoring visit. However, it is likely that shelter 4 was identical in design to shelters 1-3.

5.5 Area C2: Shelters 5 and 6 (Figs 1-2, 8-9; Plates 9-10)

After the demolition of the shelters 1, 2 and 4 (CAT Report 412 forthcoming), and during the archaeological excavation of this area in 2004 (CAT Report 412 forthcoming), two further shelters were recorded. These are shelters 5 (CF104: CAT Report 412 forthcoming) and shelter 6 (CF103: CAT Report 412 forthcoming). These shelters had already been destroyed above ground and neither of them appears on the 1949 RE map of the Garrison, so they had presumably been built over by that time. What was left of their ground plans was planned with a Total Station and photographed.

Shelter 5 was aligned north to south and had three remaining steps at the south end and two at the north end. The surviving length of the northern entrance was 4.05m by 1m wide. The remaining steps led down into a corridor that ended in a recess (87cm deep) and had a poured concrete floor with five 60cm by 46cm concrete slabs set into it. The southern entrance survived to a length of 4.4m and was identical in all other respects to the northern entrance.

The central chamber externally measured 7.35m long by 2.45m wide with an internal measurement of 2.25m at the widest point and 1.7m at its base. The surviving walls stood approximately 75cm above the floor of the chamber, and steel reinforcement bars could be seen threaded through the concrete. Twelve 60cm by 60cm concrete slabs extended down the centre of the chamber beneath which was a channel, 18cm deep by 46cm wide, and lined with wood, which was divided into five sections.

Shelter 6 was aligned east to west and had three remaining steps at the east end and four at the north end. The surviving length of the eastern entrance was 4.4m by 1m wide, the western entrance 4.65m long. Both entrances led into the central chamber from the south and were identical to each other. The remaining steps led down into a corridor that ended in a recess (87cm deep) and had a poured concrete floor with five 60cm by 46cm concrete slabs set into it.

The surviving details of the central chamber were identical to shelter 5 in all respects.



Plate 9: Shelter 6, Area C2 – detail of under-floor channel, looking west.



Plate 10: Aerial photograph of Area C2, showing shelters 5 (below) and 6 (above). North is at the top of the photograph.

5.6 Area J1: Shelter F1 (Figs 1, 3 and 10; Plates 11-13)

This structure was completely below ground with raised entrances level to the surface. The shelter was aligned north-east to south-west, and, once the shelter was exposed, it could be seen that both entrances were 52cm above the roof of the central chamber. The entrances were sealed by a cap of corrugated iron covered in concrete, which sat on a recessed lip within the entrance walls, 5cm deep at the sides and the entrance and 10cm deep at the chamber end. This appeared to be part of the original construction and is an indication that the shelters had some form of door or hatch. Both entrances were identical in design; each measured 5.55m by 1m in length and had eleven steps leading down to a corridor ending in a recess (87cm deep). The width of this corridor was 70cm, indicating that the walls were 15cm thick. Directly above the recess was a centrally positioned circular hole (10cm in diameter) in the roof. This is interpreted as either an air vent or an exhaust vent for waste gases. The floor was poured concrete with five 60cm by 46cm concrete slabs set into it.

The central chamber externally measured 7.4m by 1.85m by 2.45m high with an internal measurement of 1.54m at its widest point. The chamber was of unpainted concrete and had a bench extending along the external wall on either side. These benches were 46cm high by 35cm deep and were formed of the same concrete as the entire structure. Evidence of shuttering is clear and the principle of the construction technique is similar to that of the shelters on Area C2, although in this instance a different shape was achieved using the same number of facets (fifteen visible above the benches). This produced a narrower, ovoid section compared to the sub-circular cross-section of the shelters in Area C2. Sixteen 60cm by 46cm

rectangular slabs extended down the centre of the chamber. Three more exhaust vents were located at equal distances within the roof.

Both the recess and the internal doorways had the remains of iron hinges and the internal door had the remains of an iron latch, indicating that doors were at one time present. Iron hook latches were affixed to the external wall of the entrance approximately 1m off the floor. The structure displayed inverse symmetry.



Plate 11: Shelter F1, Area J1, looking south-west, with Cavalry Barracks in the background.



Plate 12: Shelter F1, Area J1 – internal view, looking north-east.



Plate 13: Shelter F1, Area J1 – detail of door hinges and latches, looking south-east.

5.7 Area J1: Shelter F2 (Figs 1, 3 and 11)

This structure was completely below ground with raised entrances level with the surface. The shelter was aligned north-east to south-west. The north-east entrance was 42cm above the chamber roof and measured 6.55m long by 1m wide. It was capped by corrugated iron covered in concrete, which sat on a lip in the entrance wall, 5cm deep at the sides and 10cm deep at the entrance and chamber ends. Twelve steps led down into a corridor (70cm wide) ending in a recess (87cm deep). The south-west entrance was 38cm above the chamber roof and measured 6.25m long by 1m wide, capped with concrete-covered corrugated iron sitting on an identical-sized lip in the entrance wall. Eleven steps led down into a corridor identical to that of the north-east. Both recesses had a 10cm-diameter exhaust vent centrally located in the roof, and each had a poured concrete floor with five 60cm by 46cm concrete slabs set into it.

The central chamber externally measured 7.4m by 1.85m by 2.45m high with an internal measurement of 1.54m at its widest point. The chamber was of unpainted concrete and had the same benches as shelter F1. Evidence of shuttering is clear and the construction technique is identical to that of shelter F1. Sixteen 60cm by 46cm rectangular slabs extended down the centre of the chamber and three more exhaust vents were located at equal distances within the roof.

Both the recess and the internal doorways had the remains of iron hinges and the internal door had the remains of an iron latch, indicating that doors were at one time present. Iron hook latches were affixed to the external wall of the entrance approximately 1m off the floor.

5.8 Area J1: Shelter F3 (Figs 1, 3 and 12)

This structure was completely below ground with raised entrances level to the surface and was aligned north-east to south-west. Both entrances were 42cm above the chamber roof and capped with corrugated iron and concrete. The lip for the concrete cap on the north-east entrance was 10cm deep at the chamber end and

5cm deep at the sides and entrance. The lip on the south-west entrance was 5cm deep at the sides and 10cm deep at the entrance and chamber end. Both entrances were completely blocked by earth and rubble that could not be removed; therefore it was not possible to ascertain the number of steps. The north-east entrance was 5.75m long by 1m wide, the south-west entrance 6.45m by 1m wide. Both entrances led down into a corridor that terminated in an 87cm deep recess with centrally-positioned 10cm-diameter exhaust vents, and both had poured concrete floors with five 60cm by 46cm concrete slabs set into them.

The central chamber was identical to shelters F1 and F2 in terms of measurements and fittings.

5.9 Area J1: Shelter F4 (Figs 1, 3 and 13)

This structure was completely below ground with raised entrances level to the surface and was aligned north-east to south-west. The north-east entrance was 42cm above the chamber roof and measured 6.4m long by 1m wide. It was capped by corrugated iron covered in concrete, which sat on a lip in the entrance wall, that was 5cm deep all the way around the interior. Eleven steps led down into a corridor (70cm wide) ending in a recess (87cm deep), above which was a 10cm-diameter centrally located exhaust vent. The south-west entrance was 37cm above the chamber roof and also measured 6.4m long by 1m wide. This entrance was blocked by earth and rubble so it was not possible to ascertain the number of steps. The south-west corridor was 70cm wide and terminated in an 87cm deep recess with a centrally located 10cm-diameter exhaust vent. Both entrance corridors had poured concrete floors with five 60cm by 46cm concrete slabs set into them.

The central chamber was identical to shelters F1-F3 in terms of measurements and fittings.

5.10 Area J1: Shelter F5 (Figs 1, 3 and 14)

This structure was completely below ground with raised entrances level to the surface and was aligned north-west to south-east. The north-west entrance was 42cm above the chamber roof and measured 6.65m long by 1m wide. It was capped by corrugated iron covered in concrete, which sat on a lip in the entrance wall that was 5cm deep all the way around the interior. Eleven steps led down into a corridor (70cm wide) ending in a recess (87cm deep) with a centrally-located 10cm-diameter exhaust vent. The south-east entrance was 45cm above the chamber roof and measured 6.35m long by 1m wide. This was capped with concrete covered corrugated iron that sat upon a 5cm deep lip at the sides and the chamber end of the entrance. The entrance was blocked by earth and rubble so it was not possible to ascertain the number of steps. However, there was an 87cm deep recess with a 10cm-diameter exhaust vent centrally located in the roof, present at the end of the corridor. Both entrance corridors had a poured concrete floor with five 60cm by 46cm concrete slabs set into them.

The central chamber was identical to shelters F1-F4 in terms of measurements and fittings.

5.11 Area J1: Shelter F6 (Figs 1, 3 and 15)

This structure was completely below ground with raised entrances level to the surface and was aligned north-east to south-west. The north-east entrance was 52cm above the chamber roof and measured 6.3m long by 1m wide. It was capped by corrugated iron covered in concrete, which sat upon a lip in the entrance wall, which was 5cm deep at the sides and the chamber end of the entrance. This entrance was blocked by earth and rubble so it was not possible to ascertain the number of steps. The entrance led down into a corridor (70cm wide), ending in a recess (87cm deep), with a centrally-located 10cm-diameter exhaust vent. The south-west entrance was 66cm above the chamber roof and measured 6.25m long by 1m wide. This was capped with concrete covered corrugated iron that sat on a lip that was 5cm deep at the sides and 10cm deep at the chamber end of the entrance. The entrance had twelve steps that led down into a corridor that terminated in an 87cm-deep recess with a 10cm diameter exhaust vent centrally located in the roof. Both entrance corridors had a poured concrete floor with five 60cm by 46cm concrete slabs set into them.

The central chamber was identical to shelters F1-F5 in terms of measurements and fittings.

5.12 Area J1: Shelter F7 (Figs 1, 3 and 16; Plate 14)

This structure was completely below ground with raised entrances level to the surface and was aligned north-east to south-west. The north-east entrance was 42cm above the chamber roof and measured 5.55m long by 1m wide. The south-west entrance 56cm above the chamber roof and measured 6.15m long by 1m wide. Each entrance was capped by corrugated iron covered in concrete that sat on identical lips in the entrance wall, 5cm deep at the sides and 10cm deep at the entrance and chamber ends of the entrance. Both entrances were blocked by earth and rubble although access was just possible via the north-east entrance. It was not possible to ascertain the number of steps at either entrance but both led to a corridor, each of which contained an 87cm deep recess complete with centrally-located exhaust vents and had poured concrete floors with five 60cm by 46cm concrete slabs set into them.

The central chamber was identical to shelters F1-F6 in terms of measurements and fittings.



Plate 14: Shelter F7, Area J1 – detail of concrete-covered corrugated iron cap, looking north-west.

5.13 Area J1: Shelter F8 (Figs 1, 3 and 17; Plate15)

This structure was completely below ground with raised entrances level with the surface and was aligned north-east to south-west. The north-east entrance was 53cm above the chamber roof and measured 7m long by 1m wide. The entrance was capped by corrugated iron covered in concrete, but it was not possible to ascertain the width of the lip on which this sat as this cap was the only intact cover on the entire site. The south-west entrance was 55cm above the chamber roof and measured 5.75m long by 1m wide. This was also capped with concrete-covered corrugated iron, which sat on a lip that was 5cm deep at the sides and 10cm deep at the chamber end of the entrance. The north-east entrance had eleven steps leading down into a corridor; the south-west entrance had twelve. Both corridors terminated in an 87cm-deep recess with a 10cm diameter exhaust vent centrally-located in the roof. The floors were each of poured concrete with five 60cm by 46cm concrete slabs set into them.

The central chamber measured externally 7.4m by 1.85m by 2.45m high with an internal measurement of 1.28m at its widest point. This indicates much thicker walls

than the other shelters on the site. The chamber was of unpainted concrete and had a bench extending along the external wall on either side. These benches were 45cm high by 33cm deep and were formed of the same concrete as the entire structure. Evidence of shuttering is clear and the principle of the construction technique is similar to that of the other shelters, although, in this instance, fewer facets were poured than in either those types on Area C2 or the other type on Area J1, ie seven were visible above the benches here. Sixteen 60cm by 46cm rectangular slabs extended down the centre of the chamber. Three more exhaust vents were located at equal intervals within the roof.

Both the recess and the internal doorways had the remains of iron hinges and the internal door had the remains of an iron latch, indicating that doors were at one time present. Iron hook latches were affixed to the external wall of the entrance approximately 1m off the floor.



Plate 15: Shelter F8, Area J1 – internal view, looking south-west.

5.14 Area J1: Shelter F9 (Figs 1, 3 and 18)

This structure was completely below ground with raised entrances level with the surface and was roughly aligned east to west. Both entrances were 40cm above the chamber roof and capped with corrugated iron and concrete. The lip for the concrete cap on the eastern entrance was 5cm deep at the sides and chamber end of the entrance. The lip on the west entrance was 5cm deep at the sides and entrance. The eastern entrance was 6.45m long by 1m wide, the west entrance 6.6m long by 1m wide. Both entrances descended eleven steps to a corridor that was 70cm wide and terminated in an 87cm-deep recess with a centrally-positioned 10cm-diameter exhaust vent. Both had poured concrete floors with five 60cm by 46cm concrete slabs set into them.

The central chamber measured externally 7.4m by 1.85m by 2.45m high with an internal measurement of 1.54m at its widest point. The chamber was of unpainted concrete and had a bench extending along the external wall on either side. These

benches were 46cm high by 35cm deep and were formed of the same concrete as the entire structure. Evidence of shuttering is clear, with the construction technique identical to that of shelters F1-F7. Sixteen 60cm by 46cm rectangular slabs extended down the centre of the chamber. Three more exhaust vents were located at equal intervals within the roof.

Both the recess and the internal doorways had the remains of iron hinges and the internal door had the remains of an iron latch, indicating doors were at one time present. Iron hook latches were affixed to the external wall of the entrance approximately 1m off the floor.

5.15 Area J1: Shelter F10 (Figs 1, 3 and 19)

This structure was completely below ground with raised entrances level with the surface and was roughly aligned east to west. Both entrances were 45cm above the chamber roof and capped with corrugated iron and concrete. The concrete covers each sat on a lip that was 5cm deep at the sides and entrance. The eastern entrance measured 6.7m long by 1m wide and had eleven steps leading down to a corridor that was 70cm wide. The west entrance measured 6.65m long by 1m wide and was blocked with earth and rubble, making it impossible to ascertain the number of steps. Both corridors terminated in an 87cm-deep recess with a centrally-positioned 10cm-diameter exhaust vent. Both had poured concrete floors with five 60cm by 46cm concrete slabs set into them.

The central chamber was identical to shelters F1-F7 and F9 in terms of measurements and fittings.

5.16 Area J1: Shelter F11 (Figs 1, 3 and 20)

This structure was completely below ground with raised entrances level with the surface and was roughly aligned north to south. The northern entrance was 46cm above the roof of the chamber and measured 5.45m long by 1m wide and was capped by concrete-covered corrugated iron. This sat on a lip in the entrance walls that was 5cm deep at the sides and entrance. The southern entrance was 52cm above the chamber roof and measured 5.3m long by 1m wide. The concrete covered-corrugated iron cap sat on a 5cm-deep lip that extended around the entire interior of this entrance. Both entrances descended eleven steps into a corridor (70cm wide) that terminated in a recess (87cm deep), with a centrally-positioned 10cm-diameter exhaust vent. The floor of the north corridor was of poured concrete with five 60cm by 46 cm slabs set into it. In contrast to this shelter and the others on Area J1, the south corridor had only four slabs.

The central chamber was identical to shelters F1-F7 and F9-F10 in terms of measurements and fittings.

5.17 Area P1: Shelter F1 (Figs 1, 4 and 21; Plates 16-18)

This structure was completely below ground with raised entrances that would have been level with the surface at the time of construction. Subsequent development raised ground-level, totally obscuring any trace of the structure. Once fully exposed, it was observed that the shelter was roughly aligned north to south. The north entrance was 55cm above the roof of the chamber and measured 6.55m long by 1m wide. The entrance was sealed by a cap of corrugated iron covered in concrete, which sat on a recessed lip within the entrance walls, 5cm deep on each side. This appeared to be part of the original construction and is an indication that the shelters had some form of door or hatch. The south entrance was 45cm above the roof of the chamber and measured 6.45m long by 1m wide. The concrete-covered corrugated iron cap sat on an identical-sized lip to that of the north entrance. Both entrances descended eleven steps to identical corridors that terminated in a recess (87cm deep). The width of this corridor was 70cm, indicating that the walls were 15cm thick. Directly above the recess was a centrally-positioned circular hole (10cm in diameter) in the roof. This is interpreted as either an air vent or an exhaust vent for waste gases. The floor was poured concrete with five 60cm by 46cm concrete slabs set into it. A white painted number (46) was observed on a facing panel of each entrance.

The central chamber measured externally 7.4m by 1.85m by 2.45m high with an internal measurement of 1.54m at its widest point. The chamber was of unpainted concrete and had a bench extending along the external wall on either side. These benches were 46cm high by 35cm deep and were formed of the same concrete as

the entire structure. Evidence of shuttering is clear and the construction technique is nearly identical to that of the shelters on Area J1. Here the facets above the benches were identical until the highest central panel, where a 20cm-wide by 4cm-deep recess was inserted. However, this did not significantly alter the ovoid shape of the chamber when viewed in section. Sixteen 60cm by 46cm rectangular slabs extended down the centre of the chamber. Three more exhaust vents were located at equal intervals within the roof.

Both the recess and the internal doorways had the remains of iron hinges and the internal door had the remains of an iron latch, indicating that doors were at one time present. Iron hook latches were affixed to the external wall of the entrance approximately 1m off the floor.



Plate 16: Shelter F1, Area P1, looking south-east.



Plate 17: Shelter F1, Area P1, south entrance, showing white-painted number, looking west.



Plate 18: Shelter F1, Area P1 – internal view, looking north.

5.18 Area P1: Shelter F2 (Figs 1 and 4)

This structure was completely below ground with raised entrances which would have been level with the surface at the time of construction. Subsequent development raised ground-level, totally obscuring any trace of the structure. Once fully exposed, it was observed that the shelter was roughly aligned north to south. At some point after 1949, shelter F2 was partially destroyed by the alterations to Ypres Road that probably accompanied the demolition of the Military Hospital. Because of this, it was not possible to collect much data concerning the northern entrance of shelter F2. It is not possible to say how long the entrance was, but it was 1m wide, with a surviving length of 4.95m, and it had at least six steps leading down into a corridor (70cm wide) that terminated in a recess 87cm deep with a centrally-positioned 10cm-diameter exhaust vent. Fragments of concrete with corrugated iron adhering to them would suggest that the entrance was capped. The south entrance was 45cm above the roof of the chamber and measured 5.85m long by 1m wide. This was capped by corrugated iron covered in concrete that sat on a recessed lip within the entrance walls, 5cm deep on each side. Eleven steps descended into a corridor (70cm wide) that terminated in a recess 87cm deep with a centrally-positioned 10cm-diameter exhaust vent. The floors in both corridors were of poured concrete with five 60cm by 46cm slabs set into them. A white painted number (45) was on a facing panel of each entrance.

The central chamber was identical to shelter F1 in terms of measurements and fittings.

5.19 Area P1: Shelter F3 (Figs 1 and 4)

This structure was completely below ground with raised entrances that would have been level with the surface at the time of construction. Subsequent development raised ground-level, totally obscuring any trace of the structure. As a result of this, shelter F3 was damaged by contractors during their sub-surface excavations and it was not possible to obtain complete measurements for the two entrances. Once shelter F3 was located and fully exposed, it was observed that the shelter was roughly aligned north to south. The northern entrance was 55cm above the roof of the chamber and 1m wide, with a surviving length of 5.2m descending at least seven steps into a corridor. The southern entrance was 45cm above the roof of the chamber and 1m wide, with a surviving length of 6.02m. Here the damage was only minor and the entrance descended eleven steps into a corridor. These had both been capped by concrete-covered corrugated iron that sat on a lip in the entrance walls that was 5cm deep at both the sides and chamber end. Both corridors were 70cm wide and terminated in recesses that were 87cm deep and contained a

centrally-located exhaust vent (10cm in diameter). The floors in both corridors were of poured concrete with five 60cm by 46cm slabs set into them. A white painted number (50) was on a facing panel of each entrance.

The central chamber was identical to shelters F1-F2 in terms of measurements and fittings.

5.20 Area P1: Shelter F4 (Figs 1 and 4)

This structure was completely below ground with raised entrances that would have been level with the surface at the time of construction. Subsequent development raised ground-level, totally obscuring any trace of the structure. As a result of this, shelter F4 was also damaged by contractors during their sub-surface excavations and it was not possible to obtain complete measurements for the two entrances. Once shelter F4 was located and fully exposed, it was observed that the shelter was roughly aligned north to south. The northern entrance was 65cm above the roof of the chamber and 1m wide, with a surviving length of 5.5m descending at least eight steps into a corridor. This was capped by concrete-covered corrugated iron that sat on a lip in the entrance walls that was 5cm deep at both the sides and chamber end. The southern entrance was destroyed completely up to a point just outside of the chamber and was 1m wide, with a surviving length of 4.7m. There was evidence of at least four remaining steps which had descended into a corridor. Fragments of concrete with corrugated iron adhering to them would suggest that this entrance was also capped. Both corridors were 70cm wide and terminated in recesses that were 87cm deep and contained a centrally-located exhaust vent (10cm in diameter). The floors in both corridors were of poured concrete with five 60cm by 46cm slabs set into them. A white painted number (48) was observed on a facing panel of each entrance.

The central chamber was identical to shelters F1-F3 in terms of measurements and fittings.

5.21 Area P1: Shelter F5 (Figs 1 and 4)

This structure was completely below ground with raised entrances that would have been level with the surface at the time of construction. Subsequent development raised ground-level, totally obscuring any trace of the structure. As a result of this, shelter F5 was damaged by contractors during their sub-surface excavations and it was not possible to obtain complete measurements for the southern entrance. Once shelter F5 was located and fully exposed, it was observed that the shelter was roughly aligned north to south. The northern entrance was 56cm above the roof of the chamber and measured 6.55m long by 1m wide, descending eleven steps into a corridor. This was capped by concrete-covered corrugated iron that sat on a lip in the entrance walls that was 5cm deep at both the sides and chamber end. The southern entrance was 45cm above the roof of the chamber and 1m wide, with a surviving length of 4.85m. Here the damage was extensive and there was only partial evidence of at least six steps descending into a corridor. Fragments of concrete with corrugated iron adhering to them would suggest that this entrance was also capped. Both corridors were 70cm wide and terminated in recesses that were 87cm deep and contained a centrally-located exhaust vent (10cm in diameter). The floors in both corridors were of poured concrete with five 60cm by 46cm slabs set into them. A white painted number (47) was on a facing panel of each entrance.

The central chamber was identical to shelters F1-F5 in terms of measurements and fittings.

5.22 Area P1: Shelter F6 (Figs 1 and 4)

This structure was completely below ground with raised entrances that would have been level with the surface at the time of construction. Subsequent development raised ground-level, totally obscuring any trace of the structure. As a result of this, shelter F6 was damaged by contractors during their sub-surface excavations and it was not possible to obtain complete measurements for the northern entrance. Once shelter F6 was located and fully exposed, it was observed that the shelter was roughly aligned north to south. The northern entrance was 50cm above the roof of the chamber and was destroyed completely up to a point just outside of the chamber, where a surviving piece was 2.6m long and 1m wide. No steps survived at this entrance and only fragments of the concrete cap remained. The corridor (70cm wide) at the base of the steps did survive and terminated in a recess that was 87cm

deep and contained a centrally-located exhaust vent (10cm in diameter). The southern entrance was 55cm above the roof of the chamber and measured 6.45m long by 1m wide, descending eleven steps into a corridor. This was capped by concrete-covered corrugated iron that sat on a lip in the entrance walls that was 5cm deep on each side. The corridor was 70cm wide and terminated in a recess that was 87cm deep and contained a centrally-located exhaust vent (10cm in diameter). The floors in both corridors were of poured concrete with five 60cm by 46cm slabs set into them. A white painted number (51) was observed on a facing panel of each entrance.

The central chamber was externally identical to shelters F1-F5 and appeared to be identical internally; however, due to asbestos contamination, CAT archaeologists were unable to enter the structure. Observational data obtained from contractors confirmed the presence of two benches, square slabs on the floor and an oval shape to the cross-section.

5.23 Area P1: Shelter F7 (Figs 1 and 4)

This structure was completely below ground with raised entrances that would have been level with the surface at the time of construction. Subsequent development raised ground-level, totally obscuring any trace of the structure. As a result of this, shelter F7 was damaged by contractors during their sub-surface excavations and it was not possible to obtain complete measurements for the western entrance. Once shelter F7 was located and fully exposed, it was observed that the shelter was roughly aligned east to west. The eastern entrance was 55cm above the roof of the chamber and measured 6.45m long by 1m wide, descending eleven steps into a corridor. This was capped by concrete-covered corrugated iron that sat on a lip in the entrance walls that was 5cm deep on each side. It was not possible to ascertain the height of the western entrance above the roof of the chamber. Only one step survived descending into a corridor 1m wide, with a surviving length of 3.3m. Fragments of concrete with corrugated iron adhering to them would suggest that this entrance was also capped. Both corridors were 70cm wide and terminated in recesses that were 87cm deep and contained a centrally-located exhaust vent (10cm in diameter). The floors in both corridors were of poured concrete with five 60cm by 46cm slabs set into them. A white painted number (52) was on a facing panel of each entrance.

The central chamber was identical to shelters F1-F5 in terms of measurements and fittings.

6 Discussion

The survey showed that there were at least three distinct designs of air-raid shelter in use on Colchester Garrison during World War 2. Type 1 includes all of the shelters (nos 1-6 on Area C2 and its characteristics are:

- Shelters are partially above ground and covered with an earth mound
- They have angled entrances with a short flight of steps
- There are no benches inside
- A channel extends beneath the floor of the central chamber
- The central chamber is wide with narrow walls and roof

Type 2 was found on Area J1, including shelters F1-F7 and F9-F11, and its characteristics are:

- The central chamber is completely below ground
- The entrances are level with the ground, long and steep
- A bench extends along either side of the central chamber

A Type 2a also exists, comprised of shelters F1-F7 on Area P1, which are identical to the Type 2 shelters apart from two details. The first difference is the presence of twelve 60cm by 60cm concrete slabs in the central chamber compared to sixteen slabs of 60cm by 46cm. The second difference is a slight recess at the apex of the central chamber.

Only one Type 3 shelter was discovered, ie shelter F8 on Area J1. Its characteristics are:

- The central chamber is completely below ground
- The entrances are level with the ground, long and steep
- A bench extends along either side of the central chamber
- The central chamber is internally narrower and of a different shape to the other types

It is possible that the chamber of the Type 1 shelters had thinner walls and roof because the earth mound covering them was not as compacted or heavy as those of Types 2, 2a and 3, but it would seem more likely that perhaps this was an early design, discarded in favour of a thicker-roofed, more robust design that was completely underground.

The single Type 3 shelter (Area J1, F8) may simply be an anomaly rather than an intentional third design, appearing as it does within a concentration of Type 2 shelters. The thicker walls and altered profile are probably the result of errors similar to those that caused the inconsistencies within the entrances.

All three types were constructed from reinforced concrete poured into frameworks of wooden shuttering. There was a significant variety in the appearance of these structures due to the material against which the concrete was cast. Rough sawn timber was used in the entrances, which left visible imprints of wood grain and knotting. In contrast, the interior panels were generally smooth, indicating the use of fair-faced boards. What is clear from the different types of shelter found is that, despite their apparent differences, the shelters were all constructed from a modular plan. Although details vary, each shelter is basically a rectangular chamber with two rectangular entrances attached, constructed in a virtually identical manner. This suggests loose adherence to a blueprint, which allowed for modifications to be made or perhaps more likely a blueprint which allowed mistakes to occur. Nowhere is this more apparent than in the dimensions of the entrances. Although the width (both internally and externally) remained constant, whichever type was examined, the length and height above the chamber of the entrances of Types 2, 2a, and 3 vary considerably from shelter to shelter. Of the 28 undamaged entrances, the longest was 7m long (Area J1, F8) while the shortest was 5.3m long (Area J1, F11). The average length was 6.23m. The distance from the top of the entrance to the top of the chamber was also inconsistent. Of Types 2, 2a, and 3, the longest distance was 66cm (Area J1, F6) while the shortest was 37cm (Area J1, F4). The average drop in height was 48cm. A further inconsistency was in the number of steps leading into the corridors. Of the 22 entrances where it was possible to make this observation, nineteen had eleven steps with the remainder having twelve. It would appear that the intended number of steps was eleven and those with twelve the results of miscalculation. However, there are problems with the inconsistencies themselves. Although the entrances with an extra step coincide with a larger drop to the chamber roof, in relation to the individual shelters concerned, other shelters with eleven steps have equal or longer drops to the chamber roof. The extra step also does not denote an increased length in the entrance, as might be expected. The longest entrance (Area J1, F8) has eleven steps, and one of the twelve-step entrances (also Area J1, F8) is one of the shortest, being 48cm below the average. What this all shows is that, compared to the near-identical nature of the central chambers, the entrances were less specifically engineered. The variance in heights from the chamber roofs to the tops of the entrances may have been an attempt to follow the topography of the land, keeping the entrances level with uneven ground, although the construction technique would argue against this. The extra step and the differing length of the entrances were more likely the result of errors made during construction. If eleven were the desired number of steps, then this would explain why the depth and height of the steps of every shelter varied in each individual entrance, occasionally necessitating an additional step, extra length or increased height.

It is not possible to state whether or not the numbers painted on the shelters at Area P1 are contemporary with the shelters or a later classification. If contemporary, the numbers, which are 45-48 and 50-52, would indicate the presence of an eighth shelter, unobserved during the survey. Only seven shelters are depicted on the 1949

RE map, although F6 (shelter 51) is omitted and another shelter is shown to the west of F3 (shelter 50). This eighth shelter would have been number 49 and was probably demolished or covered over in the same phase of redevelopment that damaged shelter F2. On this evidence, it is likely that the numbers are contemporary with the shelters, despite the fact that no other shelter observed during the survey had them. If this is the case, then there were (theoretically) at least 52 air-raid shelters of these types on Colchester Garrison during World War 2, 44 of which are depicted on the 1949 RE map.

The discrepancies between the surveyed evidence and the map evidence are the result of four amendments to the 1949 RE map spanning 1953-1962. One of these amendments has erased the location of an additional Type 1 shelter on Area C2, replacing it with a wooden hutted building. However, it is faintly visible beneath the amendment and brings the total number of shelters on Area C2 to seven.

Although only one toilet was found intact and connected to the exhaust vent in the ceiling, it is highly probable that the identical recesses in the other shelters also contained toilets, ie two for each shelter. If this were accurate, then it would indicate an expectation that a reasonable number of people would occupy each shelter during an air raid. It is not possible to state with any certainty how many people could have fitted into the shelters, but an estimate of 30 seated personnel (approximately half an infantry platoon) for Types 2, 2a and 3 is likely, although this would have been a tight fit for fully-grown adults for any length of time. This estimate is based on an allowance of 50cm per seated person per bench, an allowance mirrored by the civilian 'Double' 50 Person Capacity Surface Air Raid Shelter used in towns and cities during World War 2 (Lowry 1996). Type 1, without benches, may have been designed to hold more people in a standing position. This calls into question just who would have used the shelters. Military personnel were expected to use shelters only when an attack was underway; civilians were expected to remain in them until the general 'all clear' was given. The Type 1 shelters at Area C2 were next to the two Army Welfare Office buildings and near to the NAAFI Club. To the immediate north were Royal Army Ordnance Department buildings (now Flagstaff House compound, Area B1b), which included at least three large administrative buildings. All these buildings were perhaps used more during the day than at night. As such, it is possible that the Type 1 shelter with its shallower access and potentially larger capacity was specifically designed to act as a daytime shelter. If it is assumed that the Type 1 shelter could accommodate at least 30 people standing, then the Area C2 shelters could have housed approximately 240 people. The number of surrounding brick buildings (although of differing size) correspond to the number of known shelters. It is probable that the shelters at Area C2 were intended for use by civilian workers and military personnel working in these buildings, rather than as refuges for active service troops. Evidence to support this theory comes from the other, excavated shelters, at Areas J1 and P1, and from map evidence in the form of the 1949 RE map.

Area J1 in Le Cateau Barracks contained eleven shelters surrounded by three brick-built married quarters comprising 26 dwellings, plus a brick-built sergeants' married quarters. A further three shelters which appear to be partially above ground (not included in the survey) are located to the north-east of Area J1 on the 1949 RE map. Two brick-built married quarters, totalling twelve dwellings, flank these. At a probable capacity of 30 people each, the fourteen shelters of Le Cateau Barracks could have housed 420 people. If an assumption is made that the married quarters supported families of four, then a figure of 152 is reached. This would be just over one-third of the estimated capacity of the Le Cateau Barracks' shelters (less than one-third when one takes into account the fact of one-quarter of the family being a serviceman who may not have been present). Nine brick-built barrack blocks are shown on the 1949 RE map in three separate groups. Each of these groups was further from the shelters than the married quarters.

The eight shelters at Area P1 had three brick-built married quarters to the immediate east; Cambridge, Connaught and Victoria. If these followed the same pattern as the married quarters in Le Cateau Barracks, then they comprised 26 dwellings giving a population of 104 for an estimated shelter capacity of 240. To the south of Area P1, AWO huts are depicted on the 1949 RE map (which may not be

contemporary with the shelters) and the Military Hospital was directly to the west. The map also depicts four additional shelters directly to the north, in Area P2 (not surveyed). A school to the east, a regimental institute to the west, a gymnasium and bathing pool to the north and three other unidentified brick buildings surround these. According to the map evidence, these shelters were partially above ground and would seem to be similar to the Type 1 shelters at Area C2.

The 1949 RE map shows other areas of the Garrison where married quarters were located. Cavalry Barracks, south-west of Le Cateau Barracks, is shown as having one brick married quarters of six dwellings, with two sub-surface shelters (probably Type 2) located next to it on open ground alongside Circular Road North. An estimate of 24 family members for these quarters is less than half the estimated capacity of the two shelters. Cavalry Barracks is shown as having eleven barrack blocks. Six partially above-ground shelters (and, therefore, probably Type 1) extended in a north-south line alongside Mersea Road on Area E. The 1949 RE map shows the Abbey Field sergeants' married quarters immediately to the south of these, ie five brick-built structures totalling 34 dwellings. This would give an estimate of 136 family members for a shelter capacity of 180. Two shelters are shown south of a single brick-built sergeants' married quarters, located in Drury Meadow at the northern end of Layer Road. No indication is given of the number of dwellings within the married quarters, and it would appear that one of the amendments to the 1949 RE map, relating to post-war redevelopment, has removed any evidence of further shelters and connected buildings. The two shelters are noted as being sub-surface and were probably of Type 2 design. The married officers' quarters on Ypres Road, totalling eleven dwellings, were provided with two partially above-ground shelters. If the family size estimate is applied to these dwellings, then three-quarters of the shelters' capacity would have been utilised. No other structures are shown in close proximity to these shelters. Assaye married quarters, to the immediate south of Goojerat Barracks, are shown as six brick-built structures each comprising sixteen dwellings. This would give an estimated population of 384. No shelters are depicted on the 1949 RE map for this area, but a large grassed area is shown to the south of the married quarters. This is an amendment to the 1949 RE map, as the remains of five sub-surface shelters were observed during the monitoring of the second phase of groundworks during the construction of Merville Barracks (CAT report forthcoming). The positioning of these shelters suggests that a sixth was originally in place but no evidence for this can be provided. The capacity of the five shelters, however, is less than half of the estimated population of the Assaye married quarters. It is likely that additional shelters were located near the known five, but it is also possible that the post-war development that affected Drury Meadow removed additional shelters to the west of Assaye married quarters. A partially above-ground shelter is shown in Sobraon Barracks near to a brick-built sergeants' married quarters of two dwellings. Other brick-built structures surround this, so it is possible that it was used as a daytime shelter as well. To the north of this is shown a sub-surface shelter that is not related to any married quarters and was also probably a daytime shelter for headquarters staff. A final shelter that was partially above ground is shown immediately to the north of a large warehouse on the northern edge of Kirkee McMunn Barracks. No married quarters are shown nearby, and it is highly likely that its purpose was for the protection of workers within the warehouse.

It would appear that the provision of air-raid shelters on Colchester Garrison during World War 2 was intended for families and civilian workers rather than for soldiers. Apart from the shelters at Areas C2 and P2, the two single examples from Sobraon Barracks and Kirkee McMunn Barracks, the majority of the 53 shelters known through map evidence and excavation occur next to married quarters. According to the 1949 RE map, Kirkee McMunn Barracks and Hyderabad and Meanee Barracks had no married quarters of any kind. No shelters are depicted either. With the exception of Assaye married quarters, all of the shelters linked to married quarters appear to have had excess capacity. This could indicate that soldiers shared the shelters but, as the available space was less than troop numbers, it is highly unlikely. Colchester was the home garrison of the 4th Infantry Division at the start of the war, which numbered possibly between four and six thousand troops. Thousands more passed through the Garrison, accommodated in

temporary tent encampments on Middlewick Ranges and the Abbey Field. Troops themselves may have had to shelter in revetted slit trenches or surface shelters of which no trace survives. The 4th Infantry Division was deployed to France in 1940 leaving behind their families and caretaker companies to look after the barracks. It is these caretaker companies who probably filled the remaining spaces in the shelters.

It is not possible to state for certain if the different types of shelter were intended for specific use by any one particular group of people. Although the majority of the shelters linked to the married quarters were Types 2, 2a and 3, the shelters in the northern group of Le Cateau Barracks, those at the Abbey Field, the shelter in Sobraon Barracks and the two at Ypres Road, appear to have been Type 1. Of the remaining shelters (those that could be considered to be 'daytime' shelters), all appear to conform to the Type 1 model apart from the second shelter in Sobraon Barracks. Similar to the differences in the entrance dimensions, these discrepancies were probably accidental rather than intentional, and may reflect time or manpower shortages during the construction of the shelters.

If the estimate for the shelter capacity is correct then a maximum of 1,590 people could have been protected from air raids in 53 shelters, with 1,200 of these spaces in 40 shelters being reserved for the families of troops. More shelters were undoubtedly constructed, evidence for which has been lost; however, the six surviving shelters that appear to be of Type 1 along Mersea Road, opposite Hyderabad and Meanee Barracks, are probably the last of any type to have survived time and the redevelopment of Colchester Garrison.

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EAA 3	1997	by B Lowry, Council for British Archaeology <i>Research and archaeology: a framework for the Eastern Counties 1. Resource assessment</i> , East Anglian Archaeology, Occasional Papers, 3 , ed by J Glazebrook
EAA 8	2000	<i>Research and archaeology: a framework for the Eastern Counties 2. Research agenda and strategy</i> , East Anglian Archaeology, Occasional Papers, 8 , ed by N Brown and J Glazebrook
EAA 14	2003	<i>Standards for field archaeology in the East of England</i> , East Anglian Archaeology, Occasional Papers, 14 , ed by D Gurney
IFA	2001a	<i>Standard and guidance for archaeological field evaluation</i>
IFA	2001b	<i>Standard and guidance for the collection, documentation, conservation, and research of archaeological materials</i>
MAP 2	1991	<i>Management of archaeological projects</i> , second edition (English Heritage)

9 Abbreviations and glossary

AOD	above Ordnance Datum
AWO	Army Welfare Offices
CAT	Colchester Archaeological Trust
CBC	Colchester Borough Council
CBCAO	Colchester Borough Council Archaeological Officer
CM	Colchester and Ipswich Museums
ECC	Essex County Council
EHHER	Essex Historic Environment Record, held by ECC
EOD	explosive ordnance disposal
IFA	Institute of Field Archaeologists
MoD	Ministry of Defence
NAAFI	Navy, Army and Air Force Institutes, an organisation created by the British Government in 1921 to run recreational facilities for the Armed Forces
NGR	National Grid Reference
OS	Ordnance Survey
RE	Royal Engineers
RPS	RPS Planning (project consultants)

10 Archive deposition

The paper and digital archive is currently held by the Colchester Archaeological Trust at 12 Lexden Road, Colchester, Essex CO3 3NF, but it will be permanently deposited with Colchester and Ipswich Museums, under accession code 2008.3.

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Distribution list:

Taylor Wimpey
RPS Planning
Martin Winter, Colchester Borough Council
Essex Historic Environment Record, Essex County Council



Colchester Archaeological Trust

12 Lexden Road,
Colchester,
Essex CO3 3NF

tel.: (01206) 541051
(01206) 500124

email: archaeologists@catuk.org

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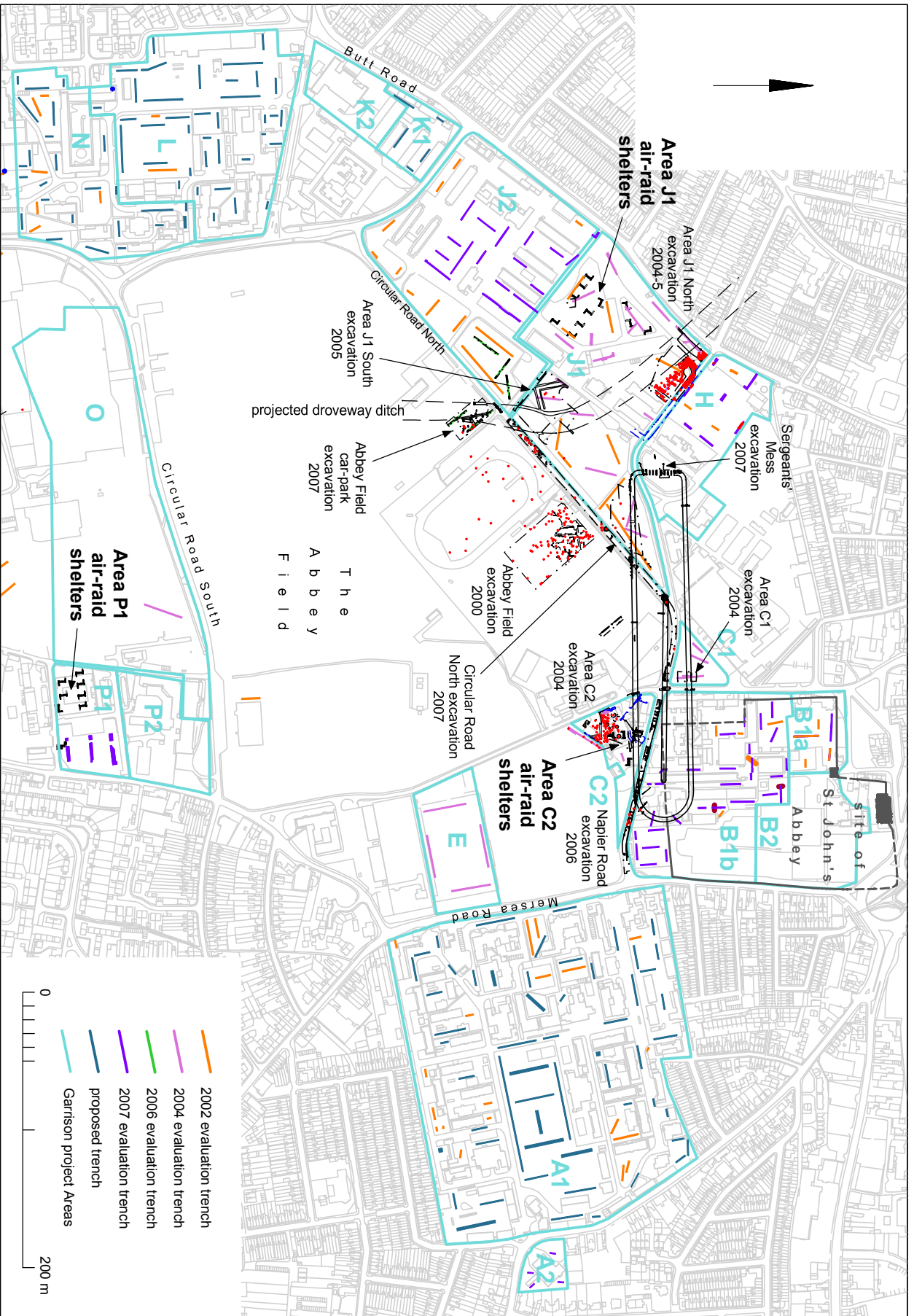


Fig 1 Site location.

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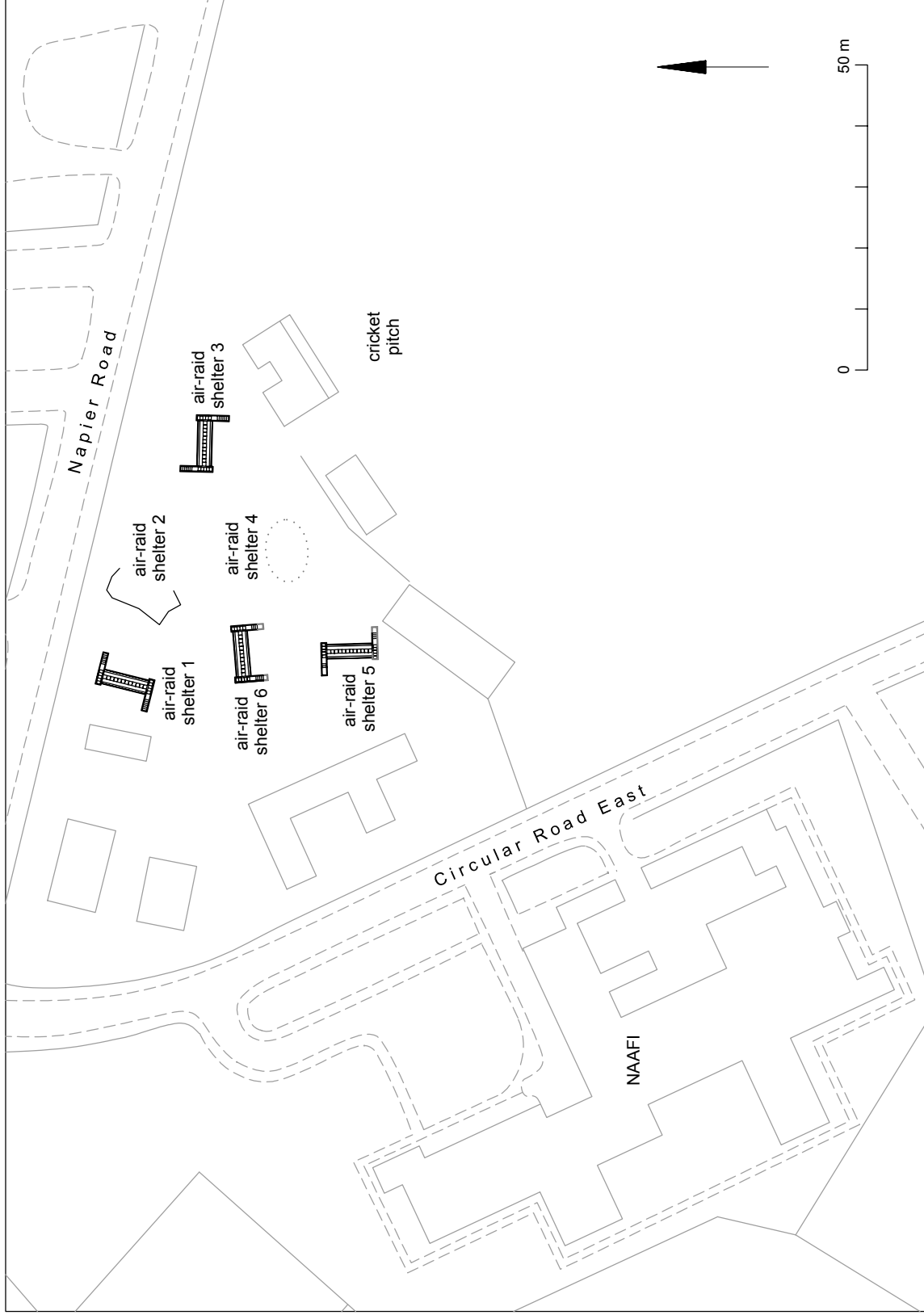


Fig 2 Plan of Area C2, showing air-raid shelters and contemporary army offices.

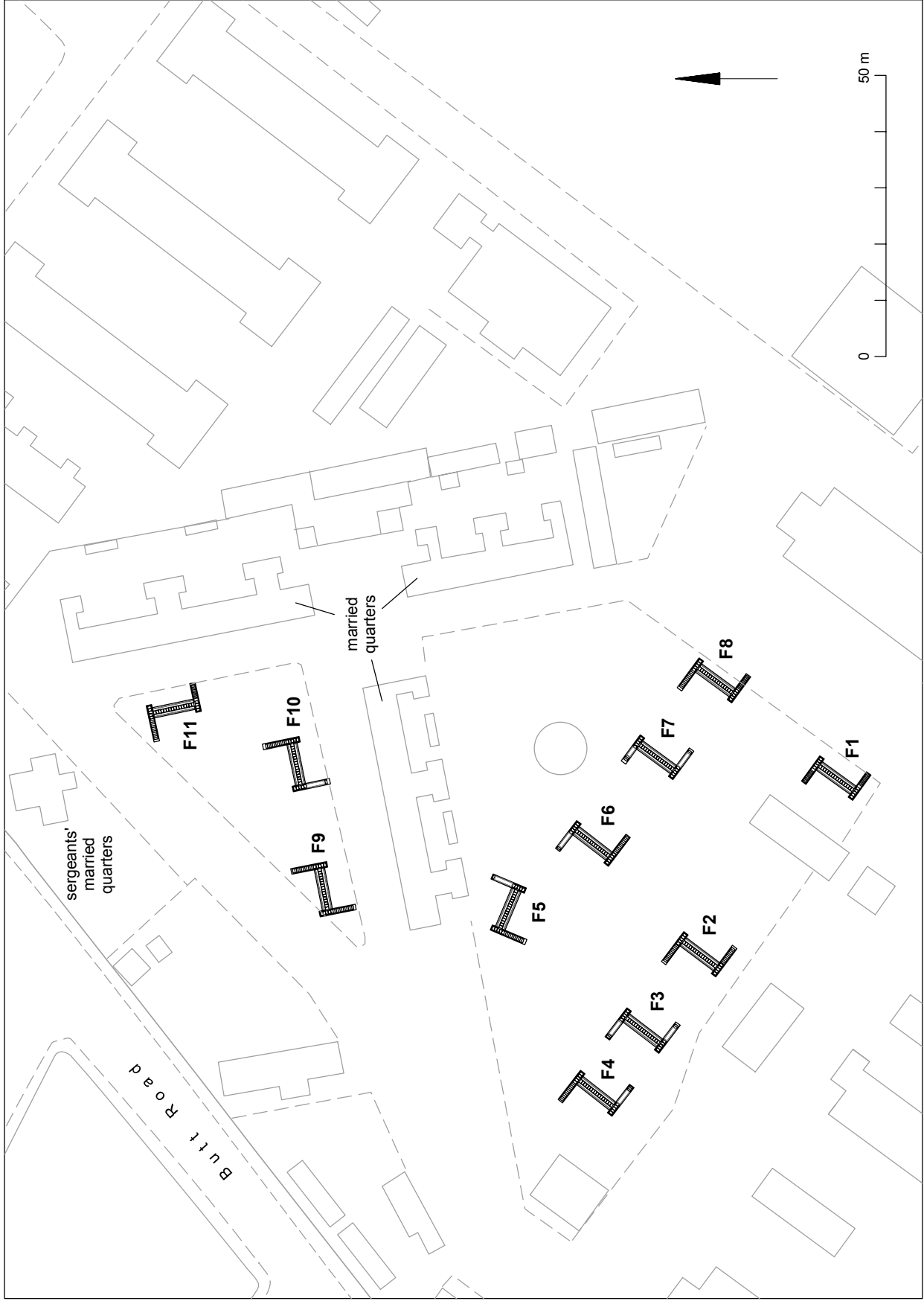
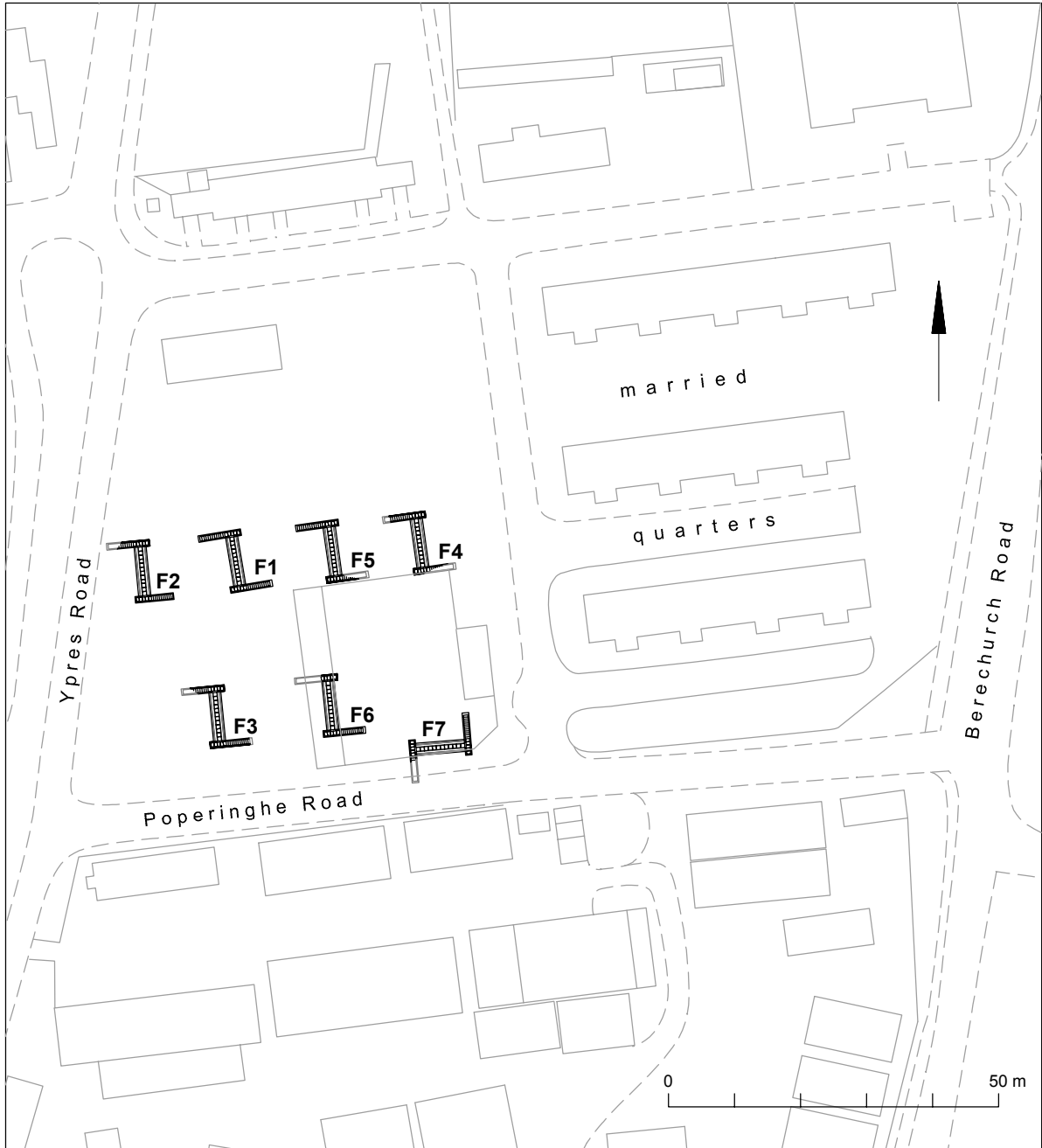


Fig 3 Plan of Area J1, showing air-raid shelters and contemporary barrack buildings.



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Fig 4 Plan of Area P1, showing air-raid shelters and contemporary barrack buildings.

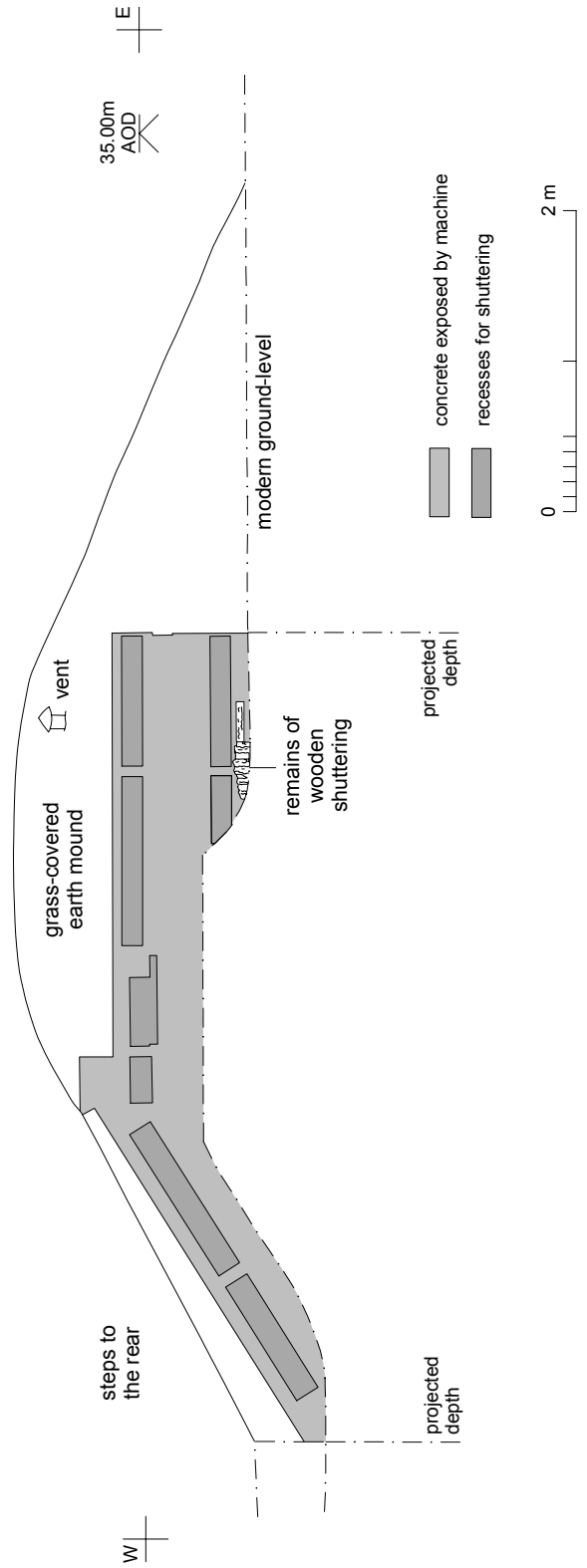


Fig 5 Area C2, air-raid shelter 1: section across the exterior of the southern end.

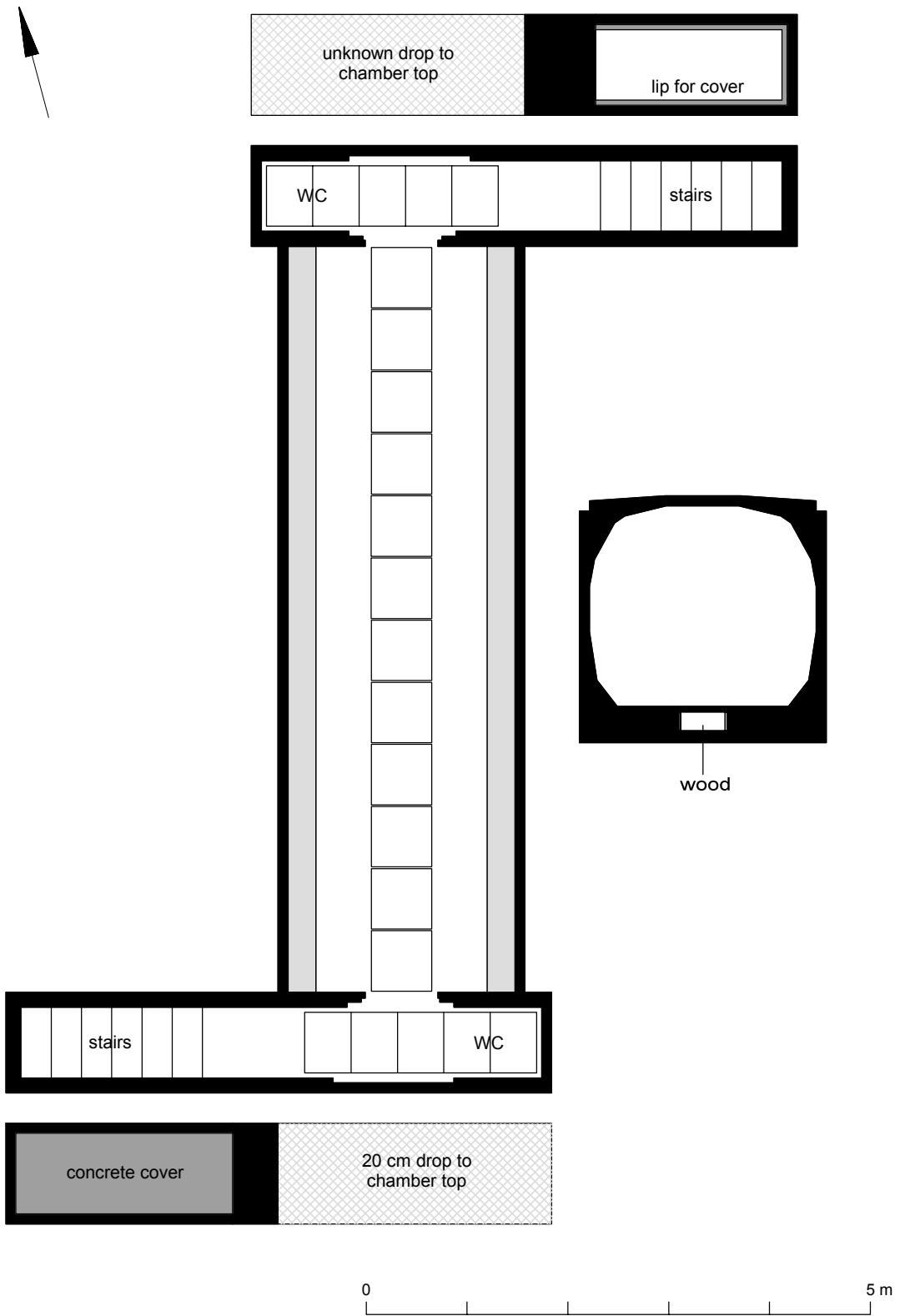


Fig 6 Area C2, air-raid shelter 1: internal plan and cross-section of chamber.

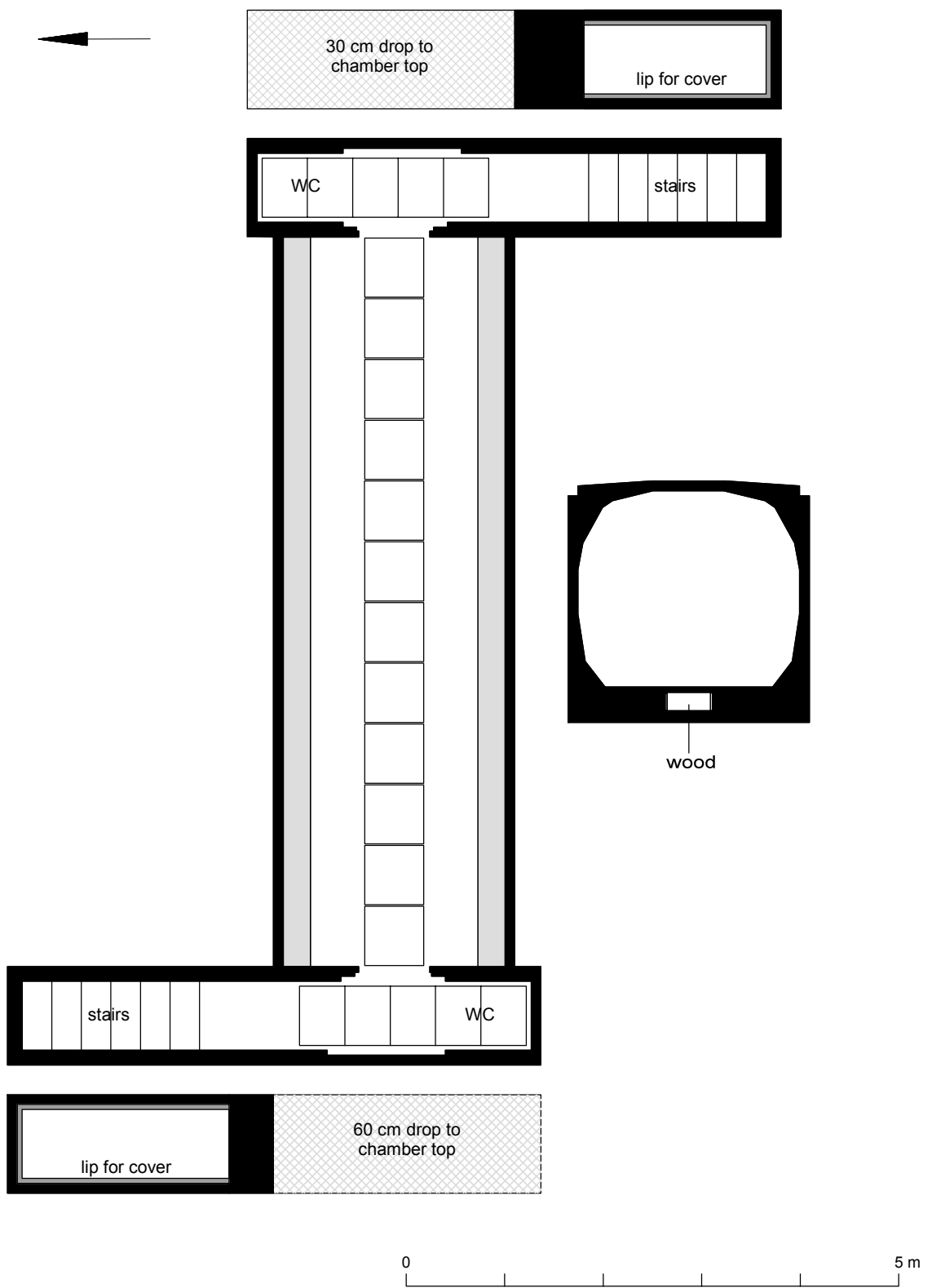


Fig 7 Area C2, air-raid shelter 3: internal plan and cross-section of chamber.

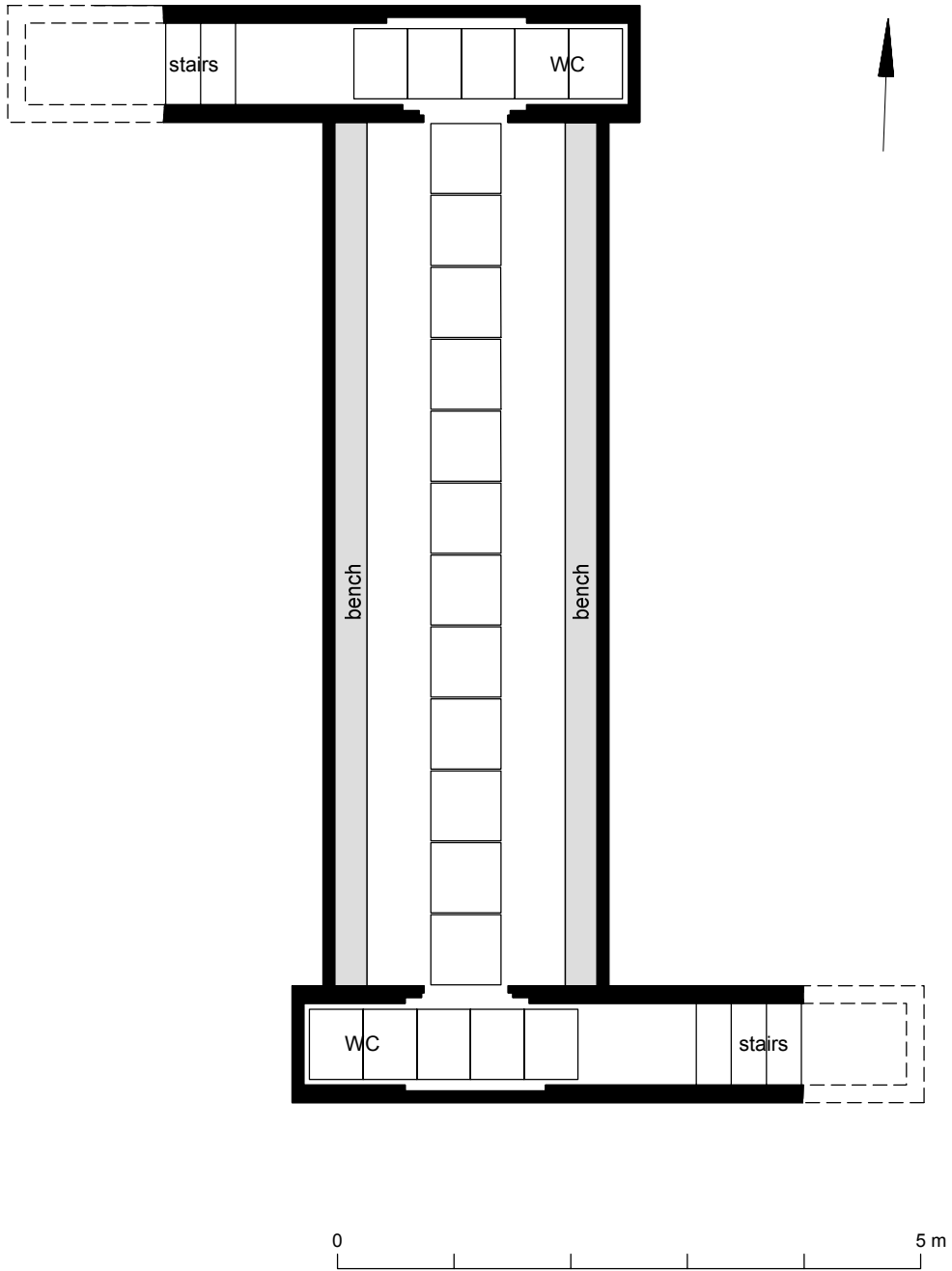


Fig 8 Area C2, air-raid shelter 5: internal plan.

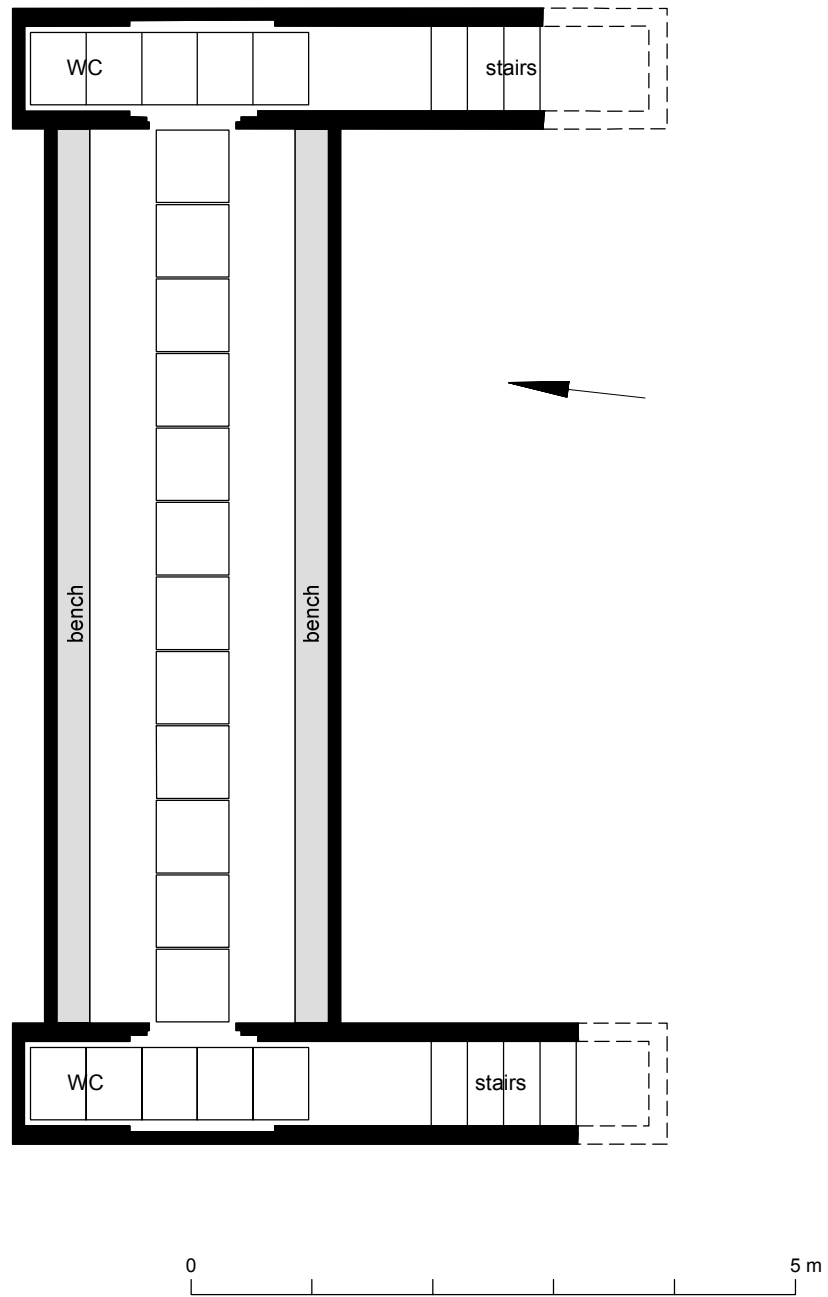


Fig 9 Area C2, air-raid shelter 6: internal plan.

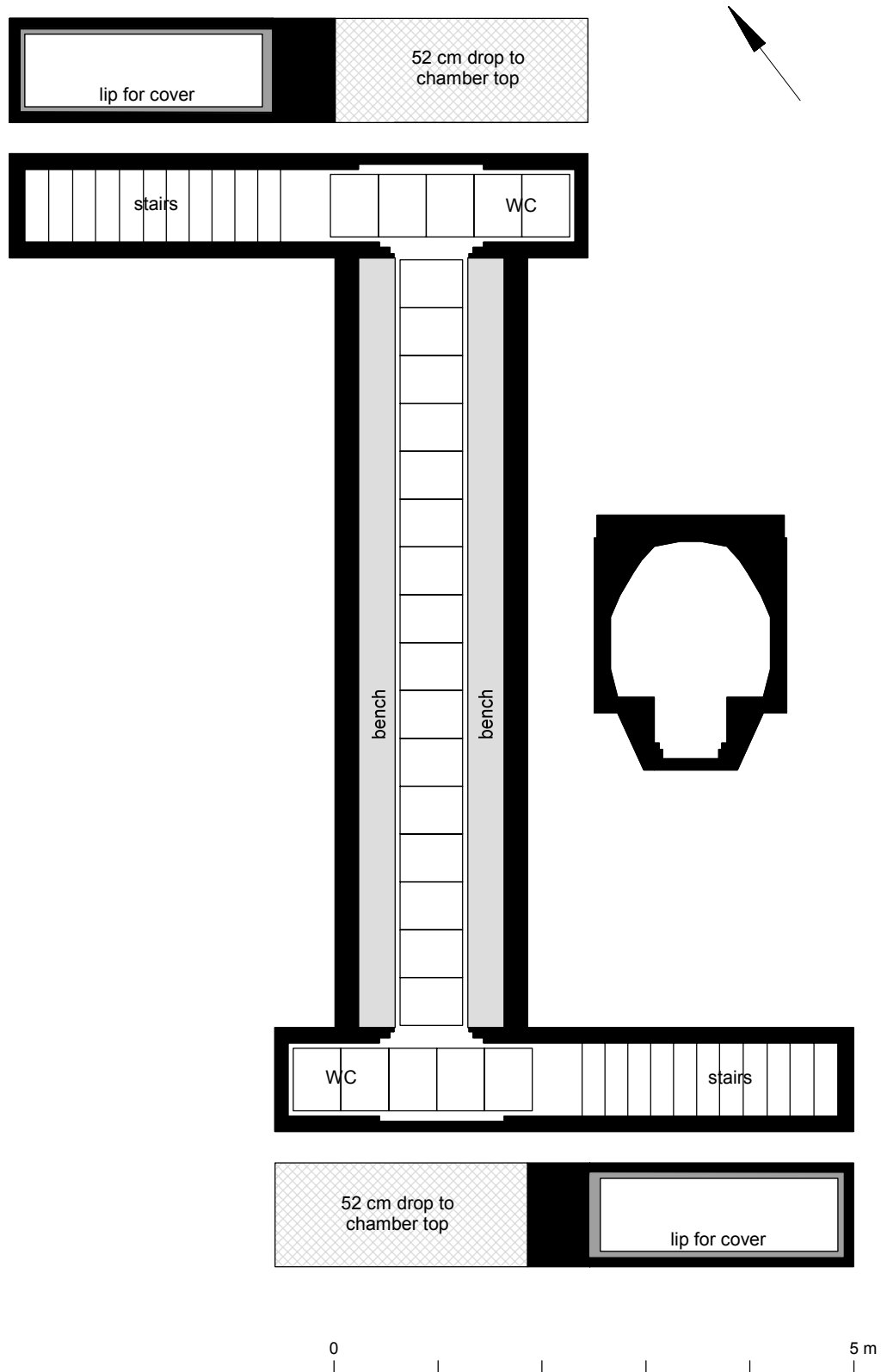


Fig 10 Area J1, air-raid shelter F1: internal plan and cross-section of chamber.

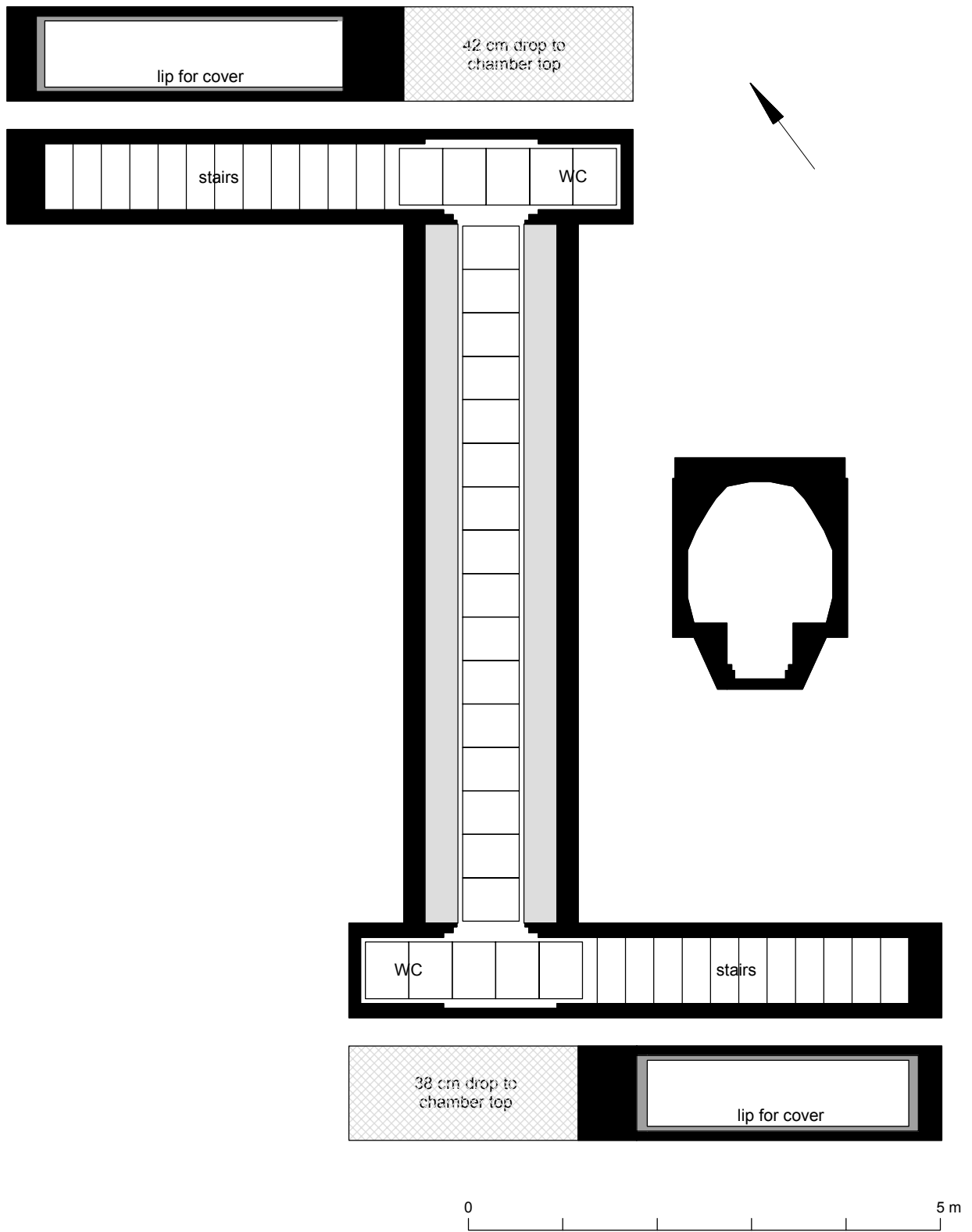


Fig 11 Area J1, air-raid shelter F2: internal plan and cross-section of chamber.

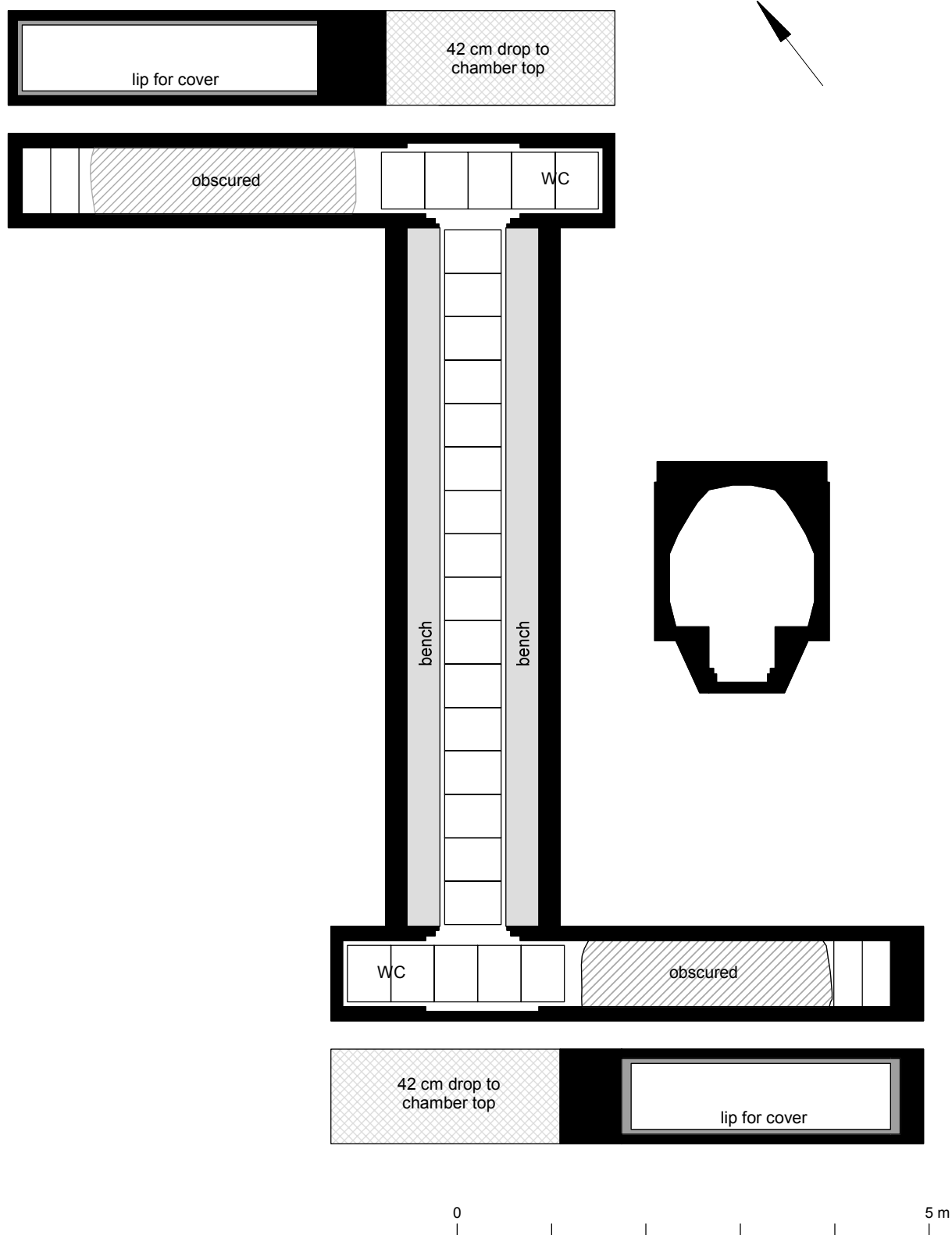


Fig 12 Area J1, air-raid shelter F3: internal plan and cross-section of chamber.

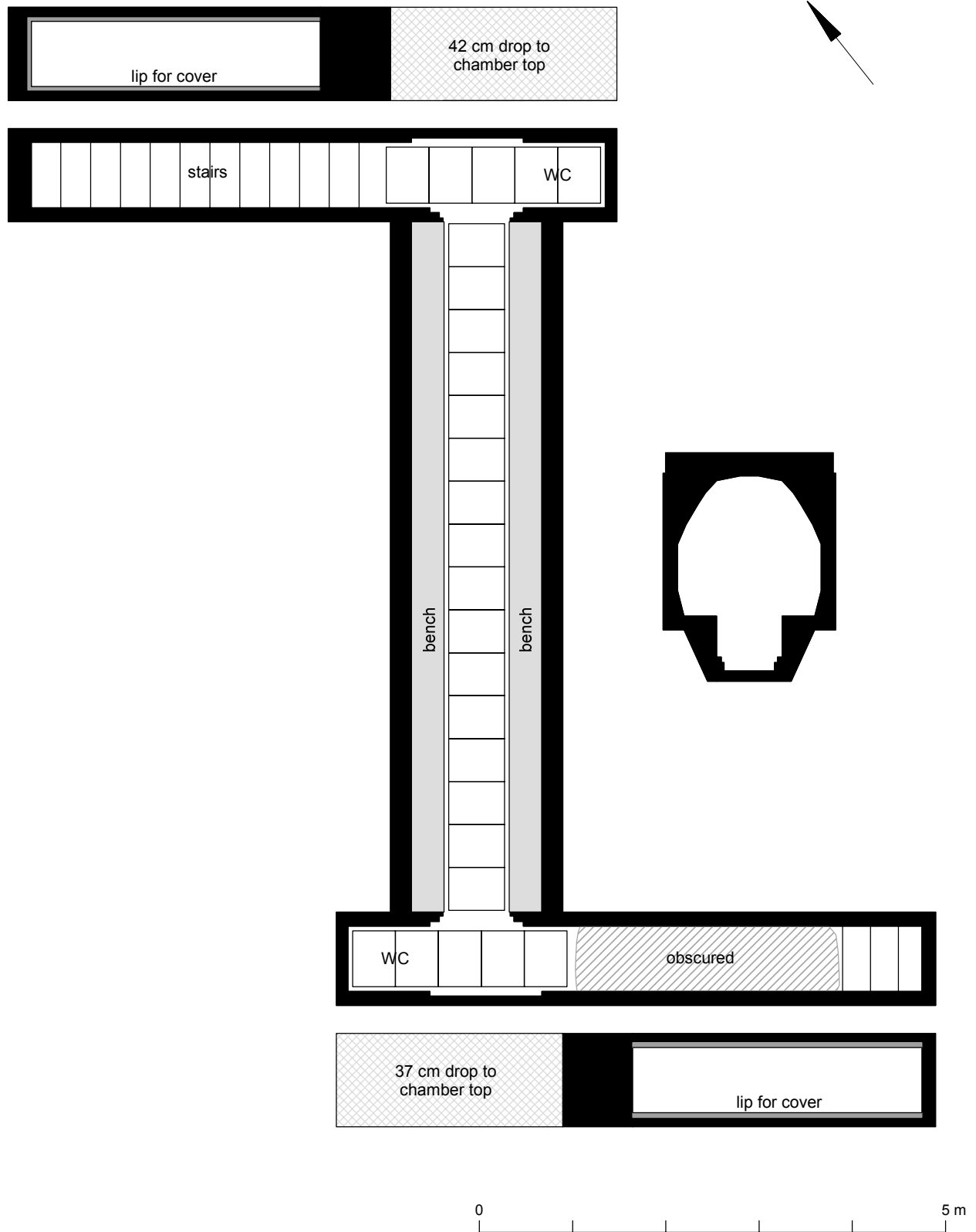


Fig 13 Area J1, air-raid shelter F4: internal plan and cross-section of chamber.

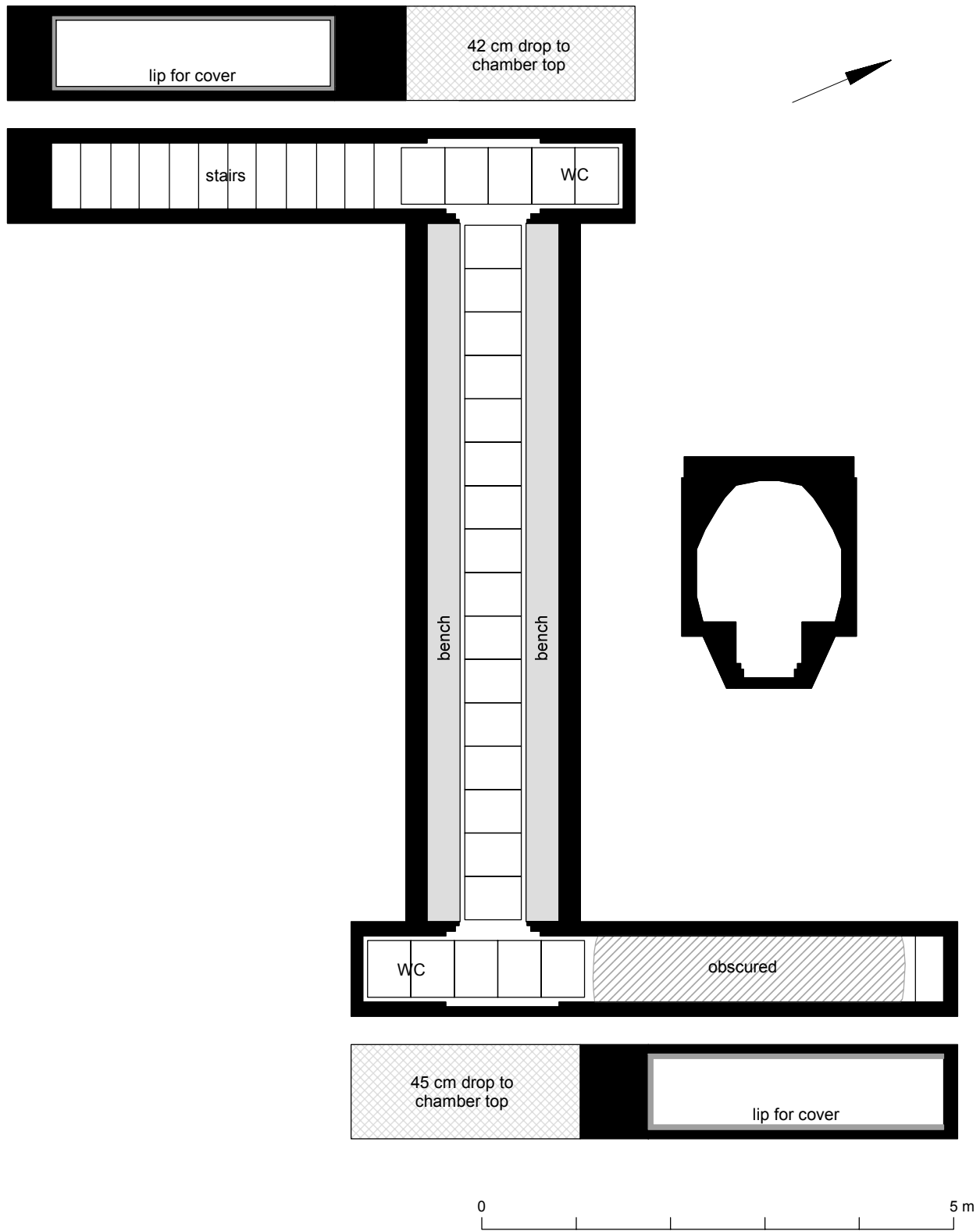


Fig 14 Area J1, air-raid shelter F5: internal plan and cross-section of chamber.

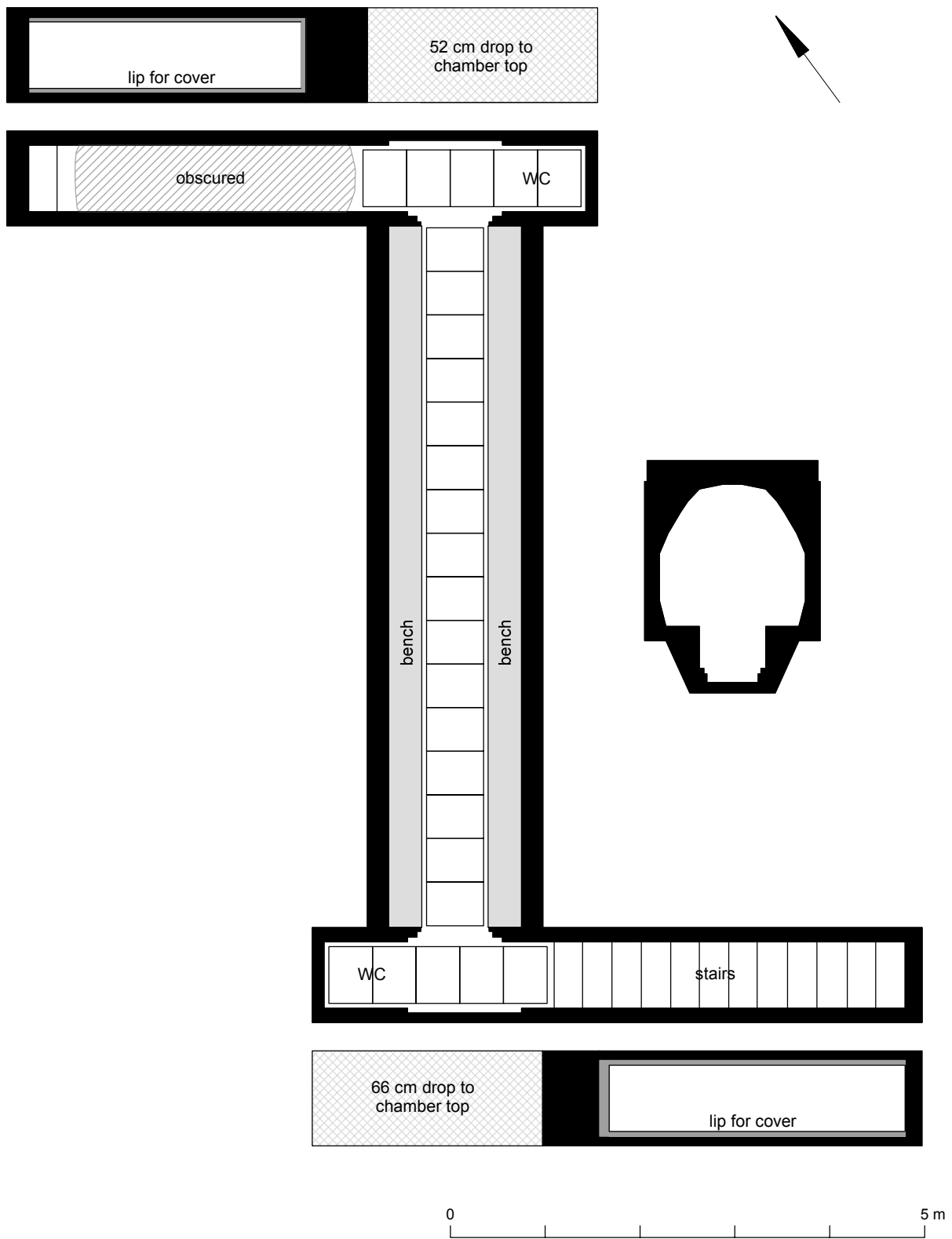


Fig 15 Area J1, air-raid shelter F6: internal plan and cross-section of chamber.

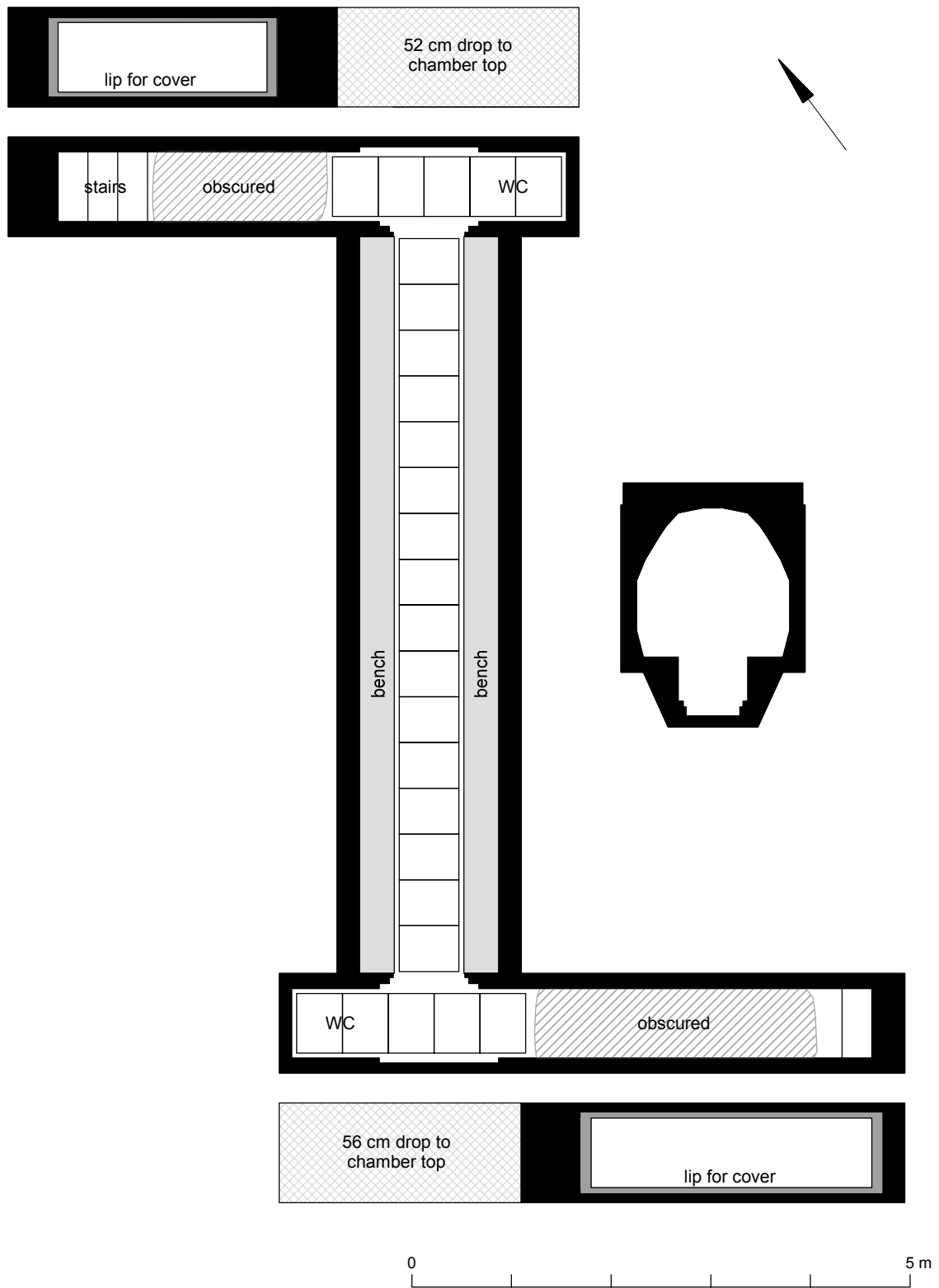


Fig 16 Area J1, air-raid shelter F7: internal plan and cross-section of chamber.

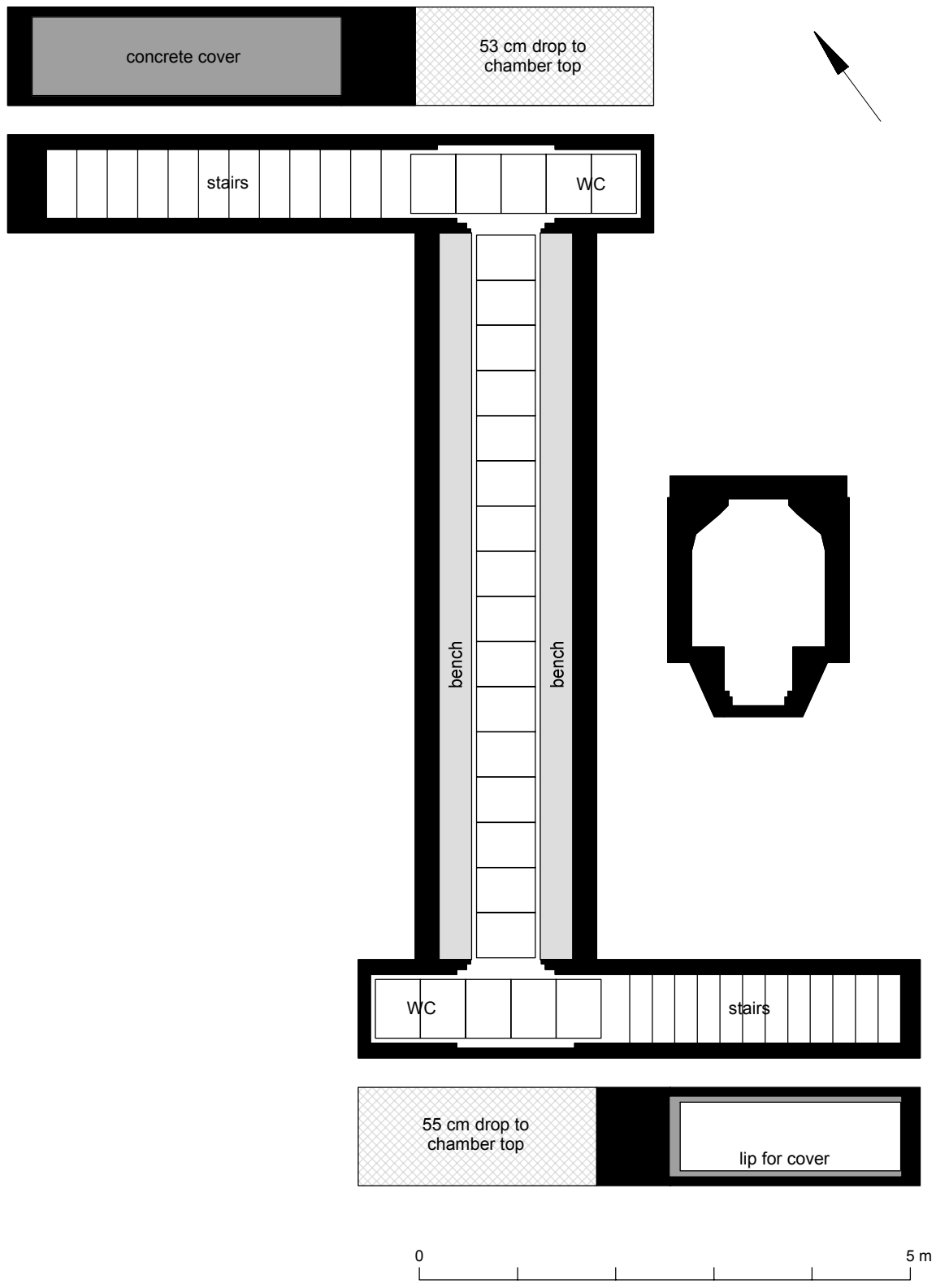


Fig 17 Area J1, air-raid shelter F8: internal plan and cross-section of chamber.

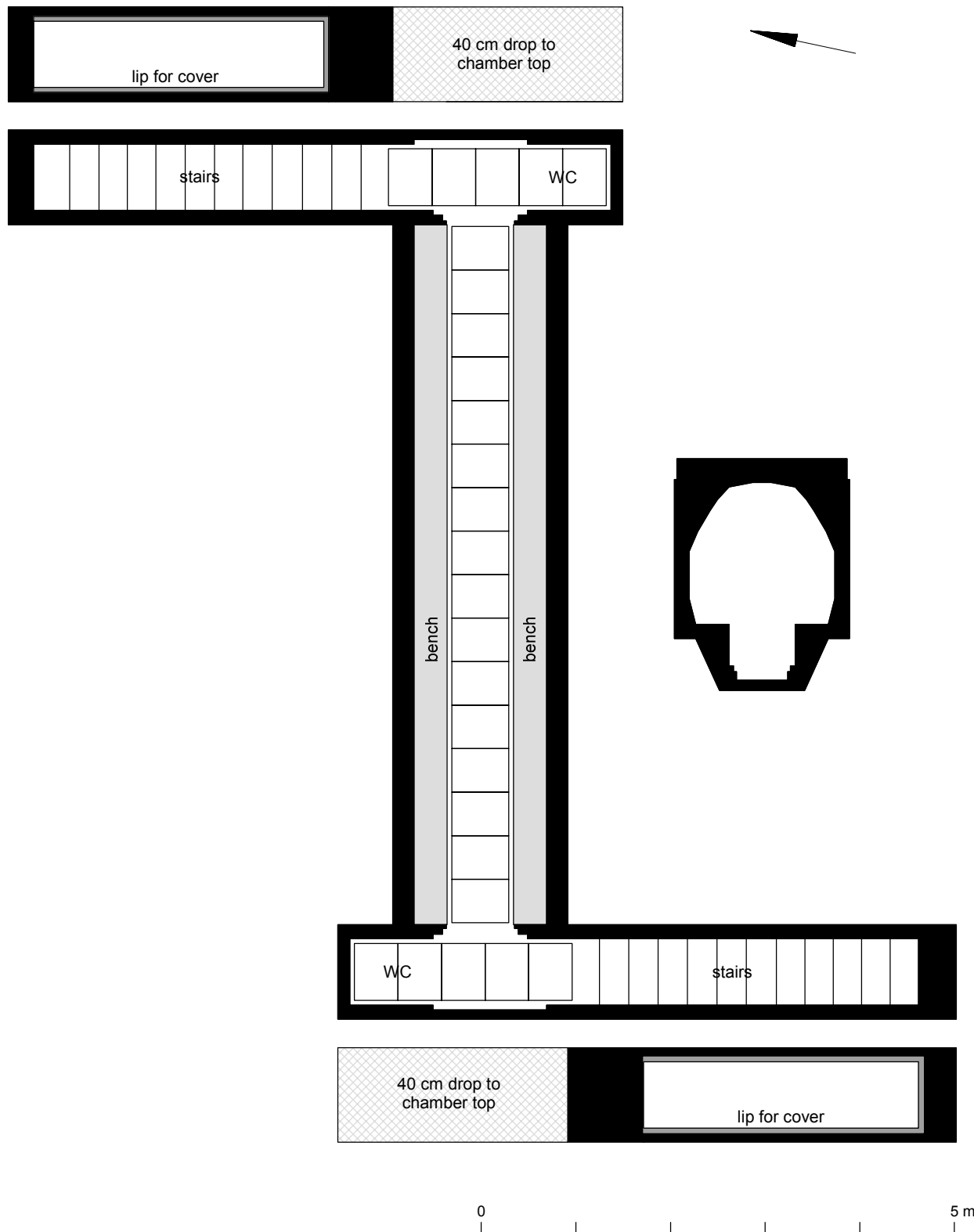


Fig 18 Area J1, air-raid shelter F9: internal plan and cross-section of chamber.

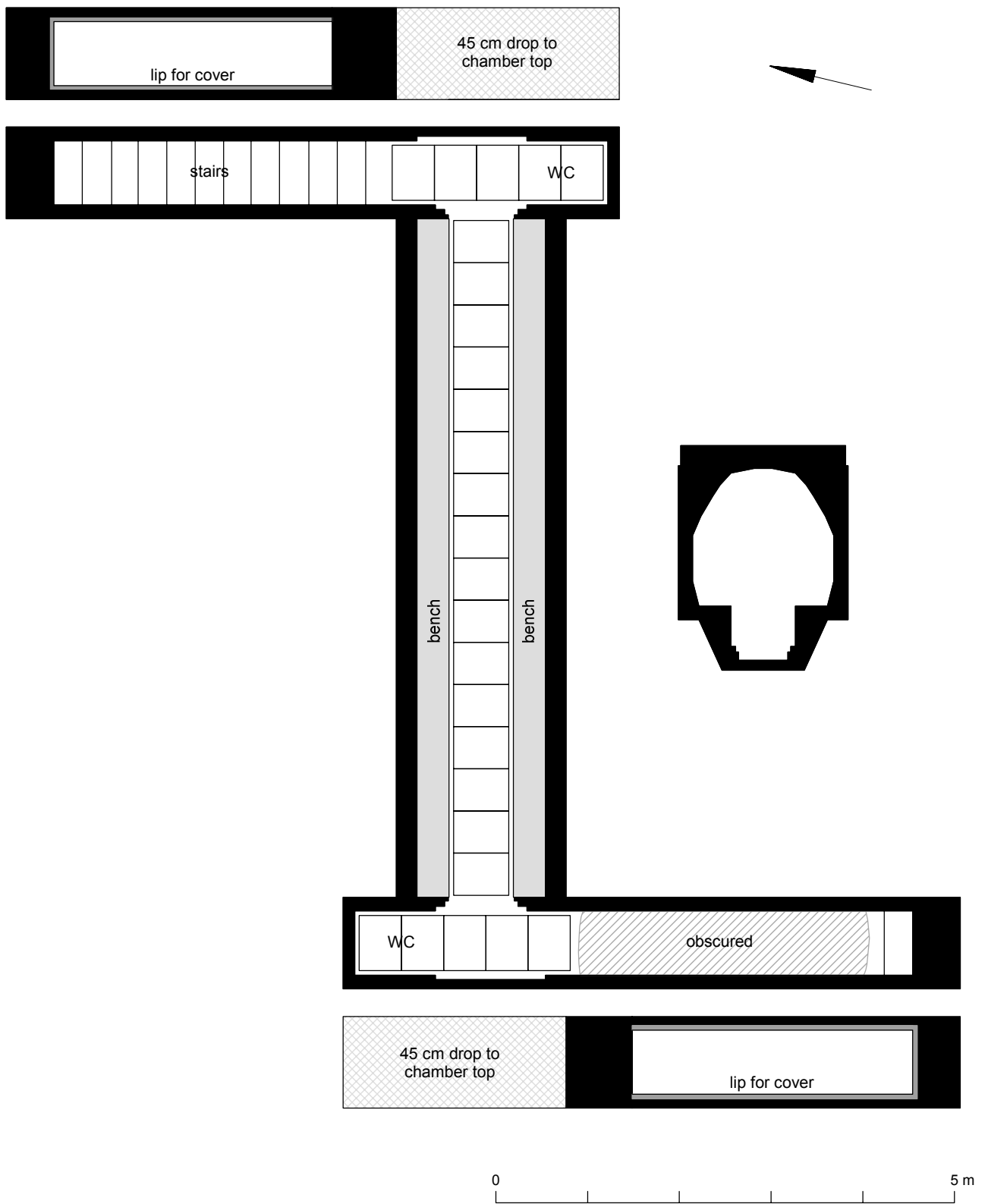


Fig 19 Area J1, air-raid shelter F10: internal plan and cross-section of chamber.

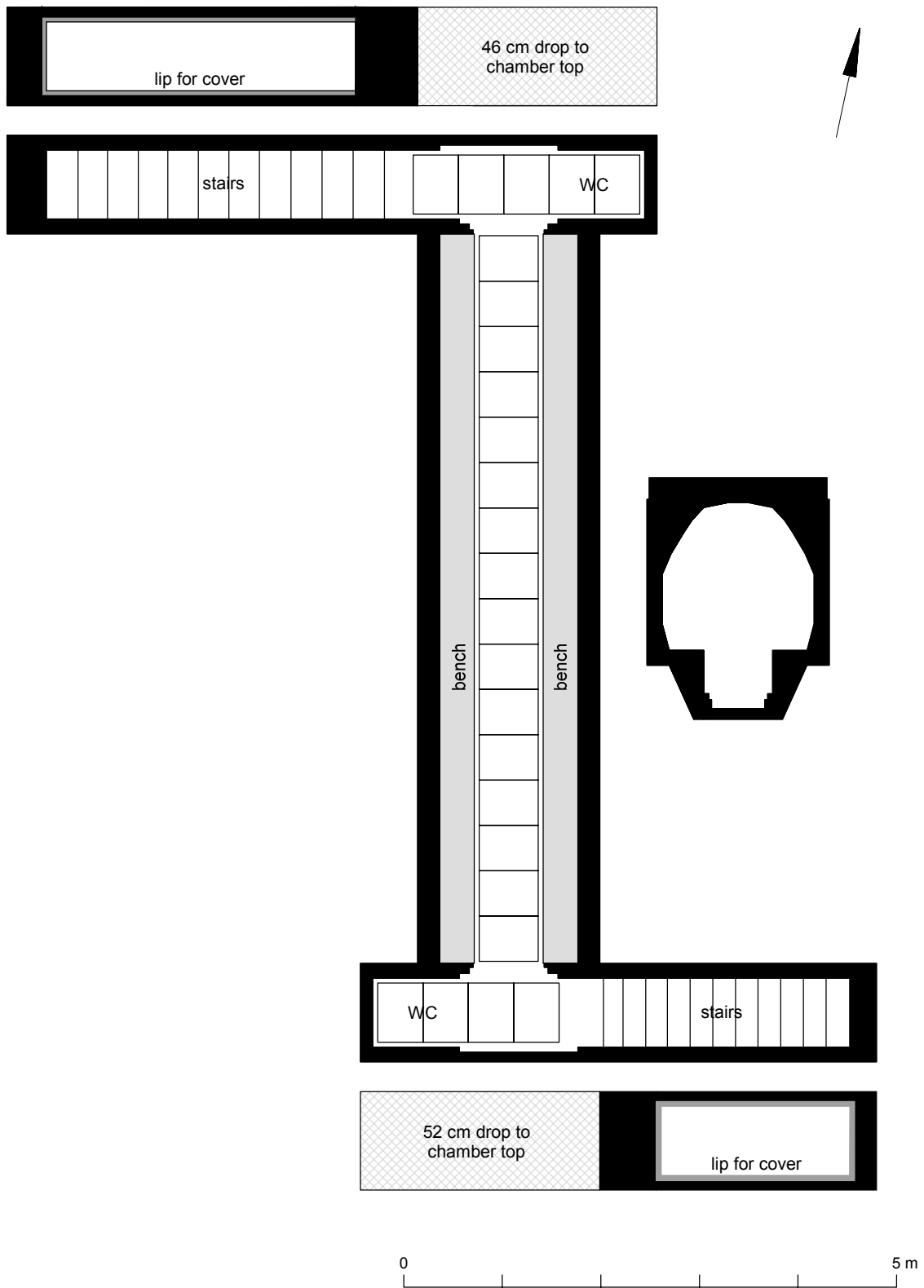


Fig 20 Area J1, air-raid shelter F11: internal plan and cross-section of chamber.

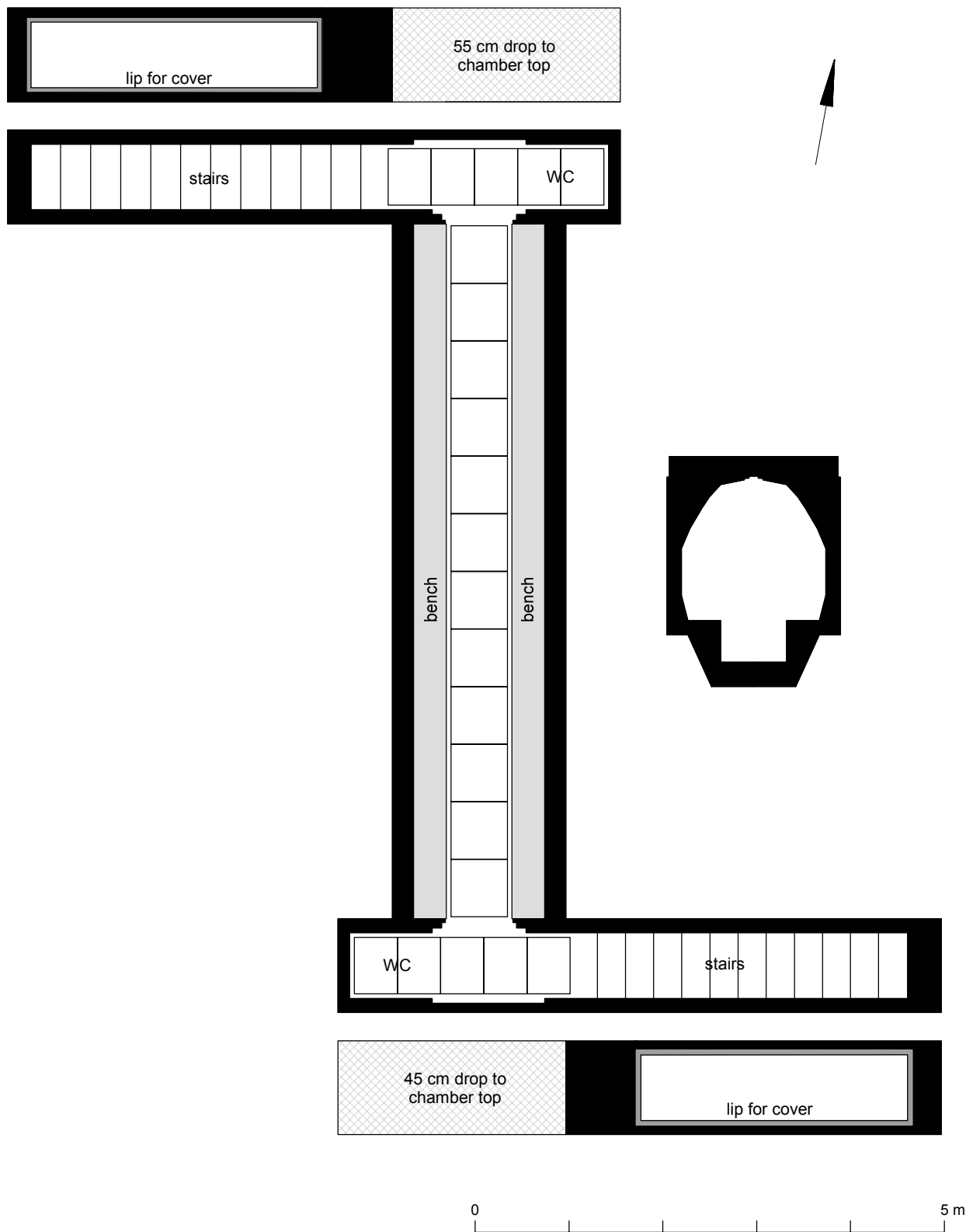


Fig 21 Area P1, air-raid shelter F1: internal plan and cross-section of chamber.

**Essex Historic Environment Record/
Essex Archaeology and History**

Summary sheet

Site address: Areas C2, J1 and P1 of the Garrison Urban Village, Colchester, Essex	
Parish: Colchester	District: Colchester
NGR: Area C2 - TL 9975 2447 (c) Area J1 - TL 9900 2400 (c) Area P1 - TL 9966 2378	Site code: Museum accession code 2008.3
Type of work: Monitoring and Recording	Site director/group: Colchester Archaeological Trust
Date of work: April 2004-May 2007	Size of area investigated: Area C2, 0.68ha Area J1, 11.1ha Area P1, 0.31ha
Location of finds/curating museum: Colchester and Ipswich Museums	Funding source: Developer
Further seasons anticipated? No	Related EHER nos: N/A
Final report: CAT Report 467 and summary in <i>EAH</i>	
Periods represented: 20th-century military structures	
Summary of fieldwork results: <i>Three groups of World War 2 air-raid shelters at Areas C2 (Napier Road), J1 (Le Cateau Barracks) and P1 (Berechurch Road) of the Garrison Urban Village at Colchester, Essex were surveyed prior to demolition. Six shelters were recorded at Area C2, eleven at Area J1 and seven at Area P1.</i>	
Previous summaries/reports: CAT Report 319	
Keywords: World War 2, air raid, shelters, bunkers, Garrison	Significance: **
Author of summary: Chris Lister	Date of summary: May 2008