

NEW PERFORMING ARTS CENTRE, UNIVERSITY OF PLYMOUTH, PLYMOUTH

(NGR SX 48063 54953)

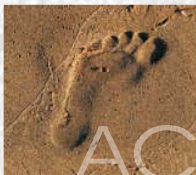
Results of historic building recording

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On behalf of Ryearch

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archaeology

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Planning ref. Plymouth City Council 12/01476/FUL

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Summary

Historic building recording was undertaken by AC archaeology in September 2012 on land at the University of Plymouth, Plymouth, Devon (NGR SX 48063 54953). The work was undertaken in support of a planning application for the construction of a four-storey Performing Arts Centre.

An archaeological evaluation of the site in August 2012 had been carried out with the aim of identifying the presence and condition of the Plymouth Leat, the course of which had been suggested by an anomaly on a ground penetrating radar survey. The Leat was not exposed and the anomaly was identified as a well-preserved linear Second World War air raid shelter.

The top of the shelter was fully exposed, and a complete record made of its interior, prior to its demolition. The shelter is of arched construction, and laid out as a covered trench in a 'zig-zag' shape. The benches had been removed, but their brackets remained, along with evidence for the electrical supply and a stove. A small quantity of graffiti on the walls was also recorded.

During the demolition of the shelter, the Plymouth Leat was partially uncovered. It was constructed onto the natural bedrock and has limestone walls and a slate capping, although some of the latter had been replaced possibly during the Second World War. The masonry may be of 18th- or early 19th-century date.

1. INTRODUCTION (Fig. 1)

- 1.1** Historic building recording was carried out by AC archaeology in September 2012 on land at the University of Plymouth, Plymouth, Devon (NGR SX 48063 54953). The work was commissioned by Ryearech on behalf of the University of Plymouth and was undertaken in support of a planning application for the construction of a four-storey Performing Arts Centre. The recording was requested by Plymouth City Council, as advised by their Historic Environment Officer, and was undertaken on a Second World War air raid shelter, and sections of the Plymouth Leat.
- 1.2** The site lies on the west side of Drake Circus in the centre of Plymouth, just to the north of the medieval and early post-medieval town. The proposed development area was formerly a car park and has most recently been used as a building site compound. The area slopes down gently to the southwest and is situated at approximately 30m – 31m aOD. The underlying solid geology comprises Devonian mudstone and siltstone of the Torpoint formation.

2. ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

- 2.1** The principal archaeological interest had concerned Plymouth Leat, which passed through the development area on a broad NE-SW alignment. To this extent an archaeological trench evaluation had been carried out by AC archaeology in August 2012 to determine the presence and survival of the leat (Stead 2012). The earliest deposits identified during the evaluation comprised a series of undated, pre-development soil layers. The earliest structural features exposed comprised limestone walls representing the rear of properties depicted on 19th-century mapping. Contemporary yard surfaces were also present. No evidence of the leat was found. A linear anomaly produced during an earlier ground penetrating radar survey, thought to be the leat, was identified as an air raid shelter.
- 2.2** The leat was constructed between 1589-91 under an Act of Parliament obtained in 1585 by the Mayor and Corporation of Plymouth, in order to bring water from the River Meavy (at a point now under Burrator Reservoir), over a distance of 17 miles, to the town that had grown up

around Sutton Harbour. The work was carried out under the direction of Sir Francis Drake, whose involvement gave rise to the alternative name of Drake's Leat. At this date it comprised an open ditch up to 7 feet wide (Hawkings 1987, 7-8). Over time its sides were lined with stone and parts roofed to prevent pollution. Much remedial work on the city's water supply was carried out in the 19th century, with the construction of a series of reservoirs and the laying of pipes.

- 2.3** Hawkings (1987) illustrates the course of the leat through the town using as his base a 17th-century map showing the leat and mills upon it. He shows the leat flowing from 'Drake's Place Reservoirs', to the north of the site, and flowing along the west side of Tavistock Road, before turning westwards into Mill Lane. The Charles parish tithe map of 1842 shows the leat crossing the site, with a house and gardens to the west. The course of the leat is also depicted on the 1867 1:2500 Ordnance Survey map. By 1894 (1:500 Ordnance Survey map) the site is occupied primarily by industrial premises, with a slaughter house to the east of the leat and a saw mill with engine house to the west. Both premises had large open yards. The leat appears to form the boundary between the two properties, as well as between residential properties further to the north.

3. AIMS

- 3.1** The principal aim was to prepare a record of the air raid shelter prior to its demolition. A second aim was to carry out a watching brief to identify whether there was any survival of the Plymouth Leat, and to record any structural remains present.

4. METHODOLOGY

- 4.1** The work was carried out in accordance with a written scheme of investigation prepared by AC archaeology (Passmore 2012). Following partial exposure during the evaluation, the top of the shelter was fully exposed revealing its position within the site. A number of access and ventilation holes were made to allow entry.
- 4.2** A record of the shelter was prepared using the standard AC archaeology recording system, comprising written, drawn and photographic records, and in accordance with AC archaeology's *General Site Recording Manual, Version 2* (2012). A plan of the shelter was prepared at a scale of 1:50, and the photographic record was compiled in high-resolution digital format.
- 4.3** The leat was exposed adjacent to the south end of the air raid shelter. The northwest end of evaluation trench 1 was extended to expose the leat towards the top end of the site. The leat was recorded in plan, in section and by photography in line with AC archaeology's *General Site Recording Manual, Version 2* (2012).

5. RESULTS (Figs 1-2; Plates 1-12)

5.1 The air raid shelter (Fig. 1-2)

The tunnel is constructed of steel reinforced poured concrete, rectangular in profile, but with an integral convex roof with a central high point gently sloping down to either side before levelling off above the underlying supporting walls (see Stead 2012, Fig. 5b). It had originally been constructed under a car park adjacent to Tavistock Road. The shelter is of the tunnel type, and is roughly orientated northeast-southwest, but with right angle changes in alignment to minimise the effects of blast (Plate 1). It has an entrance at the southern end, as exposed in evaluation trench 3, and had another entrance at its northeast end, although this part of the shelter was blocked and is inaccessible.

The entrance comprises eight steps flanked by thick reinforced concrete retaining walls. This leads down into a small lobby (Plate 2); the wall opposite the entrance displays a warning sign (Plate 3). This is mostly unreadable but makes references to washing, water, cleaning facilities and the health department. The lobby leads into a short northwest-southeast aligned tunnel, in which there are attachments for fittings, now removed, some of which are associated with the electricity supply that entered here through a conduit in the southwest wall. Throughout the shelter, all of the electric fittings have been removed, batons and but scars of removed batons survive, along with some copper ties. In the roof of this tunnel is a large vent, probably serving a now-removed stove (Plate 4).

Throughout the shelter there are L-shaped metal brackets for bench seats; the benches themselves have been removed (Plate 5). In general, these seats were originally attached to both side walls of the tunnels, although in some areas they have been removed along one side. In the tunnel nearest the entrance lobby they were removed, possibly before the shelter was opened, and replaced by the above-mentioned stove.

The northwest-southeast aligned tunnel leads into a northeast-southwest aligned tunnel. At its north end the tunnel turns again to the east. At its west junction are two toilet cubicles (Plate 6). These are divided by a brick wall that incorporates a vent. Outside the cubicles is a vent that passes through the ceiling. From this point northwards, in the floor of the shelter a drain is visible. This was added into the shelter after it had been constructed. At the corners of the tunnels there are covers giving access to small drain covers (Plate 7).

To the north, the tunnel returns to the northwest. Again, at the corner, where it turns northeast, there is a pair of toilet cubicles. Unusually, they did not open end on to the tunnel, but their doorways faced a small corridor. Adjacent to these is an emergency hatch. This is in the south wall and extends into the roof. This had been blocked, but was reopened to allow access (Plate 8).

In the tunnel to the north the bench brackets on the north wall had been removed, except towards its northeast end where there are two supports attached to an area of raised concrete render. At the north end of this tunnel, where it turns to the southeast, there is a further pair of toilet cubicles. Outside these is a vent in the north side wall, as well as an emergency hatch that has been blocked (Plate 9).

From here the tunnel then turns southeast and continues for a distance of 6m before it is blocked with rubble. This location is close to the present line of Drake Circus, and it is likely that the tunnel would have continued east to a second entrance, that was removed when Drake Circus was widened.

A small quantity of graffiti was noted. This included several poor-quality faces (Plate 10), a bus (Plate 11), the address '27 Mount Gould Road', a 1941 date inscribed on one of the toilet block walls (Plate 12), a probable cherub, the number 5, the name Jean, and the abbreviation 'RASC' for the Royal Army Service Corps.

A few artefacts were present in the tunnel. An iron Elson bucket from one of the toilets survived, but disintegrated when moved by the contractors. A few bottles were noted near the entrance and the northern escape hatch, and had probably been thrown into the shelter after the war.

5.2 The Plymouth Leat (Figs 1 and 3, Plates 13-16)

On completion of the recording of the air raid shelter, the structure was broken out and removed by the main contractor, entailing excavation to a depth of approximately 3m from the ground level. During this process a partial collapse of the west side of the excavation exposed

a section of masonry, at a depth of approximately 1m below ground level. The masonry was examined and confirmed as forming part of Plymouth Leat. The exposure occurred close to evaluation trench 2, approximately 0.8m beyond its west end (Plates 13 and 14).

The walls of the leat (401) were constructed entirely of faced and roughly-coursed limestone blocks bonded with a grey ash-lime mortar. Unstable overhanging deposits precluded excavation of the collapsed material infilling the leat, but it was evident that to either side of the infill, the leat was void and was slate capped (403). The base of the leat consisted of *in-situ* bedrock which was markedly water-worn, resulting in a degree of undercutting of both walls. Internally, the leat measured 0.86m wide by 0.76m deep; it was not possible to establish the full width of the walls but they were in excess of 0.46m.

To the south of the exposed section of leat, removal of the air raid shelter had also exposed (but not significantly disturbed) the rear face of the leat's east wall. The wall was exposed over a distance of 14m and consisted of rough-hewn limestone fragments throughout.

In order to establish the line of the leat across the site, evaluation trench 1 was extended slightly to the northwest. The leat was exposed immediately beyond the original limit of the trench (Plates 15 and 16). The leat (137) was essentially of the same limestone and rock-cut construction as the exposed section to the southwest, but was slightly narrower (0.74m) and deeper (0.96m). The east wall was fully exposed and measured 0.6m wide; full exposure of the west wall was not possible due to stockpiled spoil. The slate capping seen to the south was not present, having been replaced by steel-reinforced concrete (141) over corrugated iron sheets (139). Stratigraphically, the concrete had been poured from the same level as the steel-reinforced concrete that formed the roof to the adjacent air raid shelter, and may therefore date to the same period.

6. DISCUSSION

6.1 The air raid shelter

The shelter was no. 42 in Plymouth, and research by the owner of the *Hidden Plymouth* website, who visited the site whilst it was being recorded, has revealed that it was designed to accommodate 280 people. Construction started in September 1939 and was completed on 7 November of that year, and cost £105,000 (<http://hiddenplymouth.blogspot.co.uk/2012/09/the-wall-public-arp-shelter-plymouth.html>).

The shelter survives in a very good state of preservation, although as with most of Plymouth's shelters, internal fixtures and fittings have been removed. The arched reinforced poured concrete construction is one of the two main types of design used in Plymouth's underground shelters, including for example the Portland Square shelter, located to the north of the site, within the University of Plymouth complex.

In plan, the shelter was laid out in a right angle 'zig-zag' shape to reduce the effects of a blast on its occupants. This layout, known as a covered trench shelter, is less common in Plymouth than the rectangular network of tunnels utilised in many shelters (including for example that at Portland Square), other examples have been archaeologically recorded at Sutton High School and Drake Primary School. The more linear design may have been chosen due to the restricted space below the car park, which was surrounded by buildings, Tavistock road and the culverted Plymouth Leat (see below).

The other features such as toilet cubicles, bench seats and escape hatches are typical of Plymouth's air raid shelters.

6.2 The Plymouth Leat

The structure (F137 and F401) exposed is undoubtedly Plymouth Leat. Unfortunately, this had not been identified by the ground penetrating radar survey and as a consequence had not been targeted by the subsequent evaluation trenches. These had targeted instead a very strong radar survey anomaly, which proved to be the air raid shelter. The leat lay slightly to the west of all three evaluation trenches, and its line had not been replaced by the shelter as previous thought.

The leat was generally well-preserved, although its slate capping had not survived within the northern half of the site, where it had been replaced by reinforced concrete. The slight difference in the depth of the two exposures of the leat may simply reflect variations between ground level and the underlying natural topography across the sloping site. The relatively narrow width of the leat (0.86m) and the rock cut base is in contrast to the 2.1m width and laid crushed limestone base exposed during the AOC Archaeology Group excavations of the leat at Endsleigh Place to the north (Edwards 2007). The investigation has not provided any detailed evidence for the date of this section of the leat. However, the use of an ash lime mortar is indicative of a post-medieval, probably 18th or early 19th-century, date. The present form of the leat could therefore be associated with the construction or enlargement of the nearby Drake's Place Reservoir in 1825 and 1828 respectively.

7. ARCHIVE AND OASIS ENTRY

- 7.1 The paper and digital archive and finds are currently held at the offices of AC archaeology Ltd, at 4 Halthaies Workshops, Bradninch, near Exeter, Devon, EX5 4LQ, prior to deposition at the Plymouth City Museum and Art Gallery.
- 7.2 An online OASIS entry has been completed, using the unique identifier 135956, which includes a digital copy of this report.

8. ACKNOWLEDGEMENTS

The evaluation was commissioned by Ryearch Ltd on behalf of The University of Plymouth. Thanks are due to Mark Miners and his colleagues (Ryearch) for their assistance and co-operation on site. The site work was carried out by Peter Stead and Andrew Passmore, assisted by Samantha Hogsden. The report figures were prepared by Sarnia Blackmore and Elisabeth Patkai.

9. REFERENCES

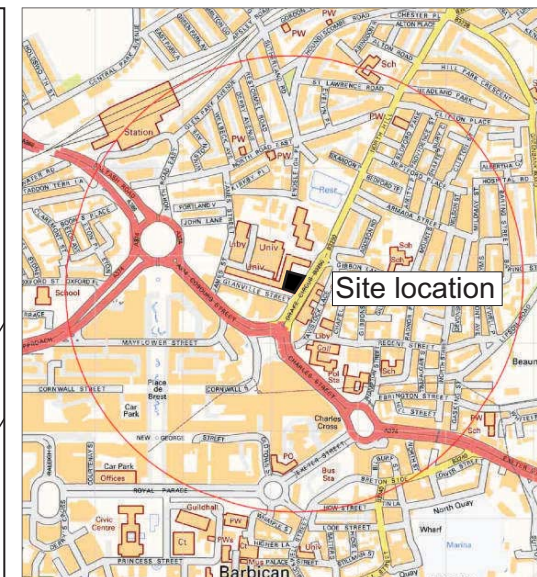
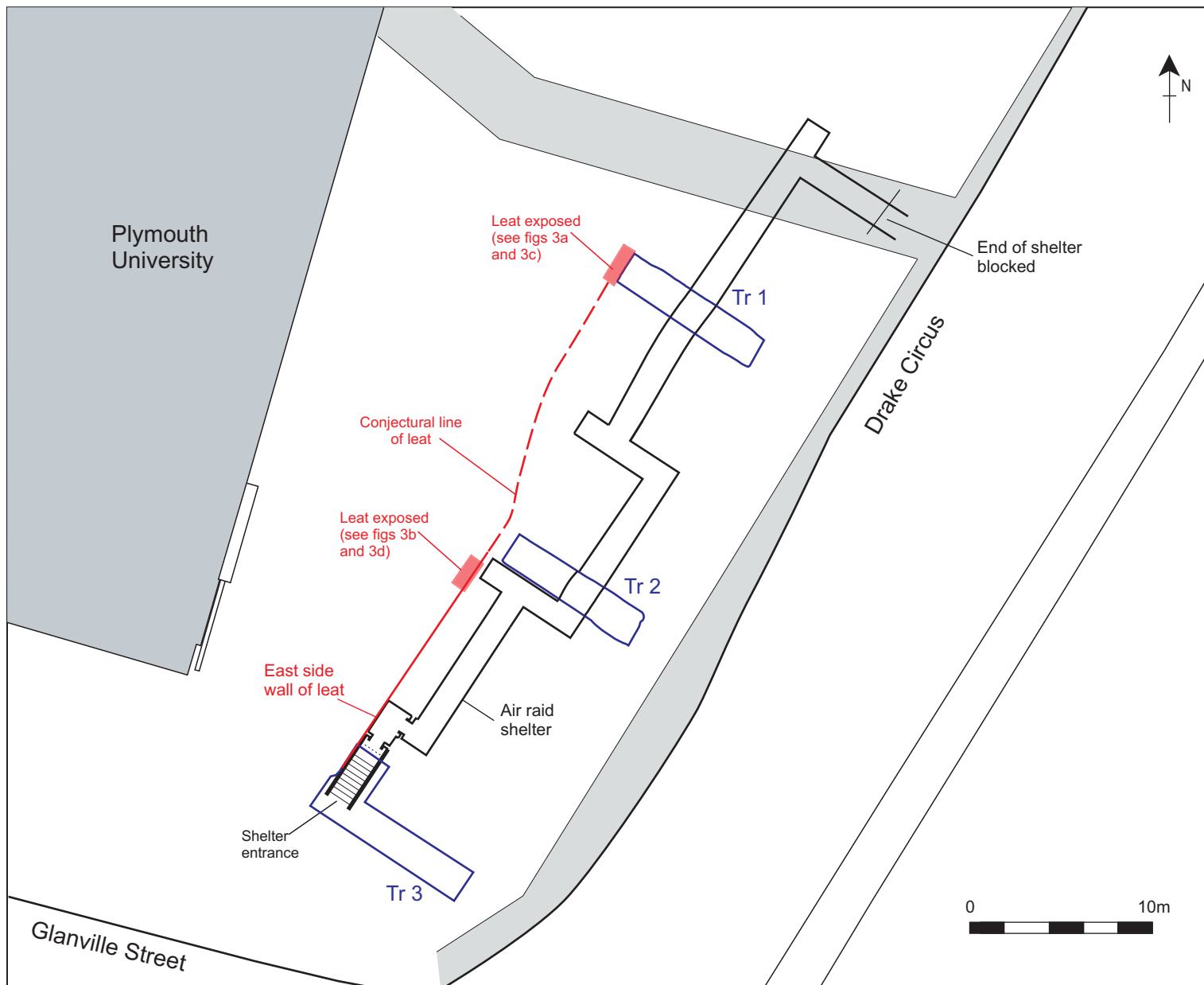
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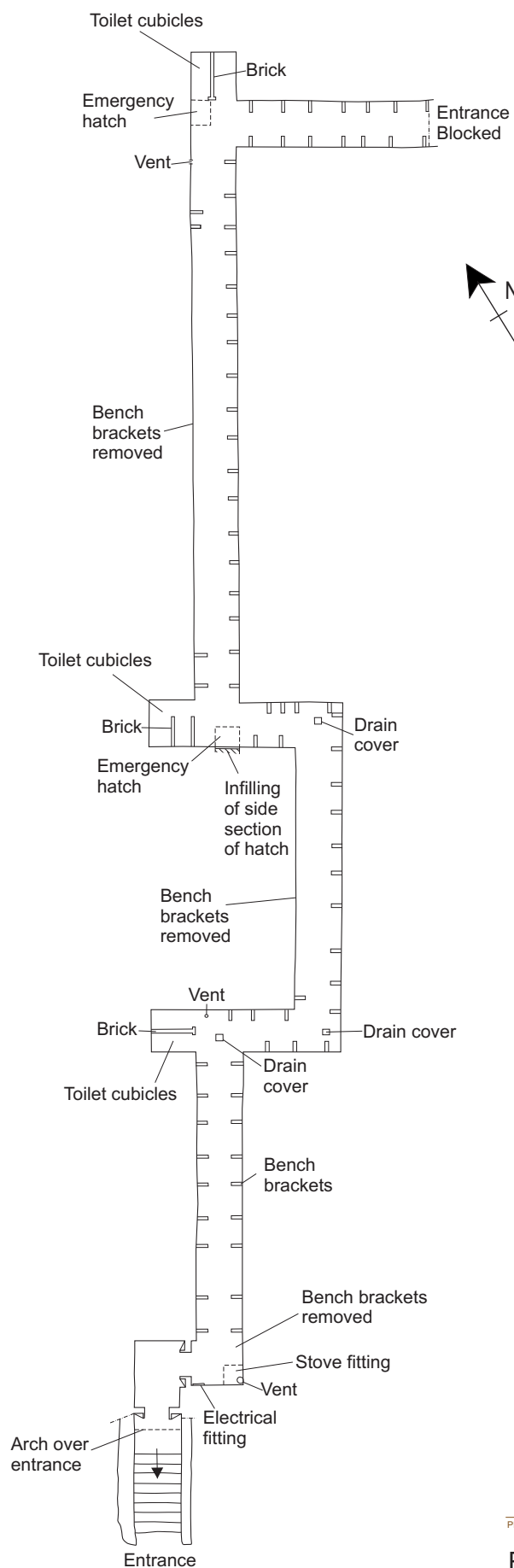
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PROJECT
Performing Arts Centre, University of Plymouth

TITLE
Fig. 1: Location of site and main features



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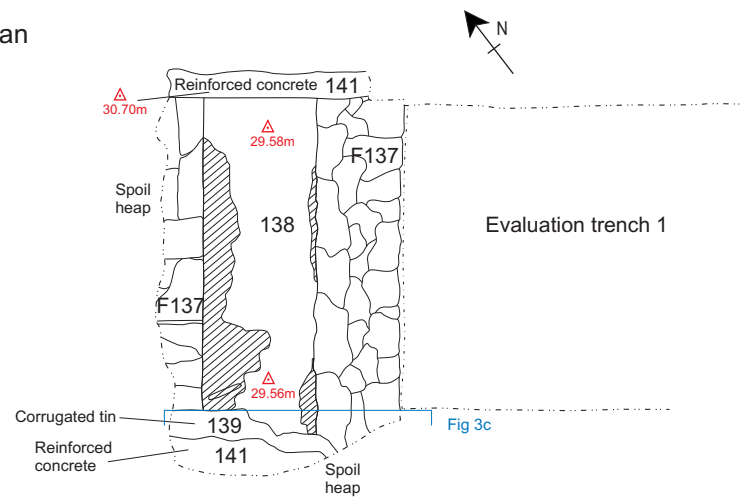
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Performing Arts Centre, University of Plymouth

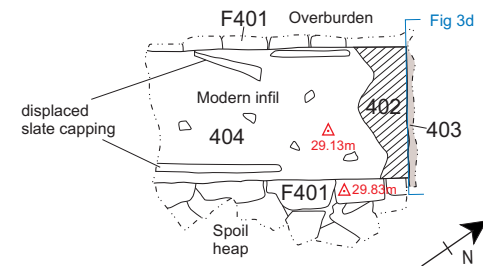
TITLE

Fig. 2: Plan of air raid shelter

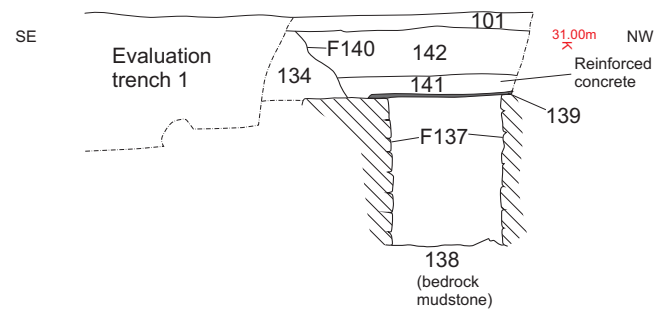
a) Trench 1, plan



b) Trench 4, plan



c) Section through leat



d) Section through leat

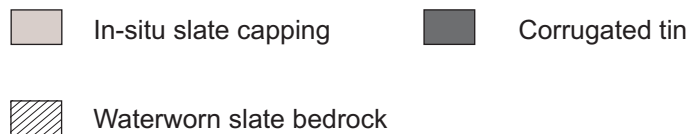
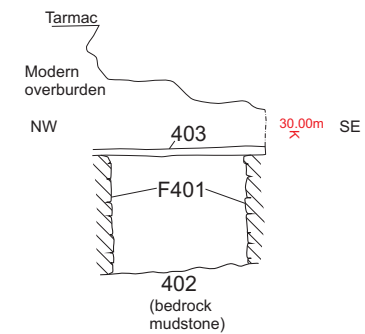




Plate 1: The top of the shelter viewed from the top of the site.



Plate 2: The southern entrance to the shelter, viewed from the southwest. Scale 1m

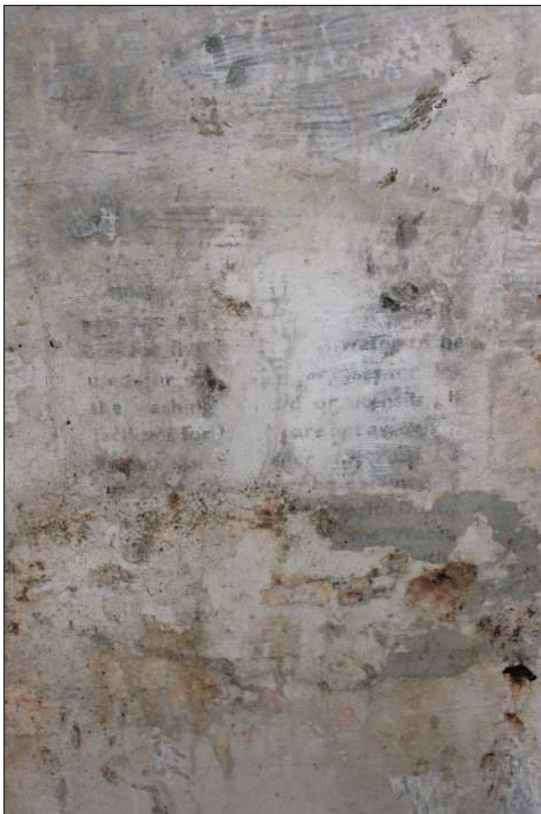


Plate 3: The sign in the entry lobby, viewed from the southwest.



Plate 4: The stove fitting and vent at the south end of the shelter, viewed from the northwest. Scale 1m.



Plate 5: A tunnel within the shelter showing bench supports, viewed from the south. Scale 1m



Plate 6: The southern pair of toilet cubicles, viewed from the northeast. Scale 1m



Plate 7: A drain in the floor, viewed from the south. Scale 0.25m



Plate 8: The reopened southern emergency hatch, viewed from the north. Scale 0.25m



Plate 9: The northern pair of toilet cubicles and the adjacent blocked emergency hatch, viewed from the south. Scale 1m



Plate 10: Graffiti – a face.



Plate 11: Graffiti – a bus.



Plate 12: Graffiti – brick with 1941 date.



Plate 13: Plymouth Leat, exposed during demolition of air raid shelter, view from the southeast. Scale 1m



Plate 14: Demolition of air raid shelter. Leat visible to left of scale, view from southwest. Scale 1m



Plate 15: Leat exposed to northwest of evaluation trench 1, view from the northeast. Scale 1m



Plate 16: Interior of leat, exposed to northwest of evaluation trench 1, view from the northeast

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