



Arts & Humanities  
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# **INTERIM REPORT ON ARCHAEOLOGICAL FIELDWORK AT CASTELPORZIANO**

**April-May 2007**

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## TEST TRENCHING

Ten test excavations were undertaken in April-May 2007 in four separate locations, variously designed to verify the presence, date and/or other relevant characteristics of archaeological features which had been identified by surface, geophysical and/or topographical survey:

1. Vicus, forum area (CPV H, trenches 8-10)
2. Villa del Confine, porticoed enclosure (CPS B2 trench 5 and 5A )
3. Villa del Confine, seaward projection (CPS B2 trenches 6-9)
4. Fish tanks D5-6 (CPS D5 trench 1)

### 1. VICUS: area H, Forum

The forum is one of the primary characteristics of a Roman town; its size and shape, and the kinds of buildings associated with it, can provide important clues to the size and socio-political organisation of the local community. The surveys of the exposed remains of the Vicus in 1984-90 established the position of the SE corner of its forum, with a group of temples (H1-3) on the south side and a line of statue bases (Fig.1), which indicated that the eastern margin corresponded with the perimeter wall of bath building A, but the rest of the size and shape of the square to north and west and remained in doubt, except for the angled placement of the northernmost and largest of the statue bases which could mark the NE corner (see *Castelporziano III*, pp.125f, figs 28-31).



Fig. 1 Vicus, Forum area H, statue bases along the east side (1989).

Two large 19th-century spoil heaps fill the space between the statue bases and the temples, beyond which the ground is flat and on the same higher level as the modern Via del Telefono. Geophysical surveys on the flat ground in the 1980s, hampered by undergrowth and surface debris, failed to produce any intelligible results (see *Castelporziano III*, pp.151-3). The reduction of low-level vegetation of recent years prompted a new geophysical survey in April 2006, which indicated a

substantial anomaly in the centre of the flat ground (see April 2006 report). Surface excavation in September 2006 traced the upper profile of a square building (H4), measuring 7.07 m by 8.00 m (24 x 27 Roman feet), constructed of tufa reticulate with occasional courses of brick and tufa quoins (rounded on the outer corners), probably dating from the later 1st century AD, to which a later extension in brick (2nd/3rd century), added a further 3 metres to the front towards the forum (see September 2006 excavation report: H trenches 1-7). A short wall projecting from the east side, 1.00 m. in length, was also a later addition, and the beginning of a brick-faced projection was found in an equivalent position on the west. Inside the building the floor level lies just below the modern ground surface, over 50 cms above the floor level in the nearby Severan bath-building (A), suggesting that it was raised on a podium. A bench or platform 1.0 m wide along the rear wall, preceded by at least one step, might signify that the building was a council chamber (*curia*) rather than a temple.

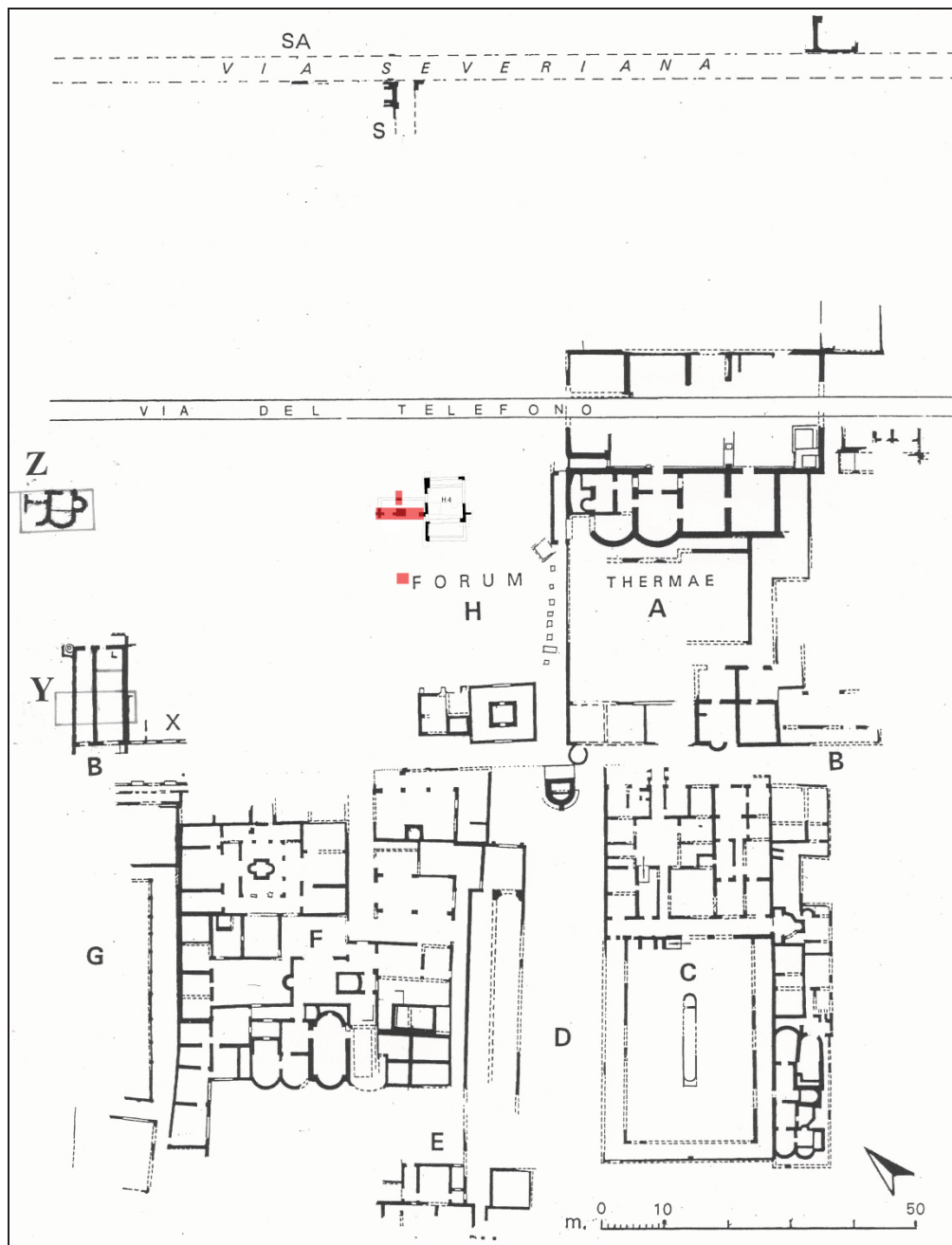


Fig. 2 Vicus, general site plan showing location of H trenches 8-10.

## H trenches 8-10

The initial intention in 2007 was to carry out further geophysical survey around the building H4, using magnetometry instead of resistivity, in order to define more of the wider context of the building, especially the fourth (western) side of the forum. However, upon consideration of the amount of loose debris (bricks, tile and other rubble) that would have to be cleared to give the survey a chance of success, and in view of the fact that the tops of the walls of H4 had proven to lie so close to the surface, it was judged that shallow topsoil trenching of the kind used in 2006 would be more efficient and definitive.

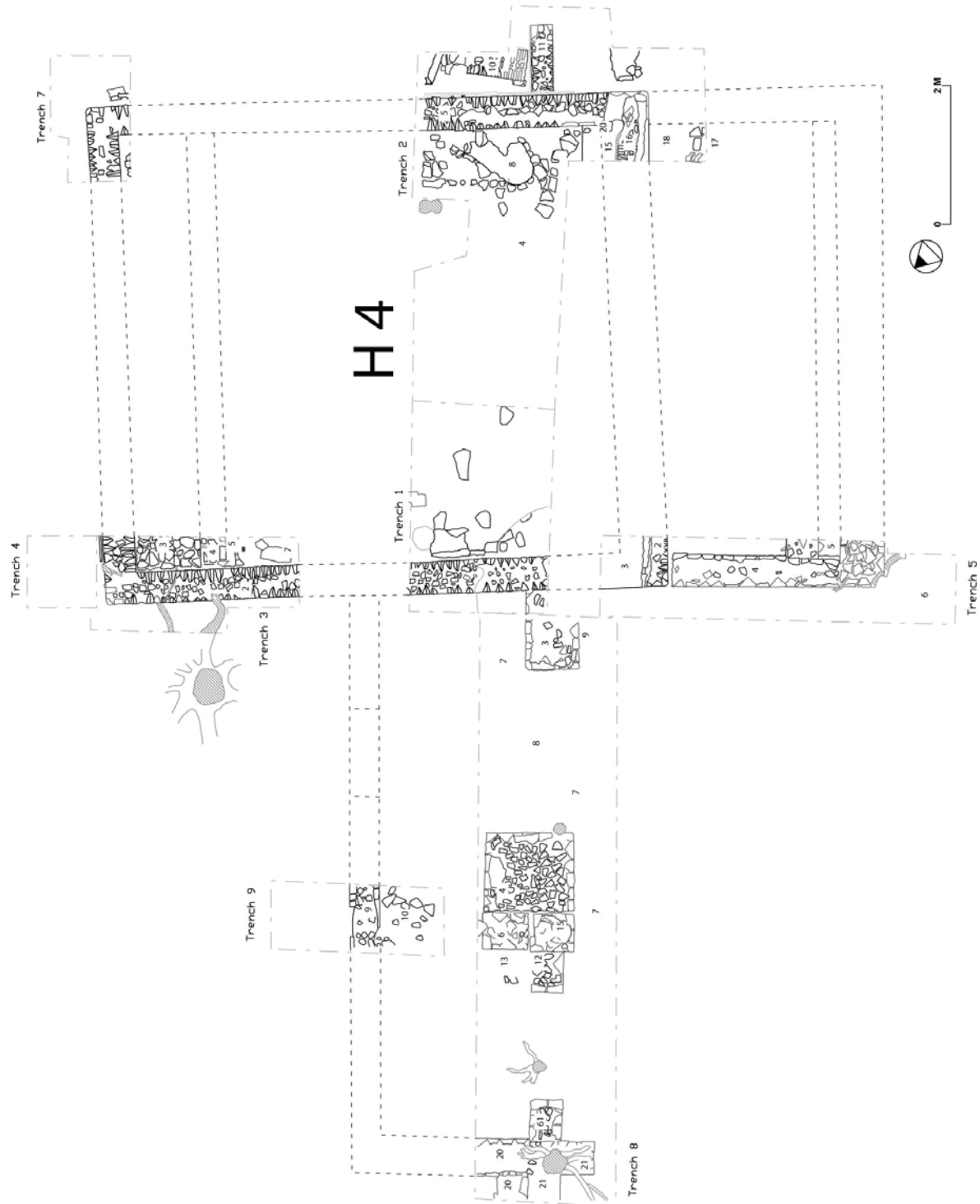


Fig. 3 Vicus, Forum area H, plan of building H4 and trenches 8-9.



**H Trench 8** (2.0 x 8.5 m) extended from the west of building H4 so as to coincide with the trace of brick walling which had been observed in 2006 projecting at a right angle from its western flank, and to reach as far as the lower slope of an adjacent mound further the west (for plan see Fig. 3, above; photos figs 4-5, below). The walling attached to the flank of building H4 (3) measures 0.77 m wide and 1.00 long, constituting perhaps a monumental base or a buttress. Another brick-faced base (4) lies in line 2.30 m to the west, measuring c.120 x 1.30 m. It abuts the east side of a brick-faced pier (5), 60 x 60 cms square, to which a block of infill on the north side (6) was probably added at the same time as the large base. On the west of pier (5) is a door jamb (12), matched by another jamb (19) at a distance of 1.20 m. which abuts a group of walls located further to the west, on a N-S alignment (20 and 21). Unit (20) forms the corner of a room extending further to the north and west; unit (21) is the corner of another room to the south, with a door in its east wall. The trench was not quite large enough to show if 20 had a similar door. Although built separately, the join between the two units was not faced, indicating that they are probably contemporaneous constructions, undertaken by different teams (and perhaps signifying a property division). Building debris (7) containing sizeable lumps of collapsed walling filled the intervening areas of the trench, disturbed by a previous excavation (9) on the south side of (3)<sup>1</sup> and by a long furrow (8) or channel running at a diagonal between 3 and 4, ending in a shallow pit (10). A sounding on the south side of 3 identified three horizons of compacted rubble, the lowest a lightly concreted surface, perhaps the forum pavement, bonded with the foundations of 3, at a depth of 1.10 m. below the present ground surface. Deposits immediately overlying this surface contained pottery of the mid-late 3rd century AD. In another sounding beside 12 and 6 traces of a brick floor were encountered at a depth of about 1.0 m. (Fig. 6). Both soundings also identified a later horizon, involving a rise in ground level of c. 50 cms. The later floor level was missing in the angle between 6 and 12, destroyed by a previous excavation (13), but its makeup consisted almost entirely of bricks and limey sand. Pier (5) and the door jamb beside it (12) have both been rebuilt at the higher level, on the footprint of similar predecessors.



Fig. 4 Vicus, Forum area H, trench 8. View from south-east.

<sup>1</sup> probably the same excavation which made the hole identified in H trench 1.





Fig. 5 Vicus, Forum area H, trench 8. View from south-west



Fig. 6 Vicus, Forum area H, trench 8, detail of walling [6], [5] and [12], with tile flooring, viewed from north-west.

**H Trench 9**, measuring 1 x 2.50 m (see plan Fig. 3, above, and photo below, Fig. 7) was opened to check whether a tree located some 3 m to the north in line with pier (5) had its roots in another similar pier. Instead, it exposed part of a continuous wall running E-W, faced on the north side in *opus vittatum* (3 courses of tufelli alternating with 2 courses of brick). On the north side of the wall the deposits were completely different from the hard-packed building debris encountered on its other side, in trench 8: soft and ashy, they contained large fragments of amphorae and pottery and a variety of metal objects in association with coins of Maxentius (AD 306-312) and Probus (AD 276-282) in fine condition (Fig. 8). The E-W wall probably represents the northern boundary of the Forum square, extending west to form the north end of a porticus on the western side of the square, and to the east to meet the flank of building H4. It probably contained a doorway in line with the gap between the bases found in H trench 8 (3-4) and the furrow running between them (8).

**H Trench 10** (1.5 x 1.5 m) was laid out 6 m to the south of H trench 8, in line with pier 5, on the other side of a large tree (for position see Fig.2), to check for further evidence of a portico or arcade<sup>2</sup> down the western side of the forum, to which pier 5 might have belonged. The area exposed by the trench was filled mainly with solid building debris (Fig.9), including a large piece of brick-faced walling which had collapsed at an angle on top of some underlying structure on the line projected for the portico. Clearance of some of the looser debris in the eastern half of the trench identified concreted rubble makeup like that found beside (3) in trench 8, at the same level, containing what could be a tile covered drain running N-S.



Fig. 7 Vicus, Forum area H, trench 9. View from north

<sup>2</sup> A shallow test dug in this vicinity in 1989, when the area was still very heavily overgrown, uncovered part of a collapsed wall containing a brick arch. Unfortunately, although the trench itself was fully recorded, its exact location was not accurately marked on the site plans of the day and it was back-filled.





Fig. 8 Coins of Maxentius and Probus (from Vicus H tr 9).



Fig. 9 Vicus, Forum area H, trench 10. View from east.



**Results.** The new data permit us to reconstruct the NW corner of the forum (Figs 10-11) and some of the phases in its history. In its final phase the square was a rectangular space of very modest size, measuring c. 28 from east to west and c. 23 m from north to south. As suspected, the position of the NE corner is marked by the large statue base set at an angle beside bath building A. The centre of the south side was occupied by a very small temple (H2), which probably dated from the foundation of the settlement in the Augustan period and was carefully preserved thereafter. The centre of the north side, to judge by the position of the newly discovered building (H4) was occupied by a street, which entered the forum on axis with the original temple. Building H4's date and function are not certain, but it probably dates from the later 1st century AD and could be either a temple or a meeting place for the local council. The larger temple (H1) on the west flank of H2 was built in the late 1st or 2nd century AD, and that attached to the east flank (H3) somewhat later, since the slightly trapezoidal form of its outer precinct apparently results from a slight difference in alignment between the two earlier temples and the adjacent bath building A, which dates from about AD 200. The door in the west wall of the baths was placed on the forum's E-W axis. All three temples on the south side were designed also to face the street (B). Temple H1 had both a cella, entered from the north, and another room, entered through a wide doorway on the south; Temple H2 appears to have had a large window in the wall of the chamber on its south side. The double precinct H3 had entrances on both the north and south, not only through the outer wall but also the inner enclosure. A travertine cippus at its SE corner is probably a marker of the religious boundary of the forum and the building provided a ritual passageway between avenue D (leading out to the seafront) and the forum. The series of statue bases set up along the eastern margin of the square curve round to meet the NE corner of H3. On the western side the square was bounded by H5: a portico of brick arcading, with a row of tabernae behind, built in the later 3rd century AD, perhaps after earthquake damage, but replacing a predecessor of similar layout.

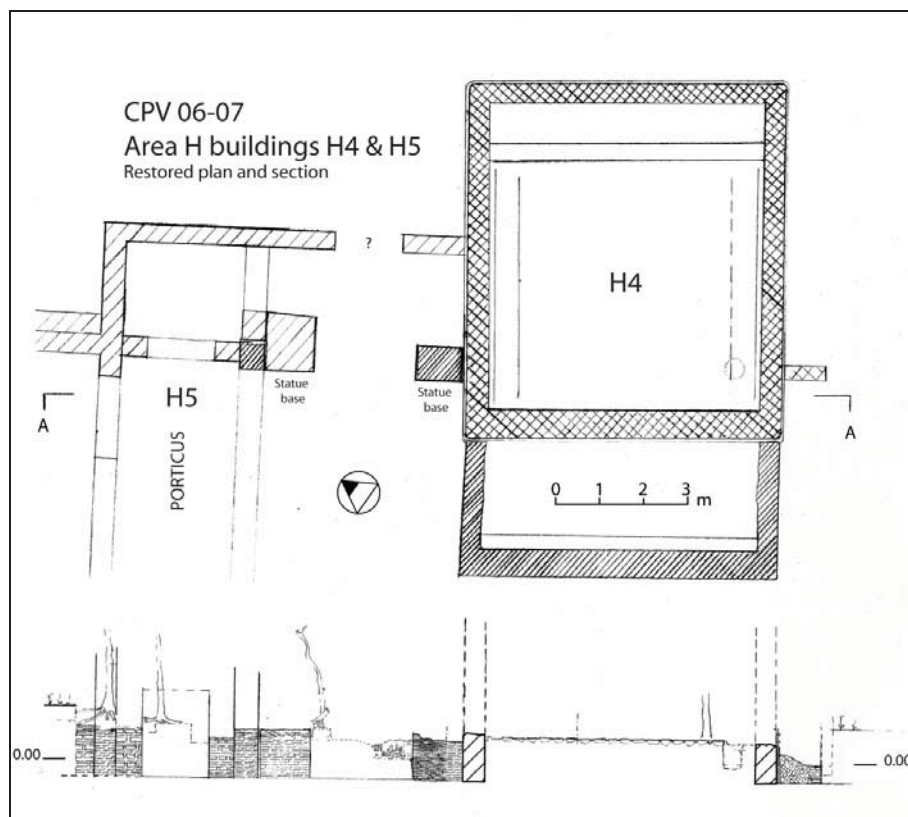


Fig. 10 Vicus, Forum area H trenches 1-9, restored sketch plan and section.

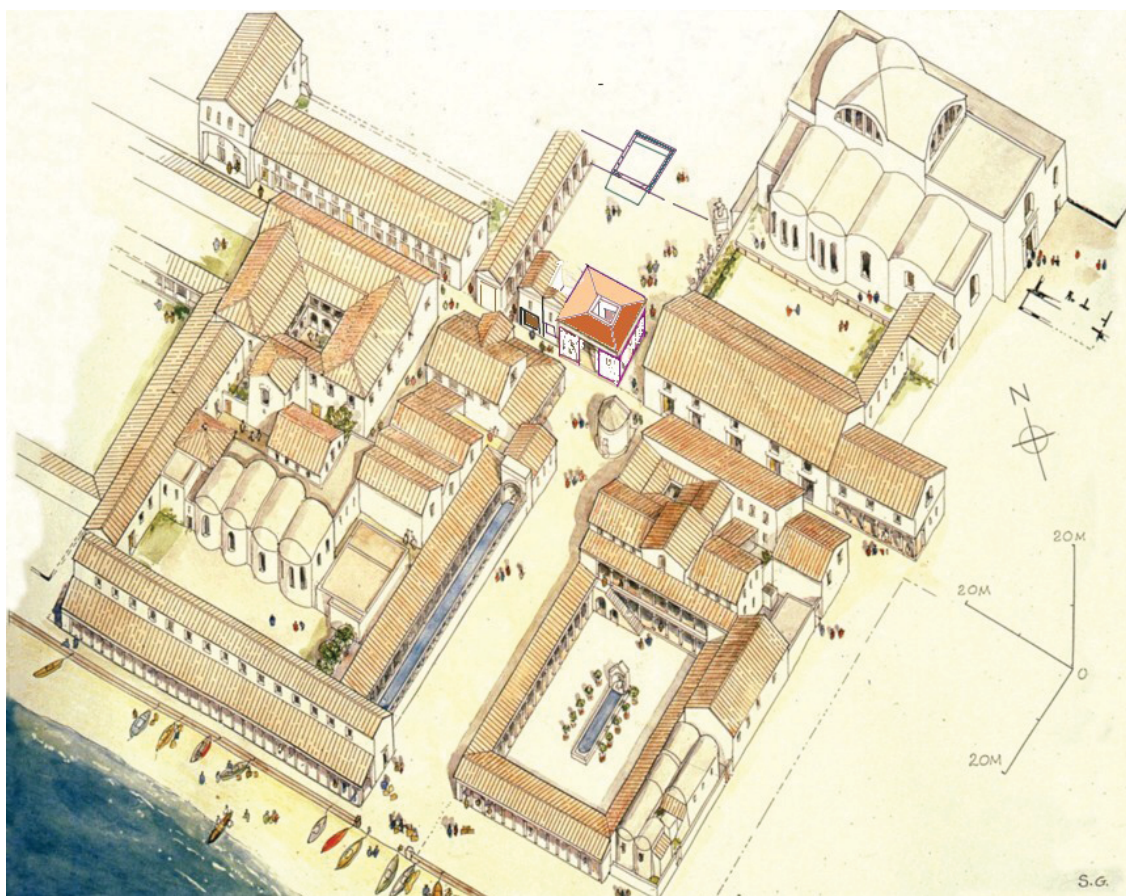


Fig. 11 Vicus, axonometric reconstruction by Sheila Gibson (1996) with modifications.

Regarding the future protection of the site, the excavations have demonstrated that the buildings on the north and west sides of the forum, although disturbed in places by past excavations, and invaded by the roots of the large trees which have grown up in the 20th century, are still standing below ground level to heights of over a metre, imbedded in the collapsed remains of their superstructure and preserving a rich stratigraphic sequence. It should also be noted that the upper level of the collapse and the tops of the walling are on a par with one other and with the floor in building H4, which in its turn is close to that of Via del Telefono. This accounts for the general evenness of the ground which has always been a noticeable feature of this part of the site, but whether the levelling was an ancient or modern process is difficult to say. The medieval re-use of building A, which apparently fortified a predecessor of Via del Telefono, with an entrance in this direction<sup>3</sup>, may have been a contributory factor, something to bear in mind if excavations are undertaken in the area in the future.

<sup>3</sup> for the medieval phase of building A see A. Claridge, "A date for the medieval settlement at the Vicus Augustanus Laurentium (Castelporziano)" in P. Delogu & L. Paroli (eds.) *La storia economica di Roma nell'Altomedio alla luce dei recenti scavi archeologici*, Florence 1993, 287-293.

## 2. Verification of the DEM: Villa del Confine quadriporticus B2 (north)

The DEM in 2005-6, on the north (inland) side of the Via del Telefono, identified a rectilinear mound running parallel with and adjacent to the Via Severiana (Fig.12), associated with a scatter of building debris, including fragments of roof tile. In its length and elevation the mound closely resembles that investigated in 2004-6 on the seaward side (CPS04 and CPS05 B2: SS2 and SS3, CPS06 B2 trenches 1-4) and found to contain four parallel walls. Between them two mounds could constitute two sides of a huge rectangular porticoed enclosure, c. 260 m by 120 m, belonging to the Villa del Confine. In April 2007 a test trench was made to check the accuracy of the topographic model and the contents of the northern mound.



Fig. 12 Zone west of Vicus, DEM map, showing locations of B2 trenches 5-9.



### **B2 (north) Trench 5 and 5A (Figs. 13-14)**

It was decided to examine the northern mound at the point where it was cut through by a modern forest track in the expectation that the cutting would only require cleaning to reveal the positions of any walls contained within the banks on either side. The section on the east side of the track was cleaned first, and duly exposed in its sloping cut one E-W wall [2], situated more or less in the centre of the mound, standing to within a few centimetres of the modern surface, with one course of tufa reticulate facing on top of one of brick preserved on the south side. The wall, c. 46 cms thick, was not faced on its north side, but had been constructed in association with a larger mass of concreted tufa aggregate, extending 92 cms further north, where it was roughly faced with tufa blocks (tufelli) and reticulate cubes placed on their sides, beyond which lay a deep deposit of almost clean sand. The western face of this extension had been destroyed down to the level of the modern track bed, but one tufa block of the lowest course of its original facing was preserved, at the south end, adjacent to the E-W wall, and a trace of concreted rubble core continued beyond the tufa facing on the north side, on a very shallow foundation, for a further c. 1 m. The trench was extended 4 m northwards and the rubble core was found to continue, albeit in even more damaged state (miraculously, the making of the modern track had not destroyed it entirely), for at least another 2 m. Beyond that only its debris could still be detected, nothing of its structure survives in place. At the south end, the wall had undoubtedly been bonded with the other walling, and can be presumed to represent a lightly built retaining wall, running N-S. That is, the modern track has very likely exploited an existing gap, an ancient passage through what was probably a natural dune. The course of the Via Severiana (well preserved in this stretch) leads to this same point before making a marked bend, suggesting that the passage represents the main entrance to the enclosure, and thus to the villa.



Fig. 13 Zone west of Vicus, B2 (north), trenches 5 and 5A, viewed from south.



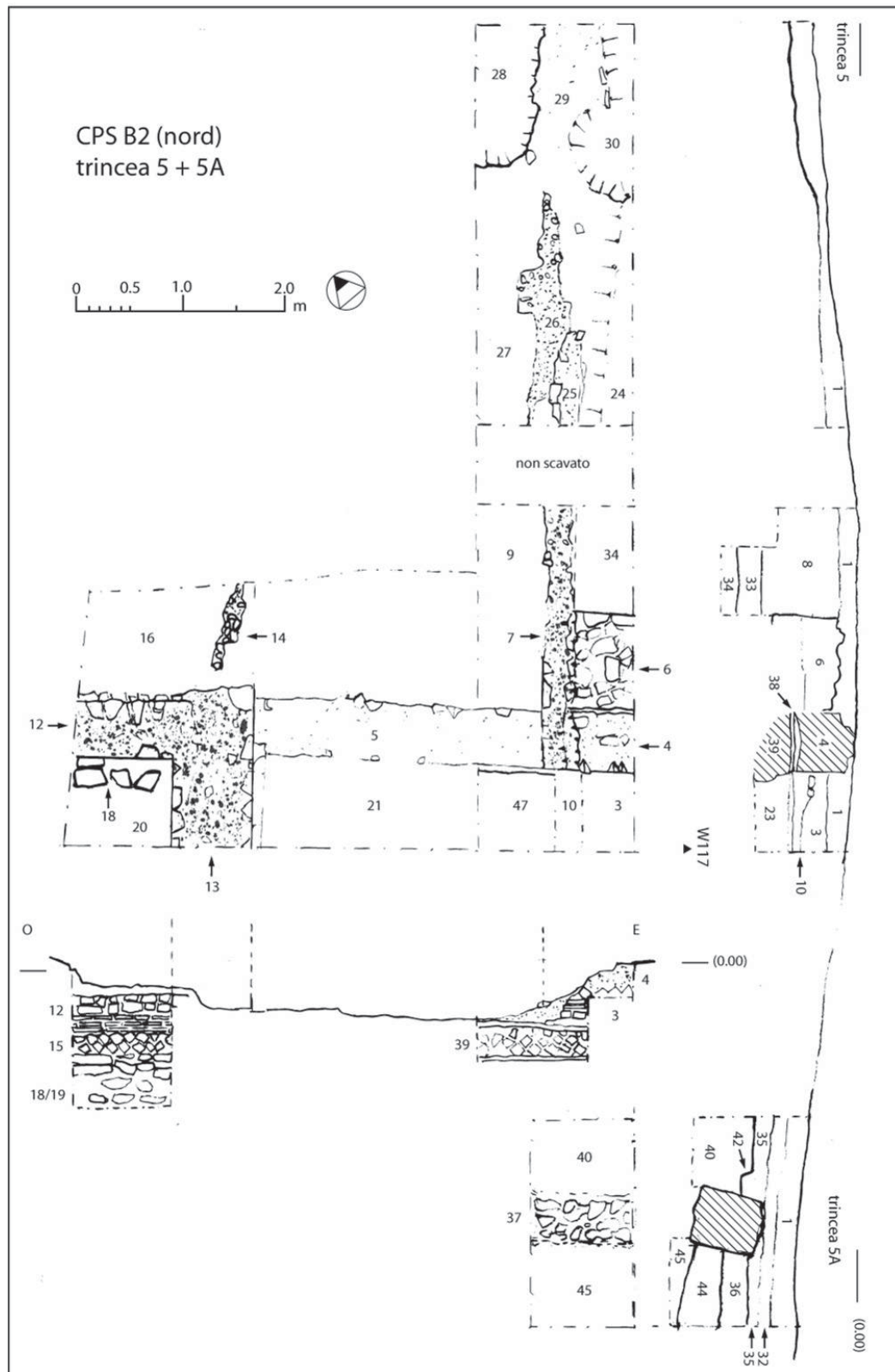


Fig. 14 Zone west of Vicus, B2 (north), trenches 5 and 5A, sketch plan and section.

In order to confirm this, the track bed and the western side of the track cutting were also cleaned, and the E-W wall was found again, with the damaged traces of a similar light foundation extended from it at a right angle to the north, as on the eastern side, but with no buttress to the north. Instead

the footing of a brick-faced wall extends to the south (for an unknown distance). A sounding in depth in the angle between this southward wall and the E-W wall revealed that their foundations are bonded, but the latter was founded on top of an earlier wall faced with reticulate tufa (Fig. 15). The sounding was deepened to establish the depth of the foundations of the reticulate wall as well, which were laid on a substantial footing of large irregular tufa blocks. A sounding beside the eastern side demonstrated that there too a reticulate wall had served as the foundation of the higher level wall.



Fig. 15 Zone west of Vicus, B2 (north) trench 5, sounding in south-west corner exposing the rebuilding of the E-W wall. View from south-west.

Trench 5A, initially 1 x 1 m, was sited in line with the initial trench on the eastern side of the track to see if there was a second E-W wall on the south (inside) of the first, at a distance of 5.30 m (centre to centre), like that found in B2: SS3 (see April 2006 report). In the event, the trench was fortunate to clip the south edge of a wall set at about 4.60 m. south of the other. Extending the trench 1 m. to the north, this second wall was found to have been reduced to the top of its foundations (c. 0.60 m deep), but had seemingly been re-built at a higher level in a second phase, like that in trench 5. The portico was therefore 90 cm (3 Roman feet) narrower than that on the south side of the enclosure, but had a similar building history. Occupation material from a deposit beside the foundations of the earlier wall (pottery, glass, edible shell) was collected and should provide a reliable indication of a date for its construction.

Samples of the sand and upper layers of soil associated with these walls were taken for environmental and luminescence analysis, and both trenches have been back-filled. Some further sampling at other points may be necessary to determine the nature of the land use within the enclosure.

### **3. Verification of DEM: Villa del Confine seaward projection from B2 (south)**

The DEM indicates that on the seaward side of the great quadrangular porticus B2 there was a further elongated rectangular enclosure (see September DEM report), extending along its entire



length and some 30 m further in the direction of the sea, surrounding a deep depression, perhaps a harbour basin. Geophysical survey followed by four small test trenches in 2006 (CPS06 B2 tr.1-4) had identified the southward projection of a wall from the seaward side of porticus B2. In 2007 we sought to define the further extension of this wall and determine whether – and if so, where - it made a return to the east.

### **B2 trenches 6-9 (Figs. 16-17)**

Trench 6, initially 1 x 1 m. was plotted from the DEM in line with the reticulate wall found in 2006 and some 30 m further in the direction of the sea, in the midst of quite dense vegetation. The trench found the wall continuing seaward at a depth of c. 2 m., standing to a height of about 1 m. below the surface but no sign of a return. Trenches 7 and 9, sited further towards the sea, found a layer of concreted rubble sloping in that direction, perhaps a ramp (Fig. 18). The return of the reticulate wall was eventually identified by trench 8, again under 2 m of sand, reduced to its foundations. Two thick and distinct strata of clean sand overlay the seaward end of the N-S wall and the area beyond its E-W return. The style of reticulate facing, with large, irregularly sized cubes, and tufa blocks forming the quoins of the corner, indicate a date in the early empire. The wall probably represents the first phase, and on present showing was not replaced in a second phase.

All four test trenches were sampled for luminescence and environmental analysis, and then back-filled. Core samples of the deposits within the depression enclosed by this walling should be able to determine whether or not it was once filled with water, and if so, sea or fresh water.



Fig. 16 Zone west of Vicus, B2 (south), trenches 6-9, viewed from west.

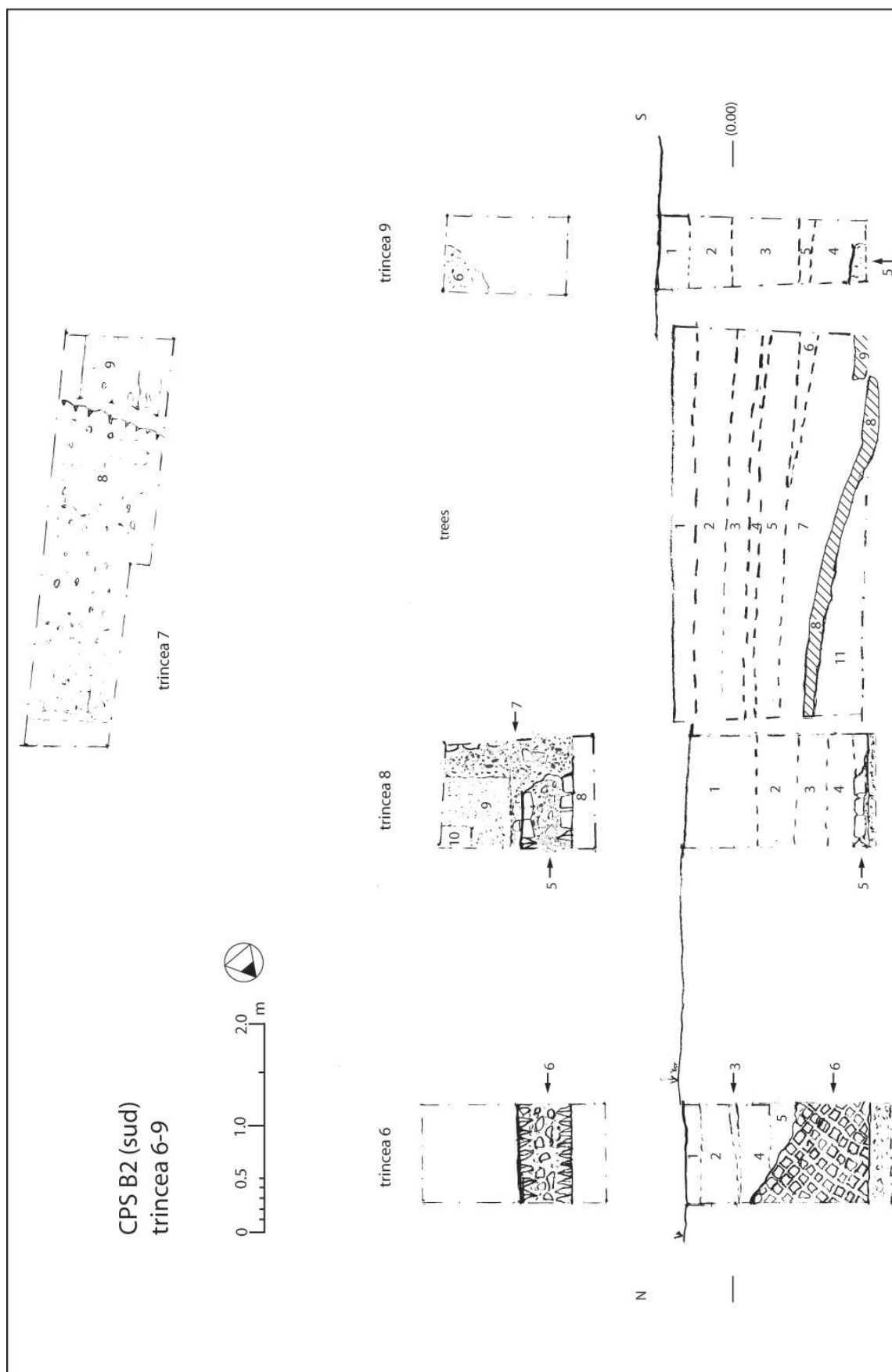


Fig. 17 Zone west of Vicus, B2 (south), trenches 6-9, sketch plan and section





Fig. 18 Zone west of Vicus, B2 (south), trench 7, viewed from south-west.



Fig. 19 Fish-farm D5, north-east corner.





Fig. 20 Fish farm D6, north side.

#### 4. Profile of D5 (fish tank)

The two very similar sites D5 and D6 were plotted in outline for the carta archeologica in 1989-90 (see *Castelporziano III*, tav. I and p. 50). Each consists of a very large rectangular depression (Figs 19-20), with a marshy tree-filled lake in the bottom, and traces of reticulate walling and collapsed concrete vaulting around the upper margins. Scatters of pottery, fragments of mosaic flooring, white stucco and painted wall plaster on D5, the smaller of the two, suggested they dated from the late republican period. For the carta archeologica of 1989-90 they were simply described as ‘ville a peristilio’, but further reflection encouraged the theory that they could constitute ancient Roman fish tanks (*piscinae*), which are a feature of the Tyrrhenian coast and have been the subject of recent studies<sup>4</sup>.

Geomorphological cores taken in D6 in 1986 (see *Castelporziano III*, pp.157-160) had revealed deposits of organic matter and silts in the bottom to depths of over 2 metres, and although financial and other circumstances prevented further scientific analysis at that time, there is a strong possibility that the depressions were in origin natural lagoons. Some 300 m. further inland is a series of three swamps or shallow lakes, with which is associated site D1: a group of low mounds containing shell middens and potsherds of late Bronze Age/early Iron age date<sup>5</sup>. The presence of two such fasciae within a measurable distance of one another and in association with archaeologically distinctive horizons is of great potential value for the study of the advance of the Roman shoreline and the relationship between its buildings and their natural setting.

In April 2007 a second set of samples from the beds of both D5 and D6 were taken for environmental analysis (see ‘Geomorphology report’), a high-density Total Station survey was

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4 J. HIGGINBOTHAM, *Piscinae. Artificial fishponds in Roman Italy*. University of North Carolina Press, Chapel Hill 1997; K. Lambeck et al. ‘Sea Level in Roman time in the Central Mediterranean and implications for recent change’ *Earth and Planetary Science Letters* 224 (2004) 563-75, esp. 564f; A. GRÜNER, ‘Architektur und Ästhetik römischer Fischzuchtanlagen’, *Archäologischer Anzeiger* 2006/1, 31-60.

5. *Castelporziano III*, p. 48f, figs 13-14.

carried out of both depressions (see ‘Topography report’) and an excavation was undertaken in D5 to examine its profile in stratigraphical section from top to bottom, reported on here.

### D5 trench 1 (Figs 21-24)

The trench was laid out on the east side of D5 where a length of *opus incertum* walling was exposed near the top of the bank and the ground scattered with fragments of black-and-white mosaic<sup>6</sup>. Initially 2m wide (later reduced to 1 m) it was positioned so as to include 2 m of the flat ground behind the wall to the east together with the entire length of the slope to the bottom of the pond, a distance of 10.80 m. (Fig. 21).



Fig. 21 Fish-farm D5, trench 1, general view from west.



Fig. 22 Fish-farm D5, trench 1, general view from east.

At the top of the bank, an *opus incertum* wall [18], composed of small tufa aggregate in a very hard, sandy cement of exceptional durability, 60 cms thick, is standing to a height of c. 90 cms, on foundations 70 cms deep. The lower half of the foundation consists of unmortared tufa lumps [25]. On the east (away from the pond), where the ground forms a level plateau between D5 and the next depression (D6), the excavation uncovered another wall [19], not quite at a right angle to [18] and now detached by some slight displacement but constructed at the same time on a common foundation and once bonded with it (the position of the return was provided for by the builders of

6. *ibid.* p. 49, fig. 15 for samples collected in the 1980s.

[18]). Neither wall is faced on the interior, and no trace of flooring was found: at this level at any rate the walls appear to have retained a solid fill of sand. The slight angle of [19] and a depression in the bank on its south side suggest that it may have bordered a channel or passage. Fragments of pottery associated with the foundation levels of [18], which was sampled on both sides, date from the later 2nd or early 1st century BC, and include also some late bronze age/early iron age material.



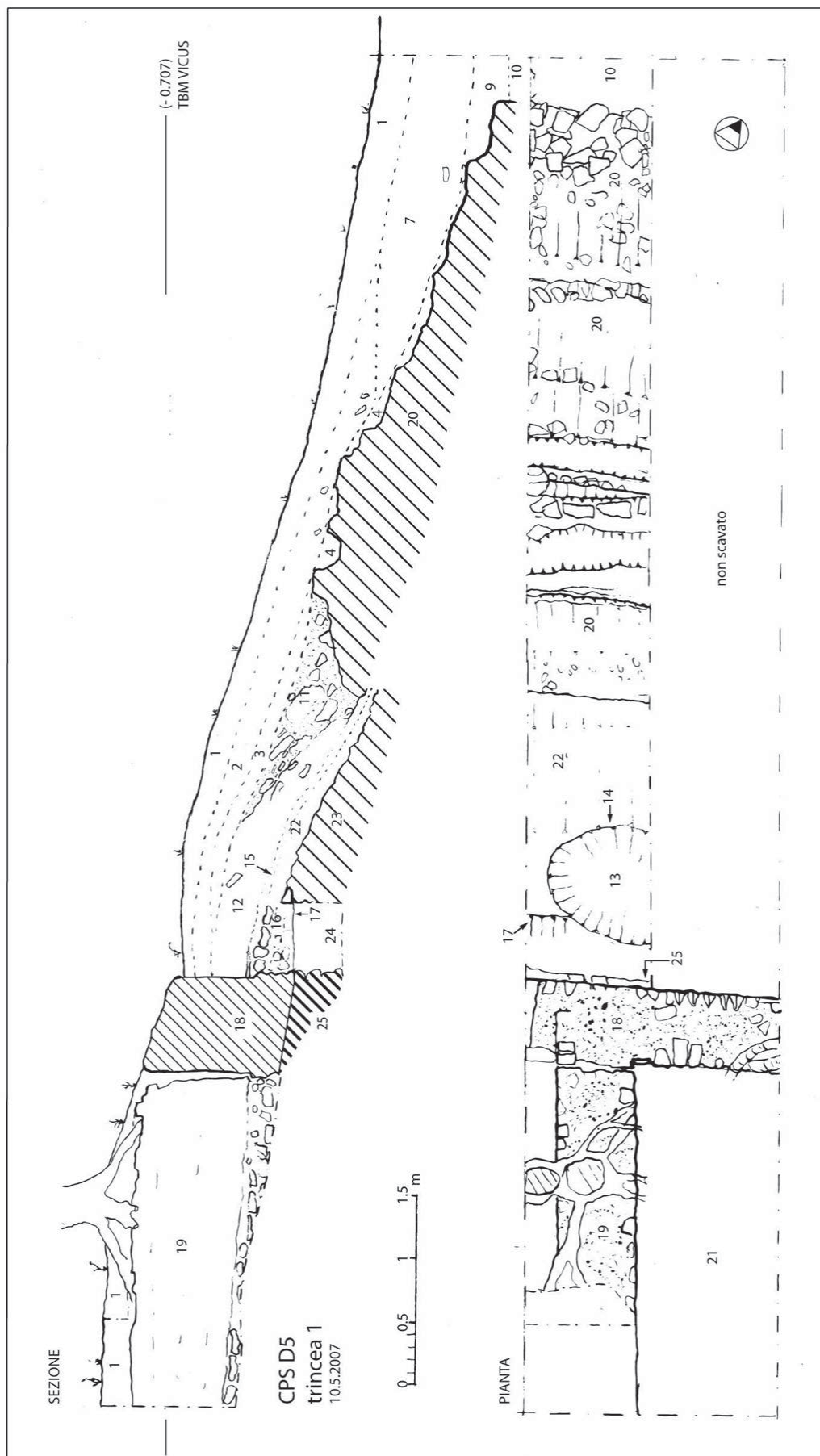


Fig. 23 Fish-farm D5, trench 1, sketch plan and section.

On the other (west) side of wall [18], at the top of the slope, the topsoil and uppermost levels [1,2,3] contained numerous fragments of mosaic with a lozenge pattern in black on white like those observed in the 1986-91 survey and also numerous fragments of column shafts and a Doric frieze in a high quality hard white stucco. These overlay a deeper and more compacted deposit containing the same materials in combination with large lumps of shaped cement (in both convex and concave forms) and other tufa and tile rubble in a mortary sand [11] which merged with a still more solid concrete formation [20], which revets the bank for a distance of c. 5.50 m, ending close to the margin of the present swamp but about a metre deeper in the ground. Although the upper profile of this mass of concreted rubble is eroded it is possible to discern parallel lines of roughly shaped tufa blocks within its fabric at broadly matching intervals down the slope. These were integral to the construction process, acting as compartments to keep the concrete from slipping, but they might also be an indication that the revetment was staggered down the slope in a series of broad steps. The relationship between this concrete revetment and the wall [18] is not certain, since the upper levels of a pit [14] (see plan) compromised the north side of the excavation in the vicinity of the wall, but they do not seem to be contemporary – the revetment is apparently superimposed on an earlier one, and the wall belongs to an intermediary phase. A small area of stratigraphy which remained in situ beside the wall, also visible in the section (Fig. 24), contained a layer of construction debris [16] corresponding in level with the offset at the top of the foundation of wall 18, filling a cut in a thin layer of pure sand [22] which overlay a lower level of rubble packing [23]. This lower level of rubble consists mainly of lumps of tufa and cocchiopesto with occasional fragment of deep red brick or tile, tightly packed together but not mortared, and is laid on what seems to be natural sand [24], into which the foundations of 18 were also laid.

The top of the foundation level (marked by an offset) is more easily compatible with the position and angle of the lower rubble slope than the upper one. However, the deposit of sand [22] over the lower rubble slope (which slopes down not only from E to W but also from south to north) into which the upper mortared level of the foundations of 18 was set suggests that there may have been some interval of time between the two constructions. The state of preservation of the upper profile is too poor to be able to tell whether wall 18 remained standing clear of the bank in the second phase or was reduced to its present level (and thus a retaining function). It is also imponderable whether the fragments of mosaic floor and white stuccowork, and concrete, relate to the decoration of the surrounding building in either phase. Further excavations at points where the bank is preserved to a higher level could perhaps provide the answers. Pottery from the sandy deposit 22, the fill of a pit 14 which was cut into it, and the lower levels of the overlying strata 11 and 12 includes some almost complete vessels dating from the end of the republican period (see Hayes Pottery report). A date for the second phase of revetment (20) has yet to be determined.

## Results

The identification of D5 and D6 as ancient fish-farms seems assured, and they are important examples of their kind, both in terms of their dimensions (among the largest known on the Tyrrhenian coast) and because of their present location, far from the sea, which probably means they are relatively well preserved. The topographical survey indicates that the tank D5 measured c. 60 by 70 metres and was slightly trapezoidal in shape, while D6 is more precisely rectangular, c. 60 by 80 metres, and both were at least 3 metres deep. Their closest comparisons are the *piscina* at Punta della Vipera (between Civitavecchia e Santa Marinella) (Fig. 25), which measures 55 x 34 m; a pair belonging to the 'Villa di Cicerone' at Formia, one 75 x > 45 m, the other 56 m wide and of unknown length; and the Giardino Pubblico site, also at Formia, 60 x 30 m.<sup>7</sup> The tanks at Castelporziano presumably once had similar internal divisions of geometric design, though the

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7 J. Higginbotham, *Piscinae*, Chapel Hill 1997, fig. 71.

walling may have been disturbed by tree roots, and it seems very likely that much of the structures around the upper margins are well preserved, including all the water supply and drainage channels.



Fig. 24 Fish-farm D5, trench 1, detail of footings of wall [18] and adjacent features.

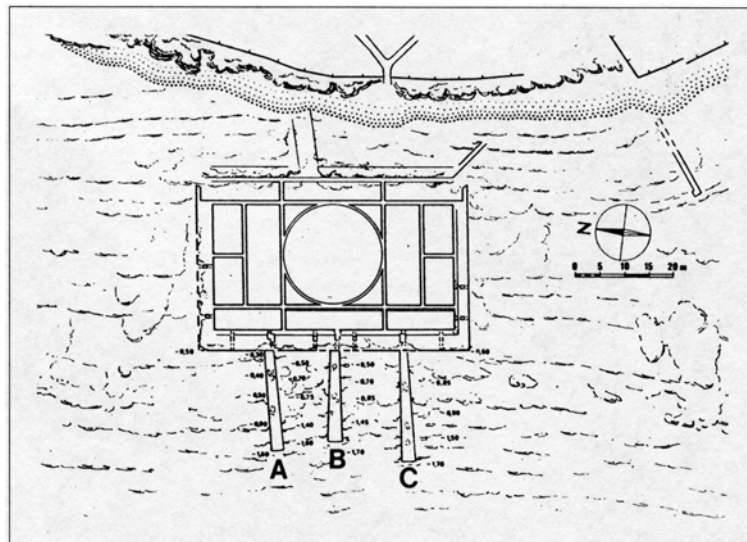


Fig. 25 Punta della Vipera, fish-farm, general site plan (from G. Schmiedt, *Il livello antico del Mar Tirreno*, Florence 1972, pl.83 as reproduced in J. Higginbotham *Piscinae*, Chapel Hill 1997, fig. 21).