THE ROMAN VILLA AT MINSTER-IN-THANET. PART 9: AN ARCHITECTURAL RECONSTRUCTION

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With the basic structural and dating evidence for the Minster Roman villa complex now published,[1] an opportunity is provided to review the evidence for the overall layout of this villa in architectural rather than purely archaeological terms.

The original appearance of any Romano-British villa is not known for certain. Recent discoveries at Redlands Farm, Northamptonshire[2] and Meonstoke in Hampshire[3] have provided a little more information about their superstructures and upper walls and further archaeological evidence from elsewhere will doubtless be uncovered in due course. Ancient literature contains some references to the construction and use of villas, but generally comparisons have to be drawn with the physical remains of better preserved villas in Italy[4] or from surviving fragments of wall-paintings and mosaics.[5] However fanciful some of the latter may be, they at least give some indication of the contemporary surroundings in which the artist was working.

Any meaningful attempt at reconstruction must of course begin with a careful and exact study of every detail of the remains, as they are and not as they might be thought or would be wished to be. The relative chronology, preferably dated, of any alterations needs to be ascertained, since any attempted reconstruction must commence with the original structure, as that will have determined the nature of any later developments. The accuracy of a reconstruction must necessarily become less the further it rises from the ground. Certain facts lead to probabilities, probabilities to possibilities and possibilities to educated guesswork. However, when complete, the entire reconstruction must at least be both plausible in form and feasible structurally. With these general comments in mind the remains excavated at Minster may now be considered.

The villa setting

As noted in the 5th excavation report, the Roman villa at Minster '... stood on a gentle slope at an elevation of 16-17m AOD and was constructed on an east-west axis, facing downhill to the south. This arrangement would have provided its residents with panoramic views across the nearby Wantsum Channel ...'. Several of the other dozen or so probable Roman villas on Thanet would seem also to have been sited to take advantage of sea views, a characteristic common of the period,[6] either by being positioned along the coast, or on the higher ground in the centre

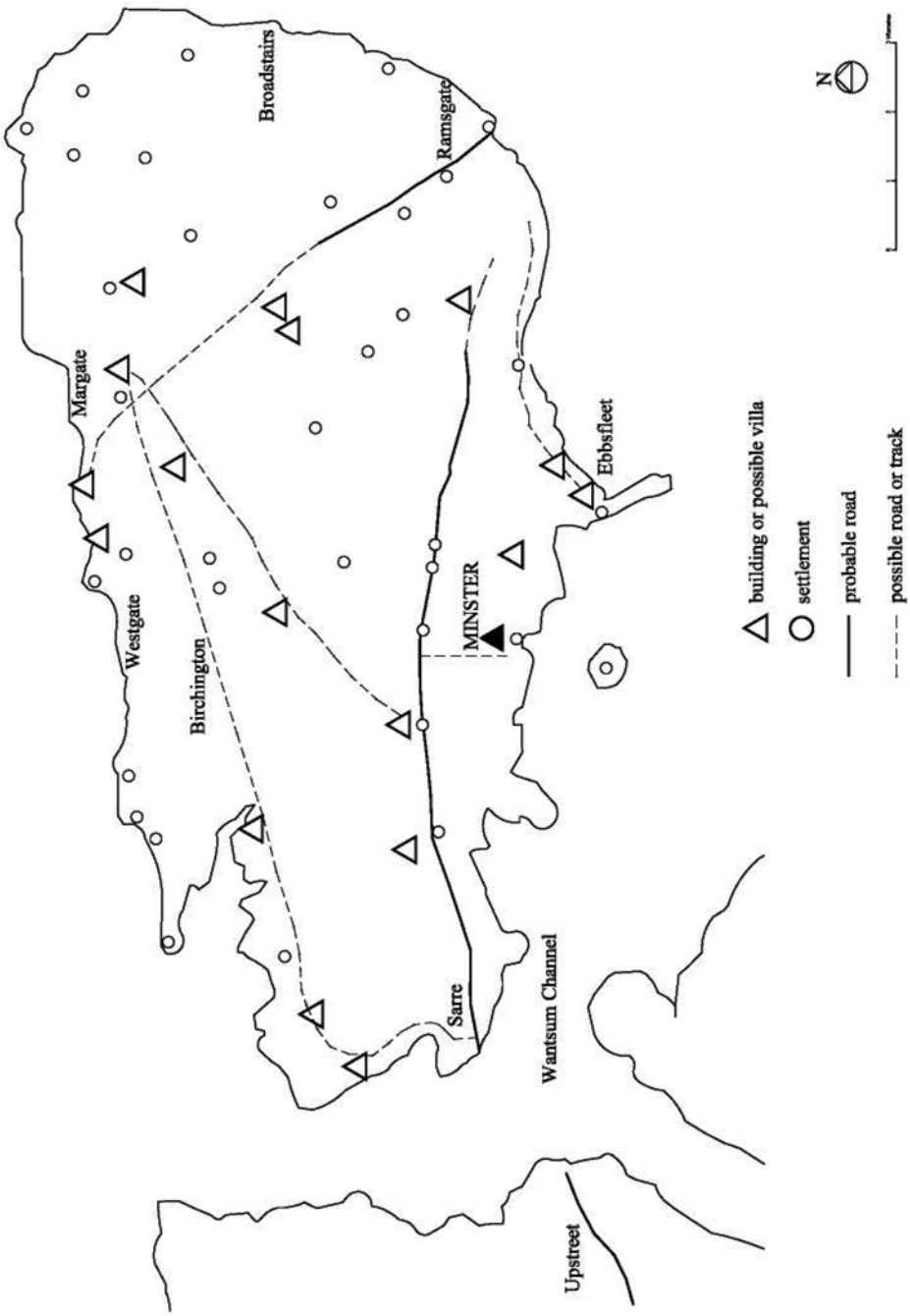

Fig. 1 Location of Minster Roman villa.

of the island. In the case of Minster, the villa was sited just below the crest of the slope, presumably to avoid direct northerly winds, and also it seems to make use of the springs that still exist to provide a supply of fresh water.

The overall layout of the Roman villa at Minster was of some architectural pretension. The villa proper (Building 1) was sited at the northern end of a large walled enclosure, with a small detached bath-house (Building 3) immediately adjacent to its south-west. Two individual pavilions (Buildings 4 and 6), probably to accommodate estate workers or lesser members of the family, were added at some later date against the east and west ends respectively to the south of the large walled enclosure. Whether part of the original design or not, this arrangement, by providing a symmetrical visual framework to the main house (Building 1) when seen from the south, was evidently deliberate.

Coincidentally or not, the north wall of the large walled enclosure ran parallel to and pretty nearly 30 Roman *actus* (1065m) away from the present A253, which is considered to be the line of a Roman road[7] running east-west across Thanet – effectively a continuation of the road through Upstreet to Canterbury (Margary 11) (**Fig. 1**). The west wall of the enclosure was parallel to and 10 *actus* (355m) from the north-south B2048 (Tothill Street), which crosses the A253 at right-angles and continues southwards via Marsh Farm Road down to the edge of the Wantsum channel, where once there was a ferry.[8] Whether the latter also represents the line of a Roman road is moot, but it is interesting that it itself lies 20 actus east of an exactly parallel line today represented by the parish boundary that runs along Chipman's Way and extends northwards beyond it. Suggestions that the present Monkton Road, which runs approximately east-west and is aligned exactly on the front of the villa, was originally the access road to the villa could not be confirmed by excavation: perhaps it and the rectangle of roads that now surround the villa site are rather to be associated with the early medieval abbey.

The only original entrance found into the villa enclosure was by means of a later gateway positioned in the centre of the south wall. Presumably there would have been some sort of trackway connecting it to the road network, but whether or not this ran westwards to Marsh Farm Road remains unknown. Although excavation could not confirm the existence of this south entrance during the earlier phases of the villa, the fact that an axis drawn north-south through its centre passes exactly through the middle of the entrance porch to the villa and the centre of the enclosure wall beyond to the north, suggests that it was.

The large walled enclosure

The (longer) east and (shorter) south walls of the large walled enclosure were not parallel to the west and east walls, forming a trapezoid rather than a rectangle with the longer of the shorter east-west walls to the south (**Fig. 2**). The south-west angle was a true 90°, as was the north-west angle, but about 30m along, the wall off the latter veered northwards by 3°- 4°. The south-east corner then compensated for this by meeting the south wall at an angle of 87°. The angle between the errant part of the north wall and the inclined east wall is also 90°. Notwithstanding the symmetry of both enclosure and villa about the north-south axis noted above, all this suggests a mistake in the setting-out of the enclosure than its being a deliberate

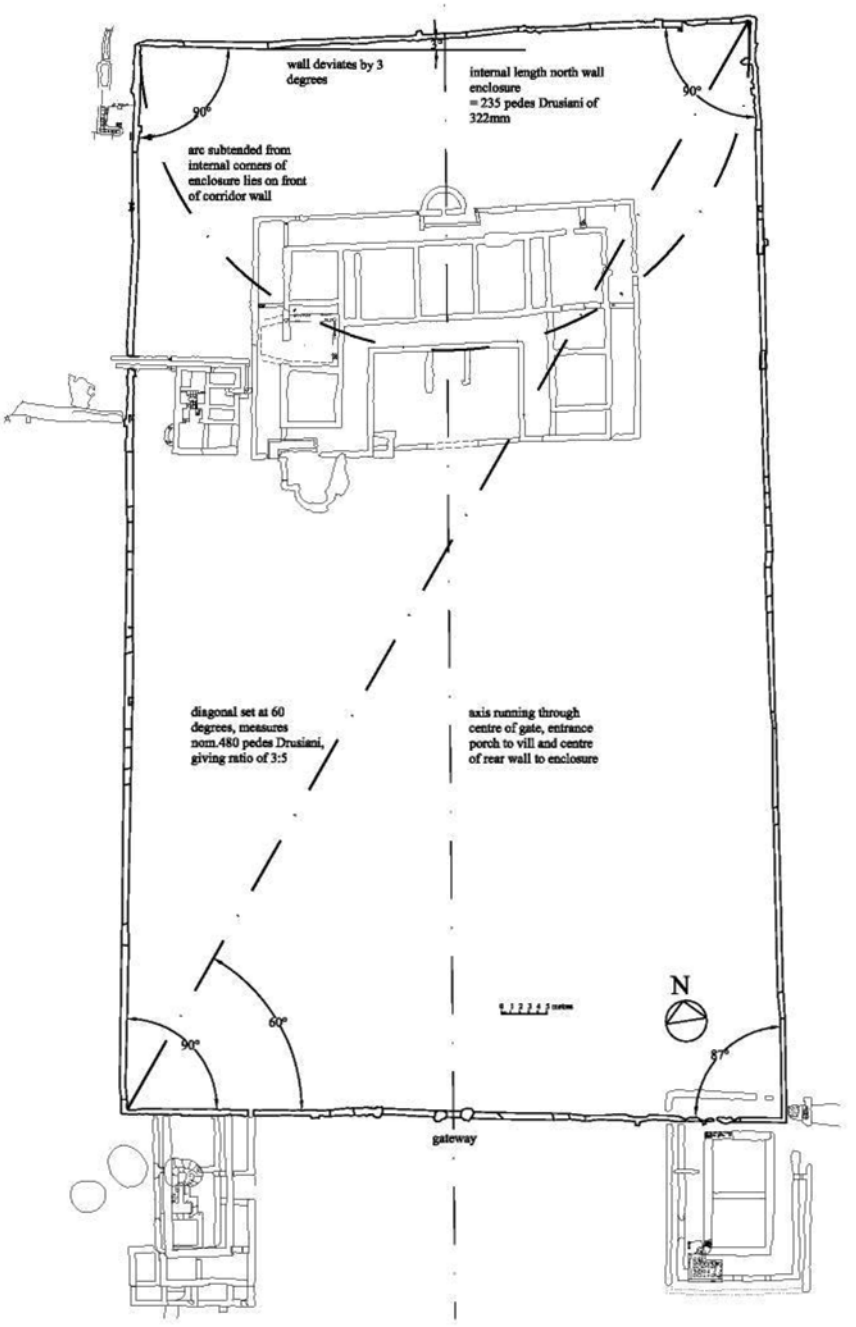

Fig. 2 Minster Roman villa – suggested setting out of the enclosure walls.

attempt to shape it to give the effect of an extended perspective when looking up the slope towards the front elevation of the villa. The chronological relationship between the latter and the large walled enclosure could not be determined, but as the excavation report notes, the walls of the villa were in fact set out parallel to those of the enclosure, twisting the east-west walls of its plan 4° in an anticlockwise direction.

As with the villa (see below) the particular units used in setting out could not be determined – none of the sides coincided with a meaningful whole number in any of the units used in Roman times. However, a diagonal line subtended from the inside east end of the projected line of the (shorter) north wall and the inside south end of the (longer) west wall did give an angle of 30°, that is, a ratio of 3:5 between the two sides, and measured pretty exactly 480 *pedes Drusiani*.[9]

The height of the large walled enclosure cannot now be determined, nor what material was used in its construction – it could have been flint, chalk blocks or even mud bricks, all of which were found by excavation to have been used elsewhere on the site. The latter two would certainly have required a coating of lime render or wash to protect them against the weather. It was evidently sufficiently strong to allow it to be used as a support to the corridor roof surrounding the east pavilion (building 4). Structural calculation suggests that the walls were unlikely to have been more than about 4m high,[10] and perhaps closer to 3m if the view to the south was to be enjoyed from the bow-fronted Room 15 off the south end of the west wing, and which was most likely built for that express purpose. A height much lower than this would not have provided the security the large walled enclosure was most probably intended to give.

The excavation report noted the existence of occasional projections to both sides of the walls, and suggested, probably correctly, that these represented buttresses. It also suggested that these marked the positions where the wall was stepped down the slope. Whilst this is quite plausible, it should be pointed out that the foundations were not stepped, that similar buttresses were arranged along both the south and north walls where the ground did not slope, and that the Romans were not averse to following the fall of the land with their masonry coursing, that being easier than keeping them horizontal: both Hadrian's Wall[11] and the baths basilica at Wroxeter[12] being examples of this. (A reconstruction to this effect is shown in **Fig. 3a)**.

The villa (Building 1)

The layout of the villa proper at Minster (Building 1, see **Fig. 4**) falls into what is categorised as a winged corridor style, or more properly, a 'row type',[13] comprising a line of rooms (Nos 5, 8, 9, 12 and 13, termed the 'central range' in the excavation report) running approximately east-west, returned southwards through 90° at either end (termed the 'east and west wings': Rooms Nos. 2 and 3 and 14, 15 and 16 respectively). Room No. 1 at the north-east corner could belong to either the central range or east 'wing'. Apart from Gadebridge Park in Hertfordshire, the closest parallels are perhaps to be found at Ditchley in Oxfordshire, Newport on the Isle of Wight (which usefully has preserved many of the door openings) and, most interestingly, the north wing of the nearby villa complex at East Wear Bay, Folkestone. This latter was a rather larger building, and more carefully laid out,

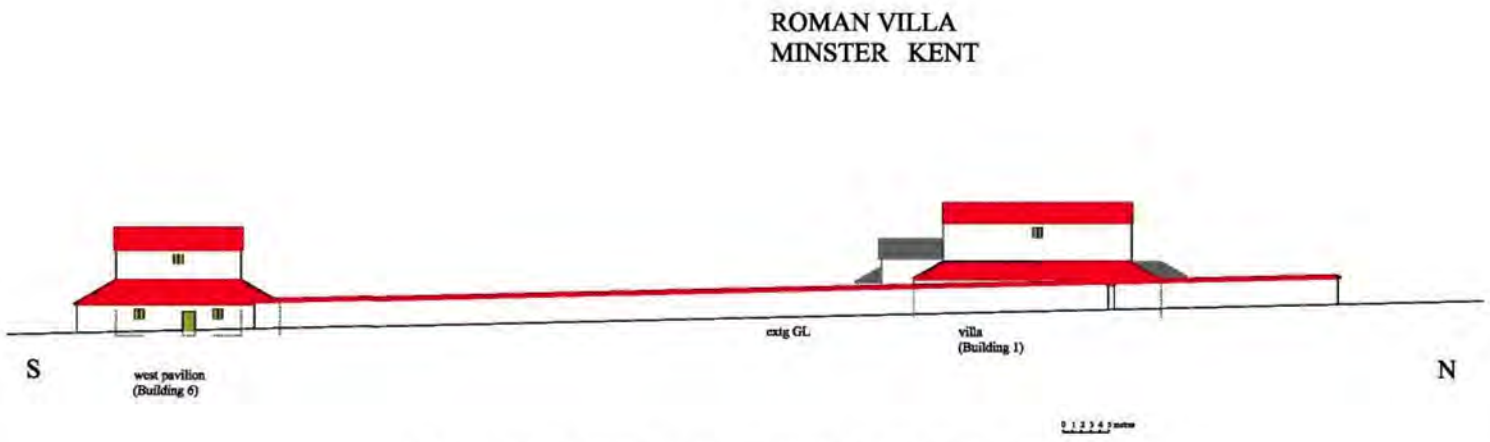

Fig. 3a Minster Roman villa – suggested east elevation overall.

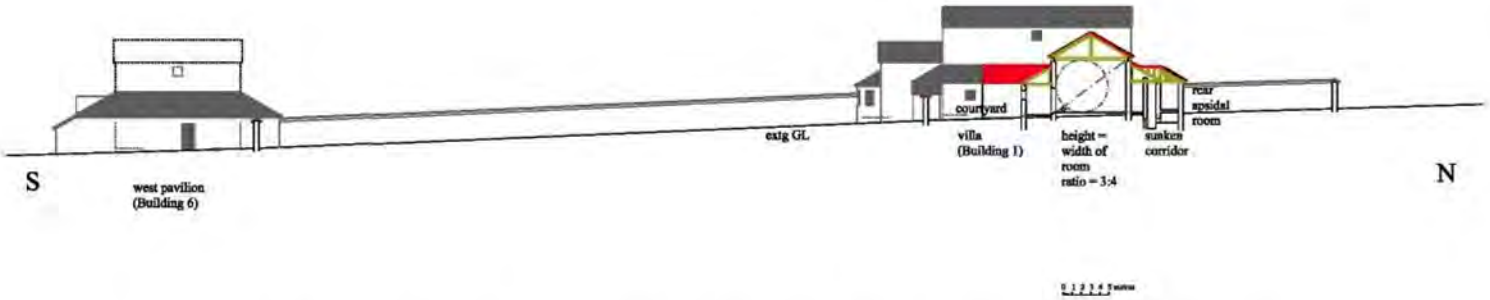

Fig. 3b Minster Roman villa – suggested long section through villa enclosure (looking west).

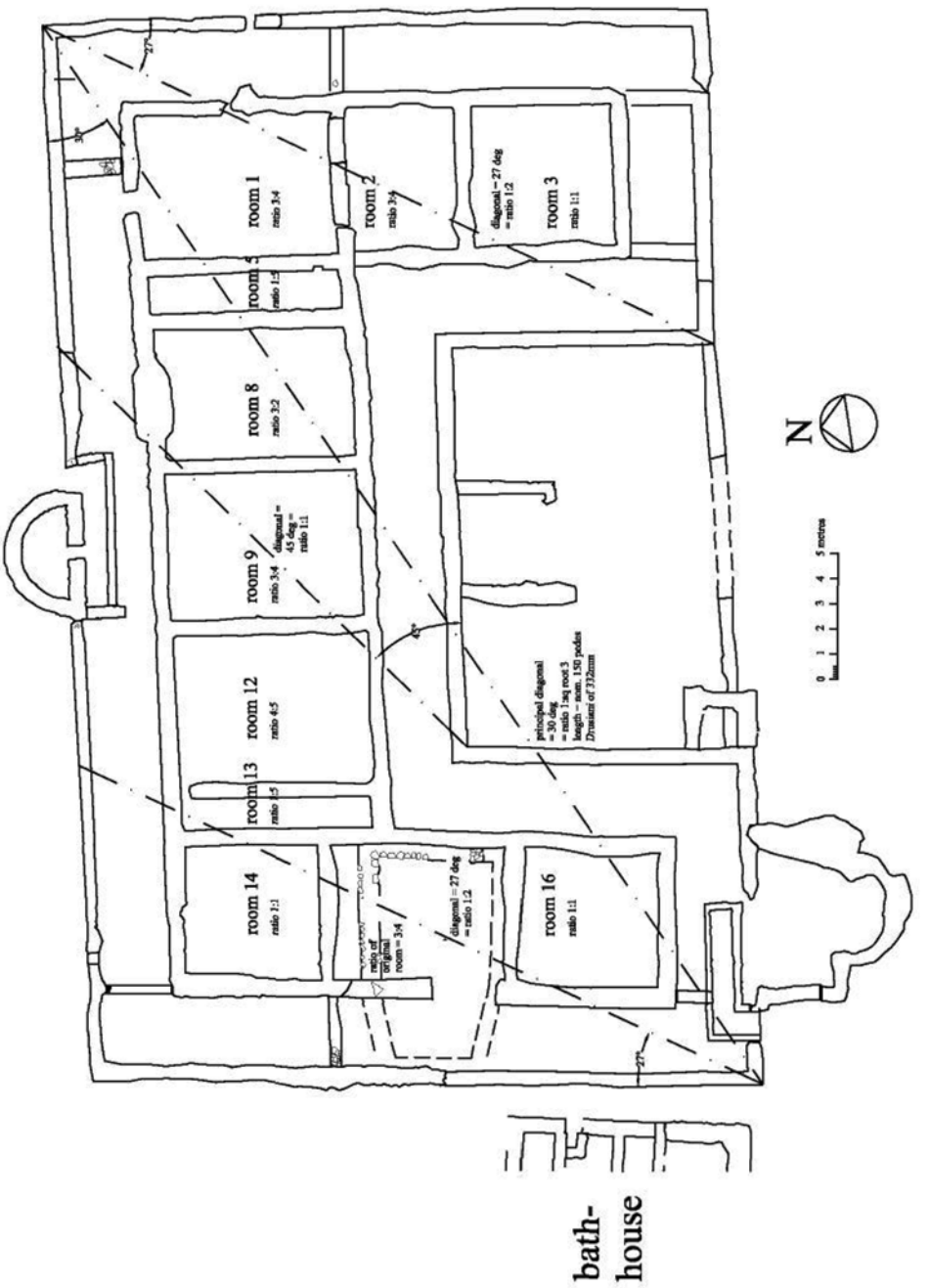

Fig. 4 Minster Roman villa – suggested setting out of villa (Building 1).

but it too had sea views and the earlier structure (termed Villa 1) even had a similar apsidal room to take advantage of them.[14]

A question arises as to the function of the 'cross passages' 5 and 13 at either end of the 'central range' (similar rooms are found in other 'row type' villas: Folkestone, for example, there termed Rooms 34 and 45). Room No. 5 to the east of Minster villa was of a later date, but it cannot be said whether this was a rebuilding of an earlier layout, or an alteration to match the existing arrangement to the west. The excavation report suggested these 'cross-passages' may have contained staircases, but this cannot be proved. At 1.50m wide, they would seem too narrow to have sensibly contained a stair with a corridor alongside. Evidence from other villas[15] does seem conclusively to point to their being used as passageways between front and rear of the villa, and to act as a lobby to the rooms either side of them. The wish to avoid a long detour around the building or to use a room as a passageway would seem to be a sensible one, as would the desire to maintain a degree of security by limiting the number of doors opening either directly to the outside or into a *porticus* which would have been at least partially open to the exterior. What can be said at Minster is that the insertion of Room 15b into the centre of the west 'wing' would appear to have required access from the south end of the 'cross-passage' to the narrow Room 15a that ran alongside it to the north, and that Room 14 in the north-west corner would likewise have required access: this could have been directly from the 'outer corridor' to the rear, but this would have isolated the room from the rest of the villa. So any staircase would have to have been located in the middle of the 'cross passage' and the remaining space available would seem to be too short to contain a staircase long enough to reach to a first floor. Therefore staircases, if they existed, would have had to be set within a room.

The two-fold symmetry of the villa gives rise to the possibility that it was owned by two family groups rather than one.[16] The middle room to the 'central range' could, as suggested, have served as a *triclinium*, or alternatively, as a communal room-cum-shrine – the hearth discovered is suggestive in this respect.[17]

The plans of many Romano-British villas imply they were fronted by a corridor-like structure usually termed a *porticus*, and this is the case at Minster. Both logic and comparative examples suggests these *porticūs* were covered by a pentice roof abutting the building behind, and this has a direct bearing on the two particular aspects particularly pertaining to villas: whether they were of one or two storeys, and how their rooms were lighted. Evidently, the wall behind would have had to have been of sufficient height to allow the pentice roof to abut against it, but whether the rooms beyond were lighted by borrowed lights below the pentice roof or high level windows above is a moot point. High level windows, whilst providing security, would perhaps have been unnecessarily difficult to maintain. Clear butt-joints between the *porticus* to the front (south) of Minster villa (termed the 'inner corridor' in the excavation report) and the 'central range' suggest it was an addition to the latter, and similar joints to the sides and rear (termed the 'outer corridor') that they were added later still. The foundations to the 'central range' were of rammed chalk and flint pebbles, those to the 'corridors' of rammed chalk only. This certainly implies they each supported a different form of structure, but because of this, the presence of butt-joints cannot be taken as an absolute indicator that the two foundations were of markedly different dates. It was not

possible archaeologically to establish how much time had elapsed between the construction of the 'central range' and the 'corridors', although the existence of the foundation to Room 31, in the internal north-west corner between the 'central range' and 'west wing', assuming it was built, suggests there was some meaningful interval, perhaps a few months rather than years. However there is evidence that the 'corridors' in fact formed part of a 'rolling programme' of building works, and were conceived as part of the original layout. A careful measuring of the plan revealed some interesting characteristics in this respect.

Although the villa was not laid out with exactitude – its east-west walls are skewed by about 4° with respect to those running north-south – they were all closely parallel with those to the large walled enclosure. However, as noted above, it is not clear which were built first. Nor could the unit of measurement used for setting-out the villa building be determined with absolute certainty. But, like the triangle that can be produced from the south-west to the north-east corners of the large walled enclosure and which appears to have been used to set it out, a diagonal drawn from the north-east corner of the 'corridors' to their south-west corner measures almost exactly 150 *pedes Drusiani*, with the shorter side to the 'corridors' of 80*pD*, suggesting the intention was to subtend the 30° angle of a 3:4:5 triangle (Fig. 4). Moreover, it seems certain that a series of ratios was used in laying-out the building: a diagonal drawn from the north-east corner of the 'corridors' but to the south-west corner of the 'corridors' to the projecting east wing and a matching diagonal from the north-west corner of the 'corridors' to the south-east corner of those to the projecting west wing both subtend the angle of 27°, giving a ratio of 1:2. A diagonal drawn across the central three rooms and their adjacent 'corridors' subtends an angle of 45°, that is, a ratio of 1:1. Each of the rooms is set out to a precise ratio: Room 3 to the 'east range' and Rooms 14 and 16 to the 'west range' are square; Room 1, Rooms 2 and 9 to the 'central range' and Room 15 to the 'west wing' all have a ratio of 3:4; the two 'cross passages' each has a ratio of 1:5; the central room is set out to 3:4, and Room 12 to 4:5. So it would seem the *porticūs* or 'corridors' were included as part of the original design, even if in fact they were built a little later. This may be represented schematically thus:

<table>
<tr><td>Room 14
1:1</td><td>Cross-
passage 13
1:5</td><td>Room 12
4:5</td><td>Room 9
3:4</td><td>Room 8
2:3</td><td>Cross-
passage 5
1:5</td><td>Room 1
3:4</td></tr>
<tr><td>Rooms 15a
&15b
3:4 overall</td><td colspan="5" rowspan="2">courtyard</td><td>Room 2
4:3</td></tr>
<tr><td>Room 16
1:1</td><td>Room 3
1:1</td></tr>
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The front wall of the south 'corridor' to the central row of rooms lies directly on an arc drawn from the centre of the north wall to the large walled enclosure and passing through its north-east and north-west corners (see Fig. 2). This is a further indication that both 'corridors' and large walled enclosure were part of the original scheme. The fact that the latter shared similar foundations to the rooms of the villa, as noted in the excavation report, adds credibility to this conclusion.

As noted above, the principal row of rooms at Minster, and the 'wings' at either end, were built at the same time. However, the width of the 'central range' is about 25% wider than that to the two 'wings', which would indicate that each was separate structurally, covered by a separate roof, rather than having the roofs mitring into each other. In this respect, Room No.1 at the north-east corner is more likely to have formed part of the 'east wing' rather than the 'central range', as this would then make the layout of the villa both absolutely symmetrical and structurally logical. For although if Room 1 were part of the 'central range', a lower 'east wing' could easily have abutted a taller 'central range' behind, this could not have been the case with a lower 'west wing', where abutting a taller 'central range' would have led to a valley junction between the two that was not only both visually and structurally awkward, but would have led to problems of maintenance with respect to rainwater penetration. This surely it would have been sensible to avoid. The deliberate symmetry presented by the pavilions to the south of the large walled enclosure implies that symmetry was a significant feature of the overall design and thus that any visual mismatch between the wings would also have been avoided. All this suggests that the 'central range' was set between the two 'wings' and did not extend beyond them, and furthermore, that it was in fact lower and the two 'wings' taller. This would then allow for a much simpler structure overall, the roof to the 'central range' easily abutting the taller walls at either end, which themselves could then be roofed separately. It is interesting to note that this configuration is exactly that displayed by the villa at Redlands Farm in Northamptonshire, the wall painting from Trier in the western Rhineland[18] and even the mosaic at Tabarka in Tunisia.[19]

This arrangement of a central range flanked by two taller elements seems not to have been uncommon in Romano-British villas. There is a common type termed the '*porticus* with pavilions'[20] which can be differentiated from the 'winged corridor villa' inasmuch as the 'corridors' are clearly terminated by separate rooms or pavilions that are square in plan, or nearly so. The reasonable assumption is that these were intended to provide 'a strong visual termination to the lighter and more open appearance of the colonnaded *porticus*'.[21] One has only to look at reconstructions where such pavilions are recreated as being lower than the central range to realise this is self-evident.[22] Incidentally, apart from their visual function, these pavilions seem often to have been used as service rooms such as kitchens or for storage rather than (say) belvederes:[23] in that, they recall the practicality of the *pigeonniers* flanking the traditional farmhouses, still to be seen today in mid and southern France. (A reconstruction to this effect is shown in **Fig. 5a**).

The question of whether Romano-British villas were of one or two storeys has been the subject of various archaeological papers but without any clear conclusion being reached:[24] therefore the evidence remaining of each building will have to be examined separately. As the excavation report noted, in this instance, barely the foundations survived. Nor is there any evidence as to the nature of the superstructure of the villa at Minster: it could have been either masonry, or of mud-brick or timber-framing on a masonry base, and of one or more storeys. Therefore, reasonable inferences will have to be made, based on parallels elsewhere, to arrive at a logically plausible solution as to the appearance of the villa. The surviving foundations could certainly have supported any of these possibilities. However,

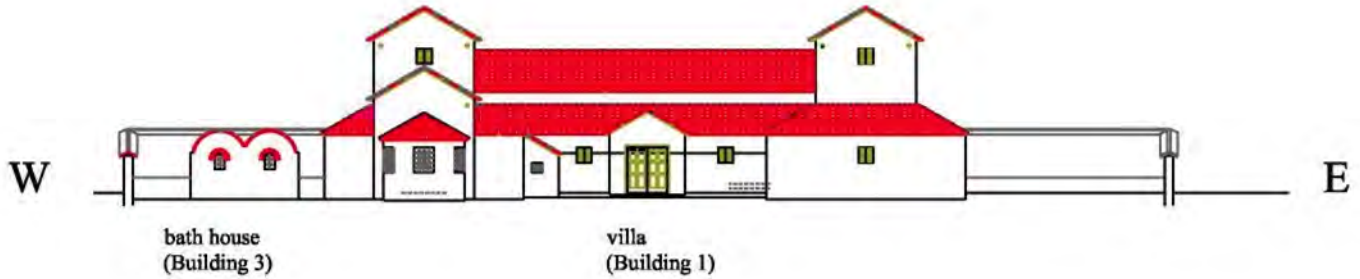

Fig. 5a Minster Roman villa – suggested section across courtyard (looking north).

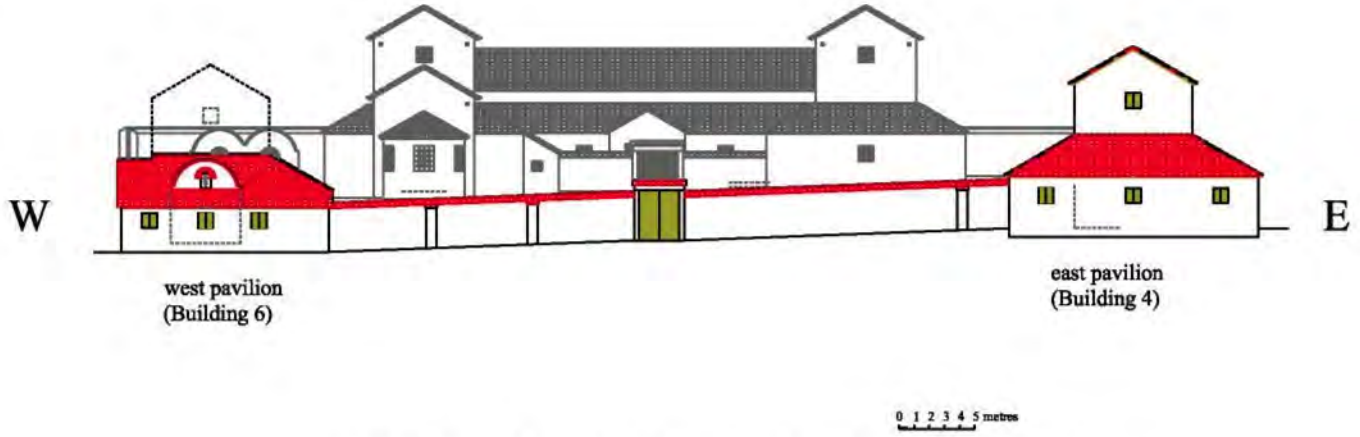

Fig. 5b Minster Roman villa – suggested south elevation, with pavilions.

the width of the foundations and the presence of apsidal rooms tends to suggest the building was of masonry construction.

Likewise, there can be no certainty as to the heights of the rooms. The Roman engineer/architect Vitruvius wrote that principal rooms should be between a third and a quarter higher than their width, with the lesser rooms being as high as they were wide.[25] Upstanding houses in and around Pompeii more or less conform to this: porticos or 'corridors' there seem generally to be as wide as they were high.[26] And as Vitruvius makes abundantly clear, proportions were greatly used in Classical architecture: he was concerned with the aesthetic reasons, but in the absence of the paper plans of today, they would have facilitated setting-out. The clear presence of simple proportions in the plan of the villa has already been noted, so there can be little doubt they played a part in the setting-out of the elevations also. At the Redlands Farm villa, the surviving masonry from the collapsed north-east end gable elevation was sufficient to make an accurate reconstruction possible. It indicated that the ground floor room would have been about as high as it was wide. Taking that as a working basis for the 'central range' at Minster, and using the largest central room as a starting point gives the length to height of the wall the same 3:4 ratio as for its floor plan, and provides sufficient height either side for a 'corridor' with a clear cross-section is as high as it is wide (i.e. a ratio of 1:1) and its pentice roof.

The excavation report on the main house at Minster villa (Building 1) notes the *porticus* or 'corridor' to the sides and rear, but not that to the front, were subsequently subdivided into rooms. This suggests that the former was an enclosed structure, by that time at any rate, presumably with window-openings set into a solid wall, but that the other was not, being either completely or partially open, perhaps in the manner of an early medieval cloister. The later addition of a porch to the centre of the 'inner corridor' rather indicates the latter, as this would both be easier structurally, and pointless if the *porticus* either side were completely open. The addition of a wall across the return of the 'inner corridor' to create a secure enclosed courtyard supports this possibility. The implication of all this therefore is that the 'central range' lacked windows – of any size at least – to its sides and rear, an inference reinforced by the later presence of a probable forge against its west wall, but that it had them on the south-facing front elevation and the inward facing sides to the 'east and west wings'. This would seem to be sensible, as it would make better use of available sunlight, especially necessary if the windows were set at a conventional height rather than at high level as they would then be 'borrowing' light from across the *porticus*. The pitch of the roof over the 'corridors' and 'central range' cannot now be determined – the archaeological evidence suggests they were tiled in *tegulae* and *imbrices*, so the pitch could have been anywhere between 22° and 40°.[27] The simplest solution would have been to continue the pitch to the 'central range' uninterrupted down over the 'corridors'; however the fact that the footings to the 'corridors' butted against those to the 'central range', indicating they were constructed separately, perhaps suggests the pentice roofs to the 'corridors' also butted against the 'central range'. In the latter case, even if the pentice roofs were inclined at the lower pitch, it is unlikely there would have been sufficient space above them for clerestory windows to light the rooms behind, unless the latter were very tall indeed. This all suggests the windows were probably set at a normal

ground floor level, with their cills a metre or so above the floor. The recovery of fragments of glass indicates that some at least of the windows were glazed. Their form however is unknown. Those recovered from Redlands Farm, and Meonstoke were about 0.6m wide and had semi-circular heads turned in stone or brickwork. Upstanding remains in Italy tend to have horizontal heads with timber lintels.

If, as proposed for the 'central range', the rooms to the 'wings' had an internal height more or less corresponding to their width, this being narrower would require the 'wings' to be lower, giving rise to the constructional problems noted above where they abutted the 'central range'. The addition of an upper storey to each of the 'wings' of, say, 10 Roman feet clear internally would however provide walls of sufficient height for the clear abutment between them of a single-storey 'central range' with its roof pitched at about 30°. All this assumes the roofs to the 'wings' were not mitred into those of the 'central range', a fact impossible to prove on the evidence available, but considered as doubtful here because of the nature of the plan. Moreover, the reconstruction proposed – two taller wings with simple pitched roofs flanking a lower central range – does match the evidence from elsewhere already cited. A two-storey 'central range' in this arrangement would require the 'wings' to the Minster villa to be three storeys high, which whilst not impossible structurally is perhaps to be considered implausible both practically and aesthetically.

The slope of the ground is such that it is presently some 0.75m lower at the front (south) end of the villa than the back, although subsequent erosion may mean this was less in Roman times. Either the footings were raised to have kept the floors level, or steps would have been required to access the rooms to the 'wings', as well as two or three in front of the entrance porch. But there was no evidence surviving either way. Regardless of this, it would have been far easier structurally to have kept the ridges to the 'wing' roofs level (Fig. 3b).

Despite the elevated siting of Minster villa, and the views available from it to the Wantsum Channel and the landscape beyond, it seems no advantage was taken of this by the original layout. The south-facing ground floor windows to the rooms in the 'central range', whatever their original purpose, ended up looking through a *porticus* into an enclosed courtyard, and those in the ends of both east and west 'wings' would have seen these views, again, only across the width of a *porticus*. The later addition of Room 28 with its bow-front and hypocausted heating indicates both that this became a defect to be remedied, and the probability that there was no view to be comfortably taken from a first-floor room.

Whatever the purpose of apsidal Room 10 to the centre rear of the villa and the bay-ended Room 15b to the centre of the west 'wing', both hypocausted and probably coeval both with each other and the bow-fronted Room 28 (their construction was similar), they did not share the latter's command of a view: apsidal Room 10 looked into the rising ground to the north, whilst Room 15b would have had its view to the west limited by the adjacent bath-house and then interrupted by the large walled enclosure. Both 10 and 15b would seem to have been private and secluded rooms, as suggested by the archaeological report, and the fact that there were the two of them may be significant, and perhaps reinforces the possibility that the villa was shared by two family units. The appearance of the apsidal rooms is problematical however: that to the rear did not appear to

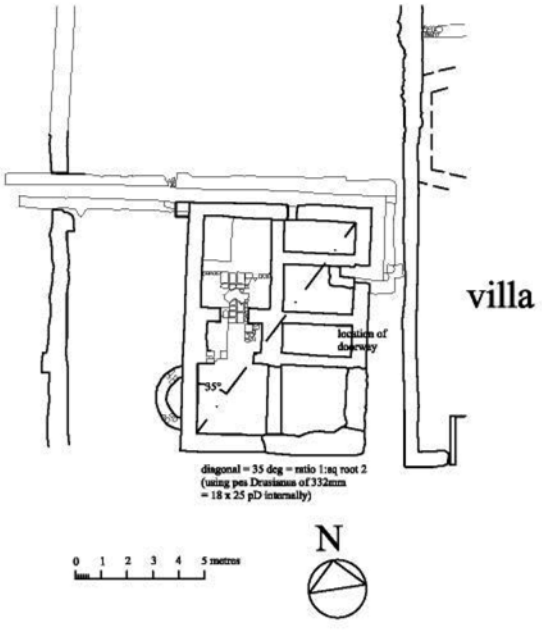

Fig. 6 Minster Roman villa – suggested setting out of the bath-house (Building 3).

have direct access into the villa, and any arrangement of its doors and windows is, frankly, baffling. Both probably had flattened semi-conical tiled roofs over the apses, rather than masonry vaults, and it would be reasonable to assume that Room 28 had one or more windows overlooking the views to the south.

The bath-house (Building 3)

The reconstruction of the appearance of the detached bath-house to the south-west is perhaps more certain (**Fig. 6**). Solidly constructed, remains uncovered show that, like the villa, it was plastered within and without, with possibly some mosaics. It comprised two parallel ranges of very small rooms running north-south, together measuring 18 by 25 *pedes Drusiani* internally. A diagonal drawn across them subtends an angle of 35°, suggesting it was set-out using a ratio of $1:\sqrt{2}$. Each range would have been covered along its long axis by a barrel vault of lightweight tufa – some was found on the site – clad in tiles and cement, and these almost certainly followed the curve of the vault.[28] There would have been a valley-gutter running between the two vaults, and as likely as not, rainwater collected there would have been discharged into the tiled drain on the north side, which it would have helped scour out.

The internal height of the rooms cannot be determined, but were most probably between one and one-and-a-half times their width. Each room presumably would have had a window in the wall. The entrance into the bath-house was evidently halfway down on the east side opposite the west 'corridor' to the villa. Access

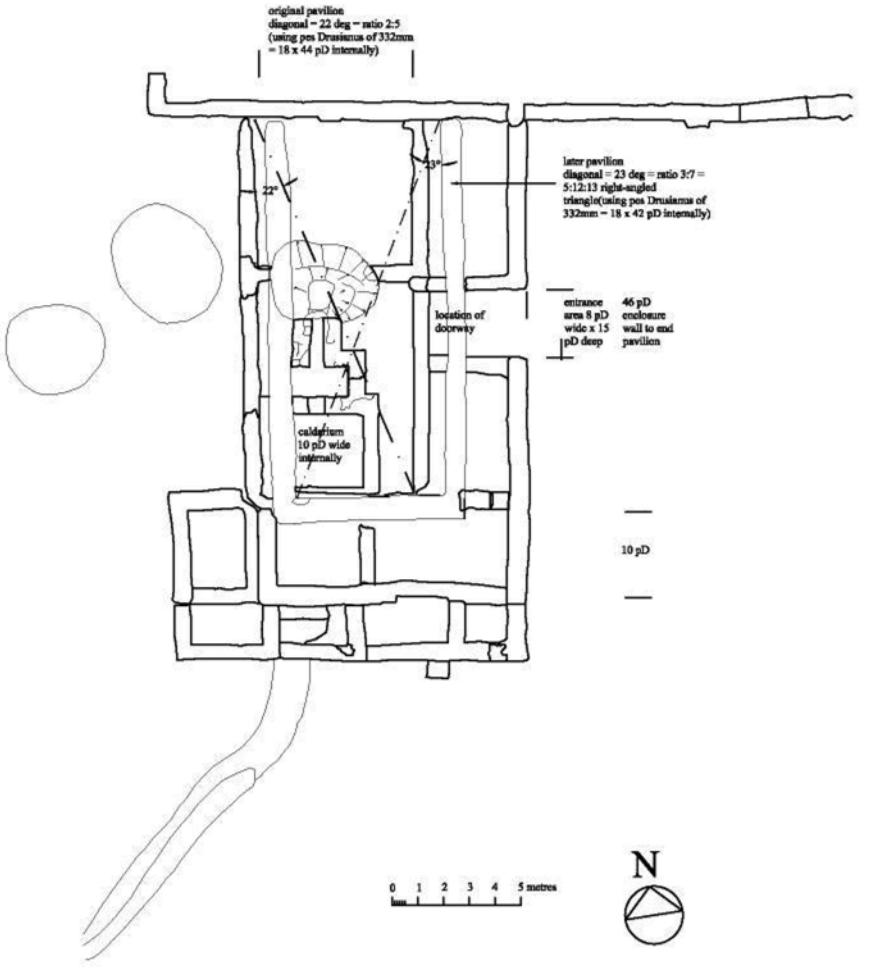

Fig. 7 Minster Roman villa – suggested setting out of west pavilion (Building 6).

however is problematic. If the most direct route via the passage just north of Room 19 and through Room 18 to the south-west of the 'outer corridor' was not followed – and there is no evidence either way – it would have meant going completely outside the villa to gain entry.

The pavilions (Buildings 4 and 6)

As noted above, two individual pavilions were later added against the east and west ends respectively to the south of the large walled enclosure (**Figs 7 and 8**). Each was initially similar in form with the rooms being much the same width as those to the 'central' range of the villa and possibly therefore a similar height. They were similarly substantially built, the walls to the east pavilion (Building 4) perhaps using mud bricks alternating with courses of flint cobbles (*pers. ob.*), which would have needed to be weatherproofed with a coating of render.

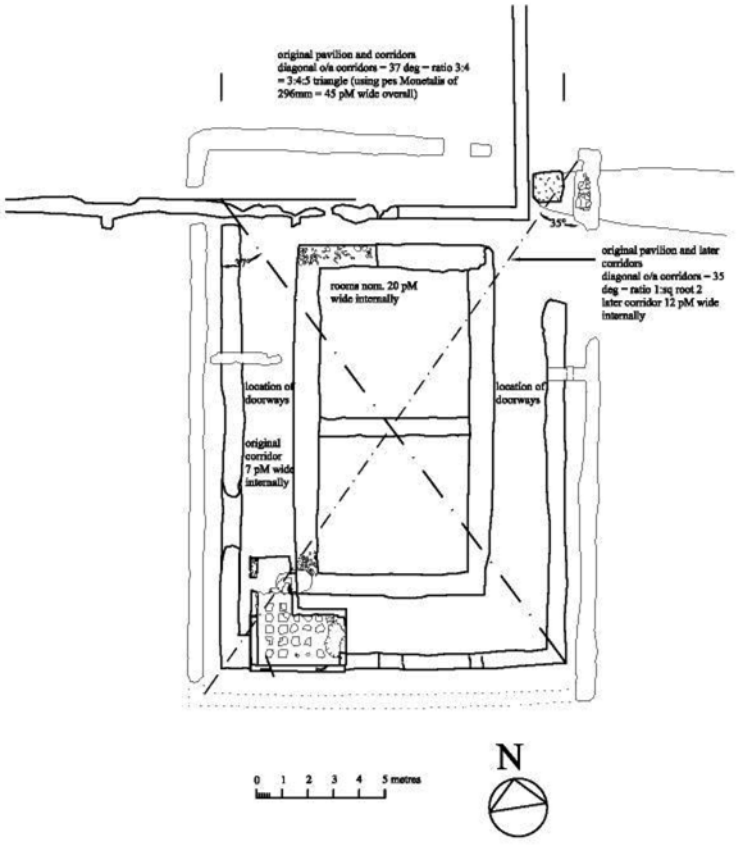

Fig. 8 Minster Roman villa – suggested setting out of east pavilion (Building 4).

Given their location, it would seem highly probable that both these buildings would have been of two storeys, so as to provide suitably vertically prominent visual foci framing the villa further up the slope (Fig. 5b). It is possible, too, that they matched the projecting and elevated east and west 'wings' it is suggested the latter possessed, capped with pitched tiled roofs with gabled ends. The entrance into the west pavilion (Building 6) appears from the excavation to have been just north of the middle of its east wall (Fig. 7): if its counterpart to the east was the same, its entrance would have been opposite, i.e. just north of the middle of its west wall. This possibility is reinforced by the fact that the dividing wall between the central two rooms to the east pavilion (Building 4), and that across the corridor were sited respectively south and north of this point and about 2m apart, thereby allowing sufficient space between them for an entrance (Fig. 8). This layout was repeated on the opposite wall of the east pavilion at least, suggesting a doorway there too.

The west pavilion (Building 6) measured 18 *pedes Drusiani* wide internally, the same unit of measurement as apparently used for the villa, and a diagonal line

drawn across the whole subtends an angle of 22°, suggesting it was set-out using a ratio of 2:5. After an interval, it was extensively modified to accommodate a bath suite. Although the original walls remained in use, the insertion of a *praefurnium* and *caldarium* within the previous rooms rather suggest any upper storey and roof had been removed to create a service courtyard open to the sky. The *caldarium* was 10 *pedes Drusiani* wide internally and perhaps had a barrel-vault over, which would have abutted the original south wall and this, together with the presence a *tepidarium* to its south, suggests the original walls were left at a height sufficient allow the other rooms (*frigidarium, apodyterium*) added around the original building to have been covered simply by pentice roofs, both rooms and roofs being similar in size and appearance to those thought to have existed around the east pavilion (Building 4). A clear area between these rooms and a further similar side room to the north giving on to the entrance measured 8*pD* wide by 15*pD*. The row of small rooms then added along the south elevation could have been covered by an extension of this roof. The fact that the second *caldarium* – also 10 *pD* wide internally – added at the same time to the west end of this row of rooms had separate foundations suggests a separate form of roof, again most probably a barrel-vault, and most likely oriented east-west so as to avoid an awkward valley junction against the *tepidarium* to the east.

All these alterations would have removed the symmetrical appearance of this part of the villa complex, and after a century or so of use, they were demolished in their turn and the west pavilion (Building 6) effectively returned to its original form of a rectangular, probably two-storeyed, structure. However it appears that a different unit of measurement was now used: the *pes Monetalis*. A diagonal line across it subtends an angle of 23°, suggesting it was set-out using a right-angled triangle of 5:12:13, and its internal measurements of 18 by 42 *pM* give a ratio of 3:7.

The pavilion to the east (Building 4), unlike its counterpart, appears at the outset to have been laid out using the *pes Monetalis* (Fig. 8). If the two villas were indeed coeval, as the excavation report supposes, this perhaps suggests that two different teams of builders were used in their construction. To its west, south and east sides it was surrounded by a corridor some 7 *pM* wide internally, with a narrower corridor to the north at exactly half the width being formed by the pre-existing large enclosure wall. How it was laid out is not entirely certain, but a diagonal line across the whole of extent of the corridors subtends an angle of 37°, giving a ratio of 3:4, suggesting it was set-out using a 3:4:5 right-angled triangle. The central rooms are 20 *pM* wide internally, with a diagonal measuring 45 *pM*. The excavation report was not clear whether the corridors were part of the original design. The setting out as proposed suggests that perhaps they were. They were in all probability topped by a tiled pentice roof with, presumably, hipped corners, giving an effect not unlike those reconstructions often reproduced of Romano-British temples.[29]

Later, this was completely replaced by a surrounding corridor whose internal width, about 12 *pM*, was the same to all its four sides. A diagonal line across the whole of its extent subtends an angle of 35°, suggesting it, like the bath-house, was set-out using a ratio of $1:\sqrt{2}$. Like the 'corridor' to the villa, it was sub-divided by cross-walls, suggesting that it was semi-enclosed and lit by window openings,

rather than being colonnaded. Smith makes the point '... that in the Roman Empire, as in seventeenth century England, the general need for light was far less than it is now ...'.[30] So, as for the villa, and although such things can never be absolutely certain, perhaps there is no need to imagine a towering interior lit by inaccessible clerestory windows in the manner of a church, and that borrowed light into the rooms taken from across the corridor, and from the opened doorways, would have been sufficient for the occupants' purposes.

ENDNOTES

[1] In a series of articles in *Archaeologia Cantiana* as follows:

Perkins, D.R.J., 2004, 'The Roman Villa at Minster-in-Thanet Part 1: Introduction and Report on the Bath-House', CXXIV, 25-49.

Parfitt, K., 2006, 'The Roman Villa at Minster-in-Thanet Part 3: The Corridor House, Building 4', CXXVI, 115-133.

Parfitt, K., 2007, 'The Roman Villa at Minster-in-Thanet Part 4: The South-West Buildings 6A and 6B', CXXVII, 261-269.

Parfitt, K., Perkins, D., Boast, E. and Moody G., 2008, 'The Roman Villa at Minster-in-Thanet Part 5: The Main House, Building 1', CXXVIII, 309-334.

Parfitt, K., Boast E. and Moody, G., 2009, 'The Roman Villa at Minster-in-Thanet Part 6: The Villa Enclosure; Buildings 2 and 5', CXXIX, 333-358.

[2] Keevil, G.D., 1996, 'The Reconstruction of the Romano-British villa at Redlands Farm, Northamptonshire', in *The Architecture of Roman Britain - CBA Research Report 94*, pp. 44-55.

[3] King, A., 1996, 'The south-east façade of Meonstoke aisled building', in *The Architecture of Roman Britain - CBA Research Report 94*, pp. 56-69.

[4] McKay, A.G., 1975, *Houses, Villas and Palaces in the Roman World*, Thames & Hudson, chapter V.

[5] Percival, J., 1981, *The Roman Villa*, Batsford, pp. 21-25; see also Wheeler, M., 1971, *Roman Art and Architecture*, Thames & Hudson, pp. 182-205.

[6] McKay, A.G., *op. cit.* (see note 4), pp. 115ff.

[7] From the 1801 edition of the Ordnance Survey map, as reproduced in *Ordnance Survey Historical Guides: Kent*, George Philip (1988), Map 17.

[8] Perkins, D.R.J., 2001, 'The Roman Archaeology of the Isle of Thanet', *Archaeologia Cantiana*, CXXI, 46-47.

[9] Taking the *pes Drusianus* as 332mm long. This as opposed to the more commonly found *pes Monetalis* of 295 or 296mm.

[10] There is no structural formula for calculating chalk block or mud brick walls, but that for freestanding brickwork walls may serve as a guide. Using BS CP111 as its basis, *Design of Free-standing Walls* by the Brick Development Association (1984), p. 20, gives the simplified formula $H \times w_m \times \gamma_r = (pH^2/2)x(6/t^2) = 6300 \times (t^2/p)$, where H = the height of a wall in metres, t its thickness w_m its mass in kN/m³, γ_r its reduction factor and p the wind loading in N/m². Taking the thickness as 0.8m and a wind loading of 509 N/m² gives a maximum height of an unsupported brickwork wall of 7.9m. This may reasonably be halved for the less stable materials most likely to have been used for the large walled enclosure at the Minster villa. And it is not improbable that the wall diminished in thickness the higher it rose.

[11] As shown by the Hadrian's Wall Recording Programme, an example of which is illustrated in Whitworth, A.M., *Hadrian's Wall: some aspects of its Post-Roman influence on the landscape*, BAR 296 (2000), fig. 78. I.A. Richmond makes the point that at places on Highfield Crags, the slopes are so steep that the courses *had* to be laid horizontally; *Handbook to the Roman Wall* (1966), p. 134.

[12] Barker, P. *et al.*, 1997, *The Baths Basilica Wroxeter*, English Heritage Archaeological Report 8, p. 51.

[13] Smith, J.T., 1997, *Roman Villas – a study in social structure*, Routledge, chapter 4.

[14] Canterbury Archaeological Trust, 2010, *East Wear Bay, Folkestone, Kent: Interim Report on the Roman villa excavations*, paras 4.4., 4.6.

[15] Smith, J.T., *op. cit.* (see note 13), pp. 47-48, 66-67, 76 and figs 10, 19.

[16] *Ibid.*, pp. 103-3.

[17] *Ibid.*, pp. 47-48 and fig. 10.

[18] Percival, J., *op. cit.* (see note 5), p. 23, fig 3.

[19] *Ibid.*, p. 23, fig. 2.

[20] Smith, J.T., *op. cit.* (see note 13), chapters 8 and 9. See also Rivet, A.L.F. (ed.), 1969, *The Roman Villa in Britain*, Routledge & Kegan Paul, pp. 53-64.

[21] Smith, J.T.: *op.cit.* (see note 13).

[22] For example, in Williams & Zeepvat, 1994, *Bancroft*, Vol.1, figs 91 and 100.

[23] Smith, J.T. *op. cit.* (see note 13), pp. 142-3; see also *West Park Roman Villa, Rockbourne, Hampshire,* 1983, RCHME, in the *Archaeological Journal*, Vol. 140, pp.137-139, referring to Rooms 32 and 26, pavilions to the SW and NW ranges respectively.

[24] Over many years, the general consensus was that they were invariably single-storey, rather like the veranda'd colonial bungalows of the British Empire. For a contrary view, see Neal, D.S., 1996, 'Upper storeys in Romano-British villas', in *The Architecture of Roman Britain*, CBA Research Report 94, pp. 33-43. This view is rubbished by Smith J.T., *op. cit.* (see note 13), pp. 9-10 and note 21, citing lack of evidence and want of rigorous examination of what there is.

[25] Sections 3 to 8 in Chapter III of Book VI of Vitruvius', *De architectura*, Morris Hicky Morgan's translation, Dover Books (1960).

[26] As can be seen illustrated in Amedeo Maiuri's guide-book *Pompeii Libreria dello Stato No. 3* (1970).

[27] Brodribb, G., 1987, *Roman Brick and Tile*, Alan Sutton, p. 10.

[28] See, for example, Cunliffe, B., 2004, *Roman Bath Discovered*, Tempus, pp. 56ff., pp. 95ff. Also *Large Freestanding Barrel Vaults in the Roman Empire* by Lynne C. Lancaster in the Proceedings of the 2nd International Congress on Construction, Cambridge University, Vol. 2 (2006), pp. 1831ff.

[29] As that from insula XXXV at Silchester, often reproduced; see Boon, G.C., 1976, *The Roman Town of Calleva Atrebatum*, Reading Museum Guide, p. 5.

[30] J.T. Smith, *op. cit.* (see note 13), p. 90.