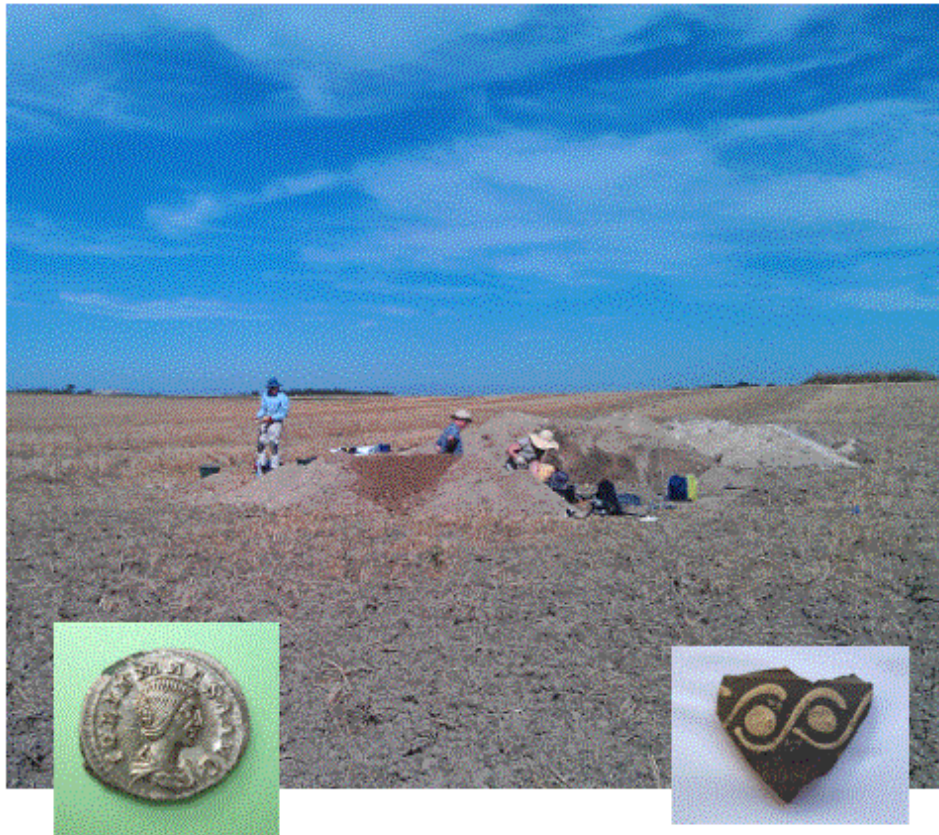


CAMBRIDGE INDEPENDENT ARCHAEOLOGY – CIA10 (NW12)



Excavations of a Roman bathhouse and other features at Nine Wells, Whittlesford in 2012

Summary

This report describes the work undertaken in the fourth year of excavation on an extensive Romano-British site near the Nine Wells in the parish of Whittlesford. Efforts were concentrated on the further investigation of what is believed to have been a bathhouse. Some attention was also given to exploring features, revealed by geophysical survey, on the crest of the slope of the shallow valley of the Hoffer Brook in which the bathhouse lies.

Following a brief introduction and acknowledgements, the report comprises three main sections, covering the three areas of trenching, the finds and conclusions reached. The first section concerns a hypocaust system, part of which was revealed in two adjacent trenches. The second section addresses the complex archaeology of the destruction of the building as evidenced in a nearby trench dug to the northeast of the hypocaust, which revealed a deep cut into the natural chalk, but otherwise scant structural remains. The third section considers the significance of a small quantity of Roman pottery and other material from trenches on the crest of the slope.

Introduction

Four reports of the earlier excavations on this site in 2009, 2010 and 2011 have been lodged with the Cambridgeshire Heritage and Environment Record (references 1, 2, 3 and 4). With reference to the geophysical survey (figure 0.1), the plan for 2012 was to:-

- Investigate further the bathhouse at general location 2, i.e. a hypocaust system that was prompted by the discovery of a single *pila* in the southern corner of the trench dug in 2011 and a possible bath showing as a high resistance area to the northeast of this trench and where a deep cut into the natural chalk was revealed in test pits dug in 2010
- Dig test trenches to explore the strong linear and rectangular features at locations 3 and 4 on the crest of the slope leading down to the Hoffer Brook.

The work was undertaken during September by a small team of enthusiasts who are all members of local archaeology and history societies. The trenches were back filled in October.

Front Page

A general view of the excavation looking north with (inset) a silver denarius of Julia Maesa (218 to 222), found in 2011 and in near mint condition, and a sherd of late 4th century pot, hinting at the longevity of the building that stood on the site and the relative wealth of the folk who occupied it.

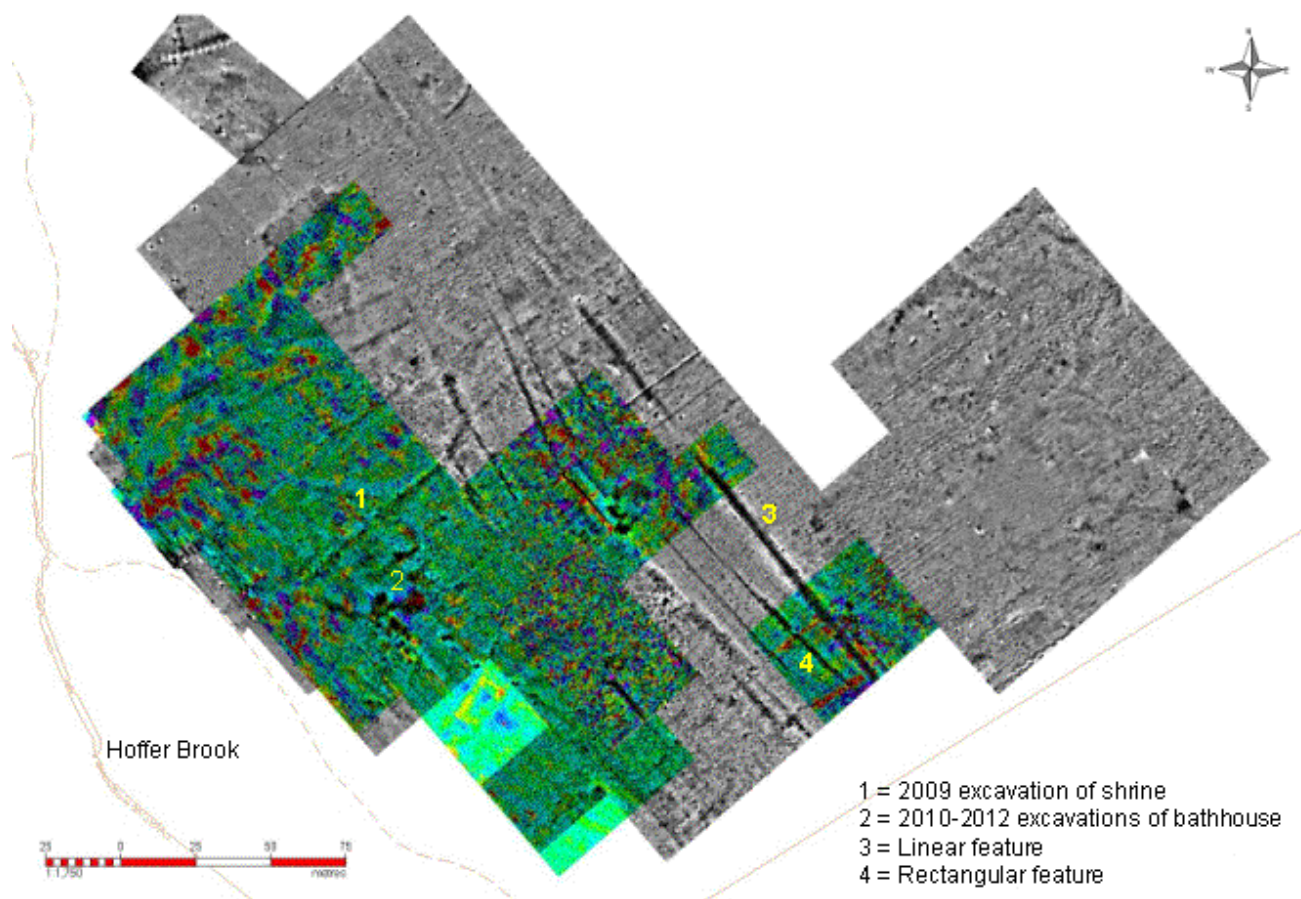


Figure 0.1 Nine Wells geophysical survey (courtesy of Archaeology RheeSearch Group)

Acknowledgements

All those who were involved in the excavation thank:-

- Quinton Carroll and Cambridgeshire County Farms for granting permission to excavate
- Farmer Leslie Harrison for allowing ready access to the site and for his interest throughout
- Bill Hughes for undertaking much of the organisation including the booking of the mechanical digger
- The Archaeology RheeSearch Group for the high quality surveys and their general encouragement of the diggers
- Oxford Archaeology East (Stephen Macaulay and Rob Atkins) for their interest and help with finds identification
- Mark Hinman of Pre-Construct Archaeology for his advice
- Richard Cushing for help with general investigations of the site

Section 1 – Excavation of a hypocaust system (trenches 01 and 06)

R Scarle

Trenches dug

The positioning of trench 01 was dictated by the discovery of part of a single *pila* in the southern corner of the trench dug in 2011 (figure 1.1), which suggested that the edge of a hypocaust had just been clipped. The corner of the 2011 trench was re-located using the datum points and a 6 x 2 metre trench was laid out as shown in the diagram (figure 1.2). Plough soil was stripped off by mechanical digger down to 0.45 - 0.50 metres, at which depth the first indications of organised structure were noted in a yellow-brown fill, with a dark deposit appearing at the southeast end of the trench. Context numbers 1.01 and 1.02 were assigned, respectively. Trowelling back along the trench commenced. A moderately high concentration (estimated to be about 10 – 20%) of randomly scattered building debris, mostly tile fragments with a wide size range, was removed and an array of *pilae* began to emerge. The northern corner of the trench overlapped slightly the 2011 trench and the *pila* that was partially revealed last year was fully exposed. This was deemed to be an acceptably small degree of trench positioning error. Working around these *pilae*, trowelling continued down into a very dark ashy deposit, assigned context number 1.03. This deposit also contained a substantial amount of building debris at about the same concentration as in the context above. Much of the tile had been blackened in the ash. The ashy deposit was typically 0.2 metres thick, which had accumulated above a gritty, buff coloured concrete floor at depth 0.80 – 0.86 metres below present ground level.

Ragged edges to the concrete floor were found in two areas of the trench, i.e. in the western corner and towards the south-eastern end. It was presumed that this was the result of more 19th century robbing (reference 5), since robbing had also been encountered in the 2011 trench. However, this did provide an opportunity to investigate the foundation of the hypocaust without destroying more of the floor. The fill of the robber pit in the western corner was assigned the context number 1.04. This was excavated down to a depth of 1.10 metres where a mixture of packed chalk and flint was found. Building debris was also present in the fill, plus part of a clay pipe stem and a piece of brown bottle glass, which provided confirmatory evidence of 19th century activity. The fill of the robber pit at the south-eastern end was assigned the context number 1.06. This was excavated down to a depth of 1.34 metres where, again, a mixture of packed chalk and flint was found. Some building debris and a lens of ashy deposit were included in this fill. Comment about the concrete floor is given in the next sub-section, which describes the features of the hypocaust.

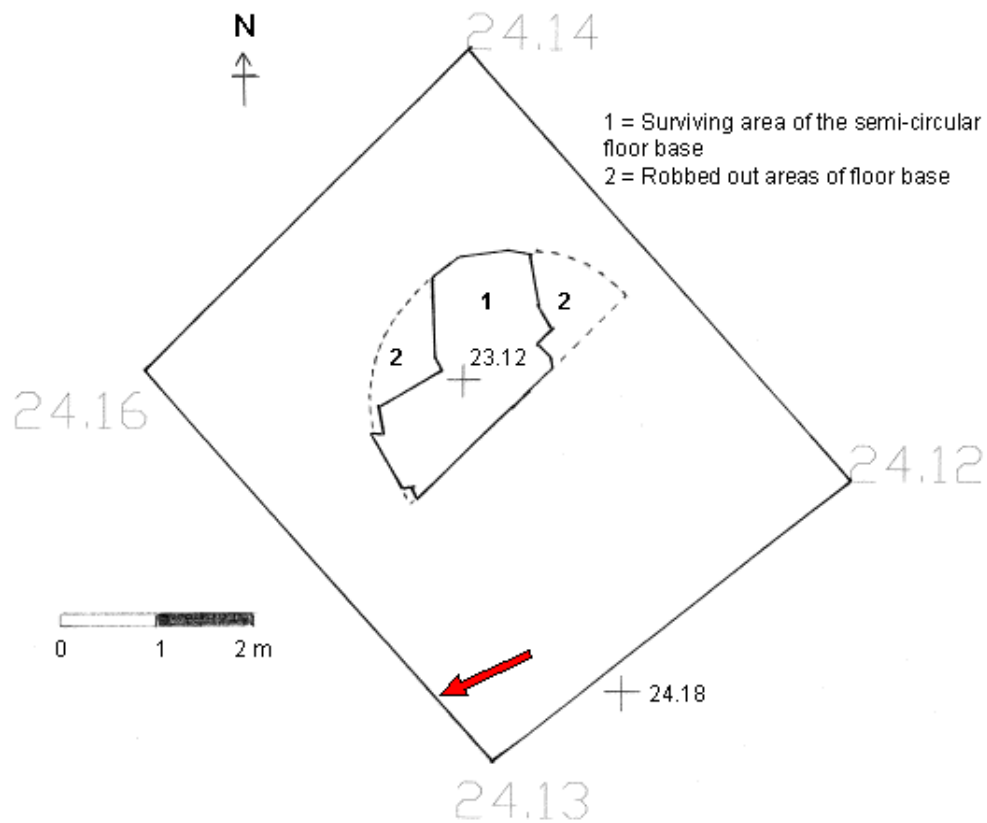
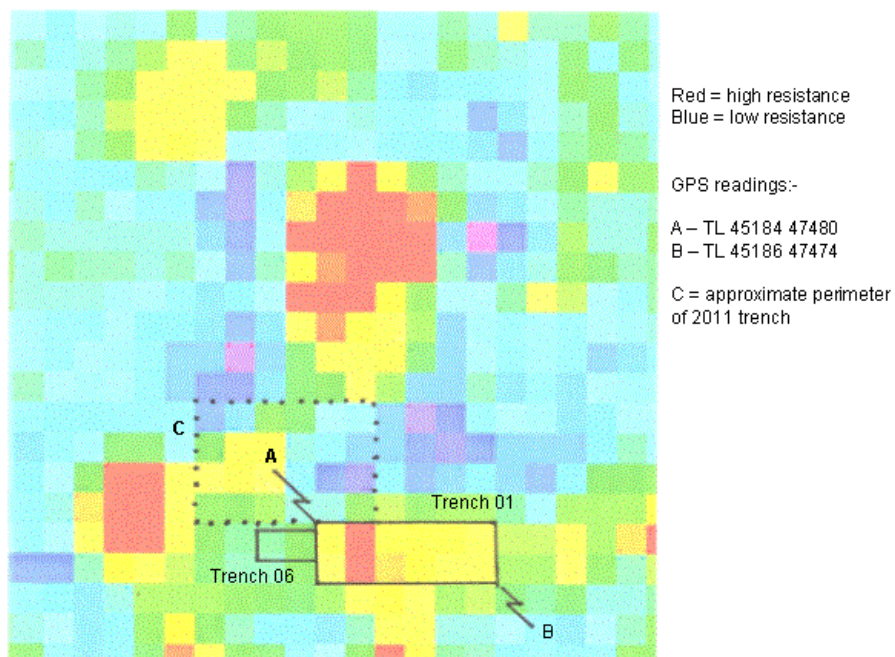
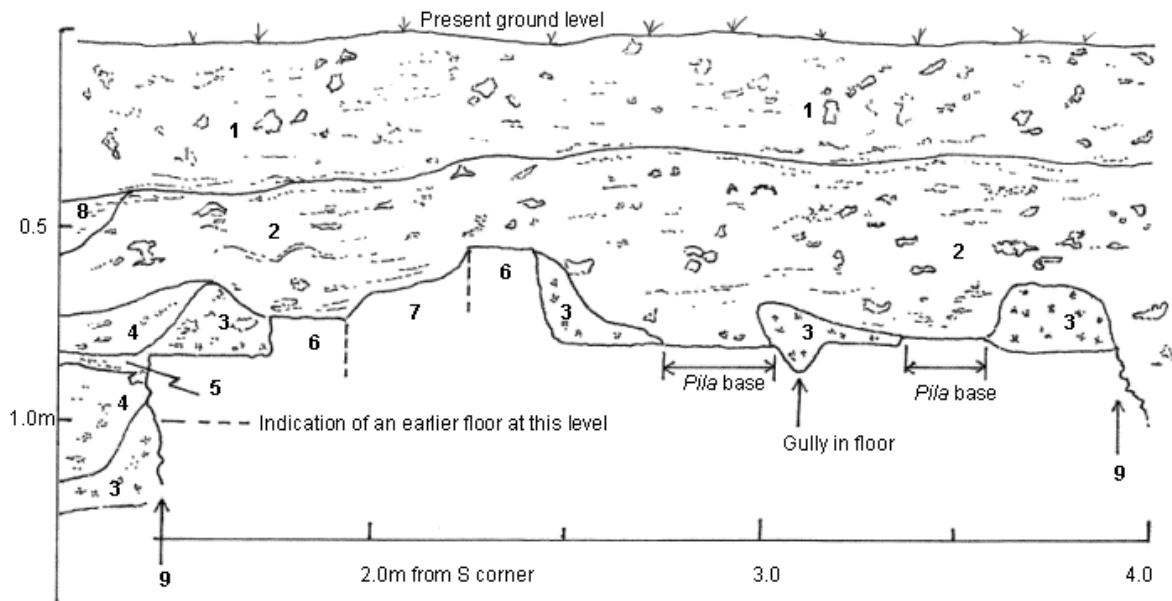


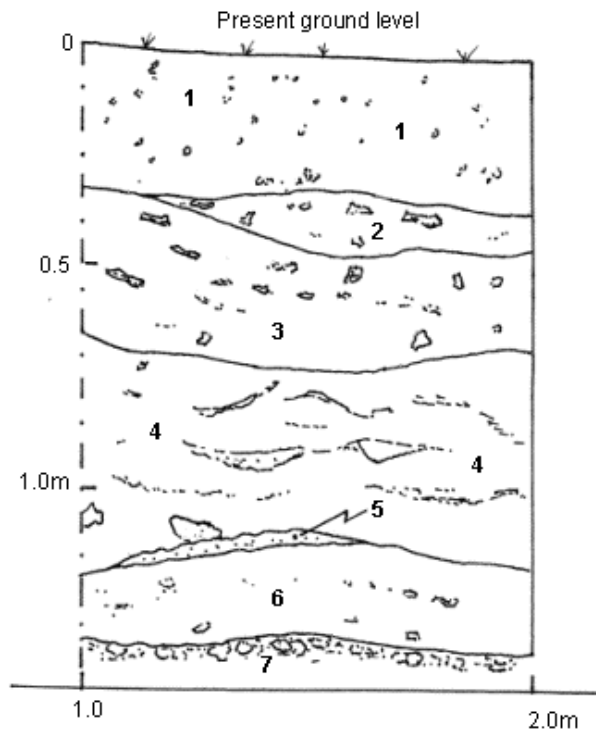
Figure 1.1 Outline plan of the 2011 trench showing the arrowed position of the pila partly revealed in the southern corner





1 = Plough soil, 2 = Yellow-brown debris layer (context 1.01), 3 = Dark, ashy deposit (context 1.03)
 4 = Mid-brown debris layer, 5 = Lens of orange mortar, 6 = Mortared tiles, 7 = Mortar and debris infill
 8 = Chalk, 9 = Edge of robber pit

Figure 1.4 Section of the southwest side of trench 01



1 = Plough soil, 2 = Yellowish layer with chalk and building debris, 3 = Dark layer with chalk and building debris (context 1.02), 4 = Mix of yellowish and mid-brown fill with chalk and building debris (context 1.06), 5 = Chalk
6 = Orangey layer, 7 = Flints and chalk

Figure 1.5 Section of the southeast side of trench 01

Trench 06 (2 x 1 metres) was laid out (figure 1.2) in order to explore the extent of the hypocaust beyond the north-western edge of trench 01. This trench was entirely dug by hand and the fill was assigned a single context number (6.01). Two more pilae were uncovered, one of which was just visible in the side of the trench. Excavation continued down to the concrete floor at depth 0.85 metres. A shallow step in this floor decreased its depth to 0.78 metres. Further along the trench the buff coloured floor gave way to a reddish floor of *opus signinum*, which continued to the north-western limit of the trench (figure 1.6). An ashy deposit, 0.10 metres thick, also overlaid this floor.

Time limitations and the position of spoil heaps prevented any further exploration of the extent of the hypocaust.

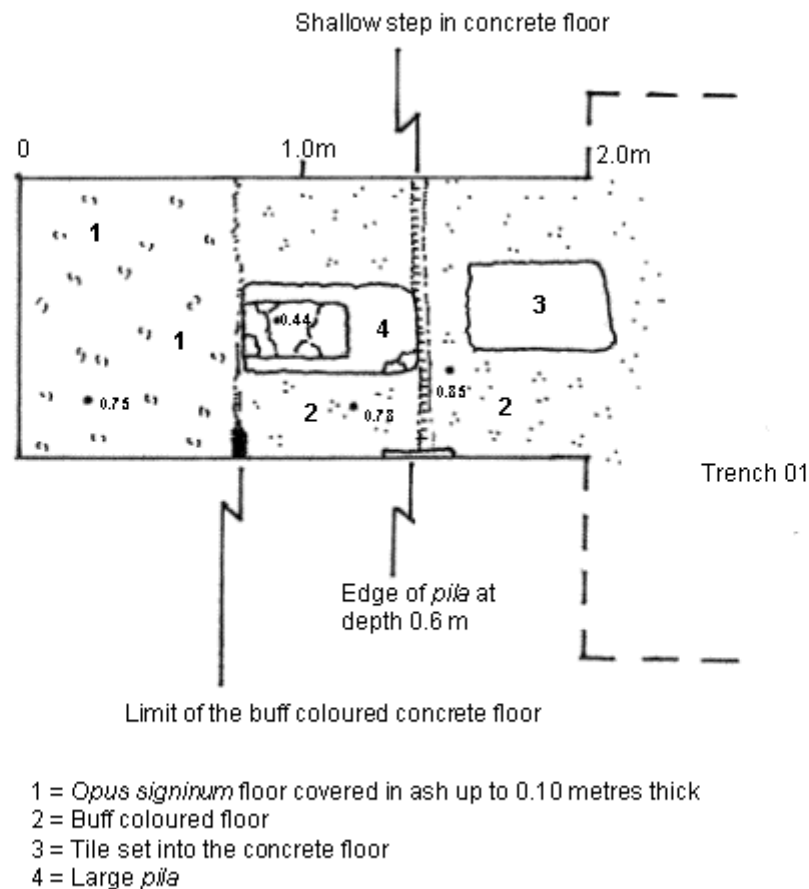


Figure 1.6 Plan of trench 06

The hypocaust

The chapter on hypocausts in Gerald Brodribb's book was used for reference when considering the features revealed, although he does remark that structures are "subject to much variation" (reference 6). His book was also used when appraising Roman building materials in general.

The positions of seventeen *pilae* were located (figures 1.3 and 1.6). For seven of these *pilae*, only the bases could be discerned. A layer of ash had accumulated around the *pilae* (figure 1.7). The maximum surviving *pila* height was 0.34 metres. The *pilae* were supported on thick (ca. 50 mm) tiles bedded into a concrete floor (the *pavimentum*). The fired clay tiles (*bessales*) used for the stacks were mostly close to the average length/width of recorded and complete tiles, which is 7.8 Roman inches (198 mm). Tile thickness (30 to 35 mm) was slightly below the average recorded (43 mm). The photograph (figure 1.8) shows the detail of their construction, using lime mortar. It was common practice in Britain to use a one foot square brick (the *pedalis*) as a cap to surmount each *pila*. A fragment of a large tile, approaching this dimension, was found in context 1.01 and this may well have been a cap (figure 1.9). Traces of mortar showed that it had been bonded to a centrally positioned *bessalis* and traces of concrete adhered to the other face. Originally, the *pilae* would have been from 0.6 metres to about 1.2 metres high, with capping and bridging tiles on top. Typically, a cement layer would have been laid on the bridging tiles, finished perhaps with a

tessellated surface, forming the suspended floor (the *suspensura*). However, the number of *tesserae* found (a total of 43 in trench 01) was not particularly great. If there had been a tessellated floor then it must have been efficiently removed at some time after the hypocaust went out of use, otherwise many more *tesserae* would have been expected amongst the debris. With these height dimensions, the floor of the heated room above would have been at least at present ground level. The quantity of box flue tile fragments in the fills indicated that the walls had been heated (figure 1.10). There were two larger sized *pilae*. One of these, which was 0.46 metres square, was not a single tile stack but a composite of tiles mortared together. One of these was a stone tile. Use of stone for *pilae* was not uncommon. This larger *pila* abutted flint foundations of a possible wall, which extended into the southern corner of the 2011 trench. Further comment about this *pila*, in the context of a possible hot water system, is made later. The other large *pila*, in trench 06, was 0.60 x 0.24 metres (figure 1.11). Its positioning seems to be significant, with its north-western side being at the junction of the buff coloured and *opus signinum* floors.



1 = Brown fill showing the position of a robber pit

Figure 1.7 Excavation of trench 01 in progress, showing some of the pilae emerging from, and surrounded by the dark ashy deposit



For the *pila* on the left, thicknesses in millimetres of mortar and tiles are, from the base upwards:- mortar - 30, 1st tile - 30, mortar - 20, 2nd tile - 30, mortar - 55, 3rd tile - 35, mortar - 20, 4th tile - 35 (with remains of mortar on top)

Figure 1.8 Detail of two pilae on their bases, set into the concrete floor with some ashy deposit behind and left in situ



Figure 1.9 Loose tiles found in the debris layer (context 1.01) – (top) a bessalis scored “IV” (as highlighted) and (bottom) a fragment of what may have been a capping tile, with mortar traces remaining



Figure 1.10 Examples of flue tile fragments from context 1.01 – (left) box flue tile with rectangular vents and (right) a possible tegula mammata, type B



1 = Edge of a *pila* protruding from side of trench

Figure 1.11 The large pila found in the middle of trench 06 (some loose tile fragments have been removed from the top layer)

It was not possible to determine the full layout of the hypocaust; the robber pits did not help in this respect. The ashy deposit seen in the sections of the south-western and north-eastern sides of trench 01 indicated that the hypocaust must extend some, as yet, undetermined distance in these directions. Also of note is that trench 01 corresponds to an area of higher resistance in the geophysical survey (figure 1.3), which intriguingly extends beyond the south-western side of the trench for about three metres. Its extension to the northeast is probably not great since the ashy deposit was no more than a metre in this direction when seen in the 2011 trench at the southern corner. The rows of *pilae* appeared to finish towards the south-eastern end of trench 01, where there were the following features:-

- A stub of wall structure comprising mortared tiles with an infill of mortar and rubble, which was constructed on the concrete floor base
- What appeared to be a grate formed of tiles (two remaining and of size 0.2 metres square) capping a channel in the floor
- What appeared to be the remains of a crumbling moulding in a buff coloured fabric with a channel (air vent?) through it.

These features are shown in both the trench plan (figure 1.3) and the photograph (figure 1.12). It was possible, therefore, that a stoke hole (*praefurnium*) had been in the location of the robber pit, the digging of which had resulted in the ragged edge to the floor. The trench section (figure 1.5) at the south-eastern end includes a dark layer (context 1.02). This may be the result of the raking out of ash. It was unlikely to be a continuation of the ashy deposit (context 1.03) around the *pilae*. Also of note was that the tile stacks had not survived at the south-eastern end. This may have been a consequence of the high temperature here, which would have accelerated the ageing of the tiles and mortar. At the north-western end, where trench 06 was dug, the buff coloured floor of the hypocaust gave way to an *opus signinum* floor, which was also overlain with ashy deposit. Possibly this marks a continuation of the hypocaust beneath another heated area (a room or corridor).



1 = Rim sherd, 2 = Gully in floor with some ash still *in situ* plus a rim sherd, 3 = Grate feature?, 4 = Air vent?
5 = Stub of wall, 6 = Feature with unknown function

Figure 1.12 Part of the hypocaust with various features highlighted

A notable feature of the concrete floor was a gully. After it had been emptied of ash, it was revealed as being 80 mm across, 70 mm deep and with curved sides. It began adjacent to the large, square *pila*, ran into the postulated grate feature and turned 90 degrees, disappearing into the south-western side of trench 01. It is shown on the trench plan (figure 1.3). Its use in the functioning of the hypocaust can only be speculated upon. One possibility is that it housed a lead pipe, part of a hot water system with a reservoir tank perhaps supported on the large *pila*. This, of course, assumes that the temperature of the floor, which was exposed to the hot air drawn through the hypocaust, could be maintained below the melting point of lead (327 degrees C). Such an arrangement might then have

provided a supply of hot water to another part of the building lying to the southwest of trench 01. Of possible relevance from the 2011 excavation was the crudely cut gully in the flint foundations close to the large *pila*. This was below hypocaust floor level and may also have been part of a water management system (e.g. a drain). There was in support of this theory:-

- A significant quantity of lead waste (2.75 kg in total) that could have resulted from a reclamation exercise after the hypocaust went out of use. The metal was recovered from the central section of the trench by metal detecting the spoil heap after mechanical digging and by excavation of contexts 1.01 and 1.03. The photograph (figure 1.13) shows some of this waste.
- George Maynard mentioned in his notes (reference 5) seeing a length of lead pipe
- A thin layer of bluish clay that had been spread on the concrete floor in the area of the 90 degree bend, and whose purpose may have been to provide some thermal protection for the pipe.

Also along the north-eastern side of trench 01 was a shallow channel feature running along the floor, with a bridging tile on top. This seemed to be associated with an ash-filled hole disappearing into the side of the trench (feature 6, figure 1.12). The final floor feature to report was a shallow step (80 mm high) that was revealed in trench 06 (figure 1.6). Design criteria for hypocausts required them to be constructed on a slope to aid the flow of hot air through them. This may therefore explain the purpose of this step.



Figure 1.13 Some of the lead waste recovered from trench 01

The concrete floor was 0.12 metres thick as revealed by the robber pit in the western corner of trench 01. It was 0.31 metres thick as revealed by the robber pit towards the south-eastern end, with some evidence of an earlier level protruding from the ragged edge of the floor at a depth of 1.0 metres. At least one refurbishment of the hypocaust during its lifetime may thus have occurred. Packed chalk and flint nodules were found at the bottom of the robber pits, suggesting that this material provided a foundation for the hypocaust floor.

One tile that was mortared into the stub of wall had been scored on its face, before it had been fired, with a large, well-formed Arabic “2” mark (figure 1.14). As the first mentions of Arabic numerals in the West are found in the *Codex Vigilanus* of 976 (reference 7), it seems unlikely that the mark had a numerical significance. Another tile that was found in the debris layer above the *pilae* had also been scored, in this case with a large, but less well formed, “IV” mark (figure 1.9). These may have been tile makers’ marks. Examples have been recorded across the country with tally marks, but these are cut into the tile edge. Generally, only 9% of tiles have been found “signed” with some kind of mark at other hypocaust sites, but use of stamps was rare.



Figure 1.14 A tile with well-formed Arabic “2” mark scored on its face

Other than the lead waste and the 19th century robbing and levelling on the site as a whole, little can be deduced as to any re-use of the hypocaust after its demise. Presumably this demise occurred sometime during the late years of the Roman period or shortly thereafter. The ashy deposit around the *pilae* was found to be intact, indicating that there had been no later activities directly on the concrete floor. The floor laid above the *pilae* may have been systematically removed. There was no evidence that the building above had burnt down.

The finds

Robert Atkins of Oxford Archaeology East kindly provided advice during identification of the finds.

As in the other trenches dug in previous years, a large quantity of ceramic building material (CBM) was found. This was randomly distributed in the fills down to the hypocaust floor and also within the robber pits, with no particular changes in concentration noted in any part of trenches 01 and 06. This material was predominantly wall/floor tile and box flue tile, with a small fragment of a possible *tegula mammata* of type B (a particular type of flue tile). Crumbly mortar was well mixed into the fills above the ashy deposit. The tile ranged in size from small to large fragments. Some joining pieces forming complete tiles were found (figures 1.9 and 1.10). There were a few pieces of wall plaster and relatively few *tesserae* compared to some of the other trenches dug in the area. On one of the plaster fragments a skim of white plaster had been applied over the original buff coloured coat, indicating some refurbishment activity. Three roughly formed, grey, dome-shaped ceramic lumps were found in trench 01 (figure 1.15). Their flat surfaces showed traces of lime mortar. These were assessed as being examples of decorative moulding that was typically applied only to the structure of high status buildings.



Figure 1.15 Decorative ceramic mouldings from trench 01

The finds are summarised in tables 1.1, 1.2 and 1.3.

Generally, the finds in trenches 01 and 06 were relatively few, other than the ubiquitous CBM, but, nevertheless, they formed an interesting assemblage. The total quantity of pottery was less than 1 kg (975 grams), with a date range of 2nd to late 4th century, which mirrors that of the coins found in previous years in the vicinity. Two mortarium rim sherds of 3rd to 4th century manufacture were found (figure 1.16 and reference 8):-

- Upper Nene Valley white ware with black grits
- Oxfordshire red slipped ware with brown grits.

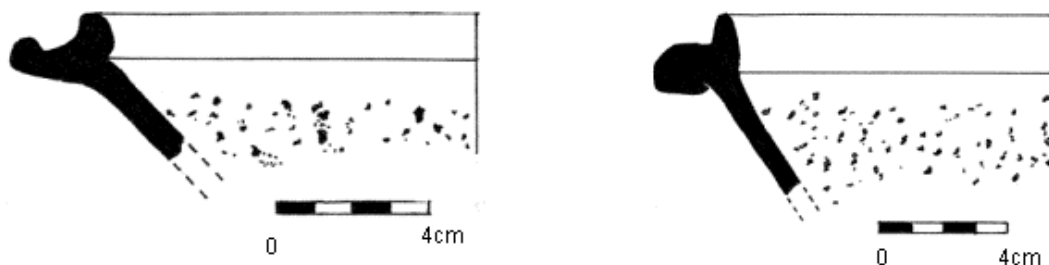


Figure 1.16 Rim forms of two mortaria found in trench 01 – (left) Upper Nene Valley white ware and (right) Oxfordshire red slipped ware

The other significant pottery finds were:-

- A 3rd century grey ware rim found in the floor gully (figure 1.17)
- A complete shelly ware rim, which was much heat affected, found nestled by a *pila* (figure 1.18)
- A base of a small, grey ware vase (figure 1.18)
- A small body sherd of late 4th century Nene Valley ware with white slip decoration (figure 1.19)
- A complete grey ware base, unusually displaying orange slip decoration of a star within two concentric rings, which had been rather crudely painted on before the final firing (figure 1.19).

No coins were found in trenches 01 and 06. A few nails and a corroded iron object from context 1.01, which was possibly a T-staple or cramp, were recovered (figure 1.20 and references 6 and 9). T-staples are believed to have been used to affix *tegula mammatae* to inner walling, thus creating flue cavities.

Edible snail shells and oyster shells were found in small quantities. Those from the ashy deposit (context 1.03) were scorched.

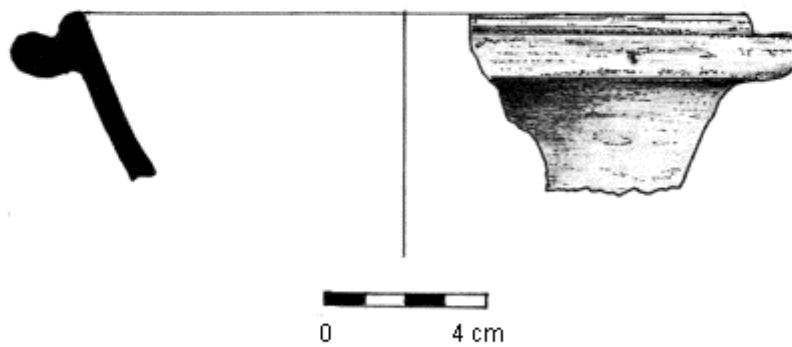


Figure 1.17 Grey ware pot sherd from gully in hypocaust floor

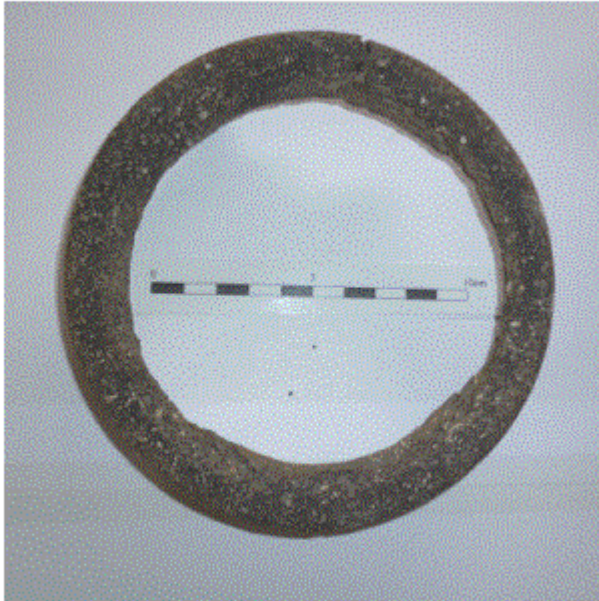


Figure 1.18 Pot from trench 01 – (left) shelly ware rim, 3rd century and (right) base of a small vase, well thrown with black slip decoration and of local manufacture, 2nd to 3rd century



Figure 1.19 Pot from trench 01 – (left) late 4th century Nene Valley colour coat ware with white slip decoration and (right) grey ware base with orange slip decoration of a star within concentric circles



Figure 1.20 Iron T-staple from context 1.01

Conclusion

The excavation of a hypocaust has been described in Section 1, providing further strong evidence for a Roman bathhouse on a southwest – northeast alignment. This may have been functional over a long period, possibly from the early 2nd century until the late 4th century. A piped hot water system may have been routed through the hypocaust. The full extent of the hypocaust and a better understanding of its relationship to the rest of the bathhouse have yet to be established through further excavation of surrounding areas.

Site Code: NW12

Trench: 01

Context: 1.01 (fill below plough soil)

Pot		Tesserae	Plaster, No.	Other/Notes
No.	Weight, g			
34	332	25 large	Total 13:-	Pot – 25 grey (3 rim), 5 buff, 1 Nene Valley, 2 red, 1 mortarium rim (red slip and brown grits)
		6 small	2 white	
			2 buff	Flint flake - 2

			1 buff with white recoat	Nail – 4 and a small strip of iron
			4 red	Oyster shell - 8
			4 degraded	Snail shell - 8
				4 of the small <i>tesserae</i> mortared together
				Iron “T” shaped item, 82 g
				Brick – 3 fragments, 50 mm thick
				Roman window glass – 2 small shards
				Roman green glass - 1
				Dome-shaped fired clay, dark grey – 3 pieces, total weight 718 g

Table 1.1 Finds from trench 01

Site Code: NW12

Trench: 01

Context: 1.03 (ashy deposit around the *pilae*)

Pot		Tesserae	Plaster, No.	Other/Notes
No.	Weight, g			
21	591	7 large	Total 5:-	Pot – 16 grey (2 rim, 2 base), 2 orange, 1 complete shelly rim, 1 late Nene Valley with white slip decoration, 1 Nene Valley mortarium rim
			2 white	
			3 degraded and blackened	Nail - 2
				Oyster shell - 11
				Snail shell - 7
				Charcoal, 17 g
				Bone fragments – 3 (small)

Table 1.2 Finds from trench 01 (continued)

Site Code: NW12

Trench: 01

Contexts: 1.02 (dark fill at SE end) and 1.04, 1.06 (robber pits)

Pot		Tesserae	Plaster, No.	Other/Notes
No.	Weight, g			
Context 1.02				
2	52			Pot – 1 grey, 1 red ware rim
Context 1.04				
		2 large, 2 small, grey		Short length of copper alloy wire, less than 1 g
				Brown bottle glass - 1
Context 1.06				
		1 large		Nail –1

*Table 1.3 Finds from trench 01 (continued)***References for the Introduction and Section 1**

1. Hughes, W and Scarle, R, "Report on a limited excavation of a Roman temple at Nine Wells, Whittlesford"
2. Scarle, R, "Report on a limited evaluation excavation of Roman building at Nine Wells, Whittlesford in 2010"
3. Hughes, W, Nine Wells 2011 report
4. Hughes, W, "Excavation of an area with possible remains of a Roman building at Nine Wells, Whittlesford, TL 447 482", May 2012
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9. Crummy, N, "The Roman small finds from excavations in Colchester 1971 – 1979", Colchester Archaeology Report 2, (item 4073)

The excavation team for trenches 01 and 06 was:-

Heather Berry, Lynne Cornelissen, Adam Lister (trench 06), Joe Rey, Rodney Scarle, Shiela Sell, Robert Skeen

Thanks to all for the efforts expended.

Section 2 – Excavation of trench 02

P Cornelissen

Excavators: Bill Hughes, John Street, Lynne Cornelissen, Peter Cornelissen and Adam Lister

1. The proposal for trench 2

The decision of where to place trench 2 was based upon the GeoFiz survey carried out in 2010. The intention was to determine the boundaries of the possible bath area that was first found in the two 2010 trenches B235245 and YX235245. Within both these trenches a probable floor level was found at a depth of approx 1.2m.

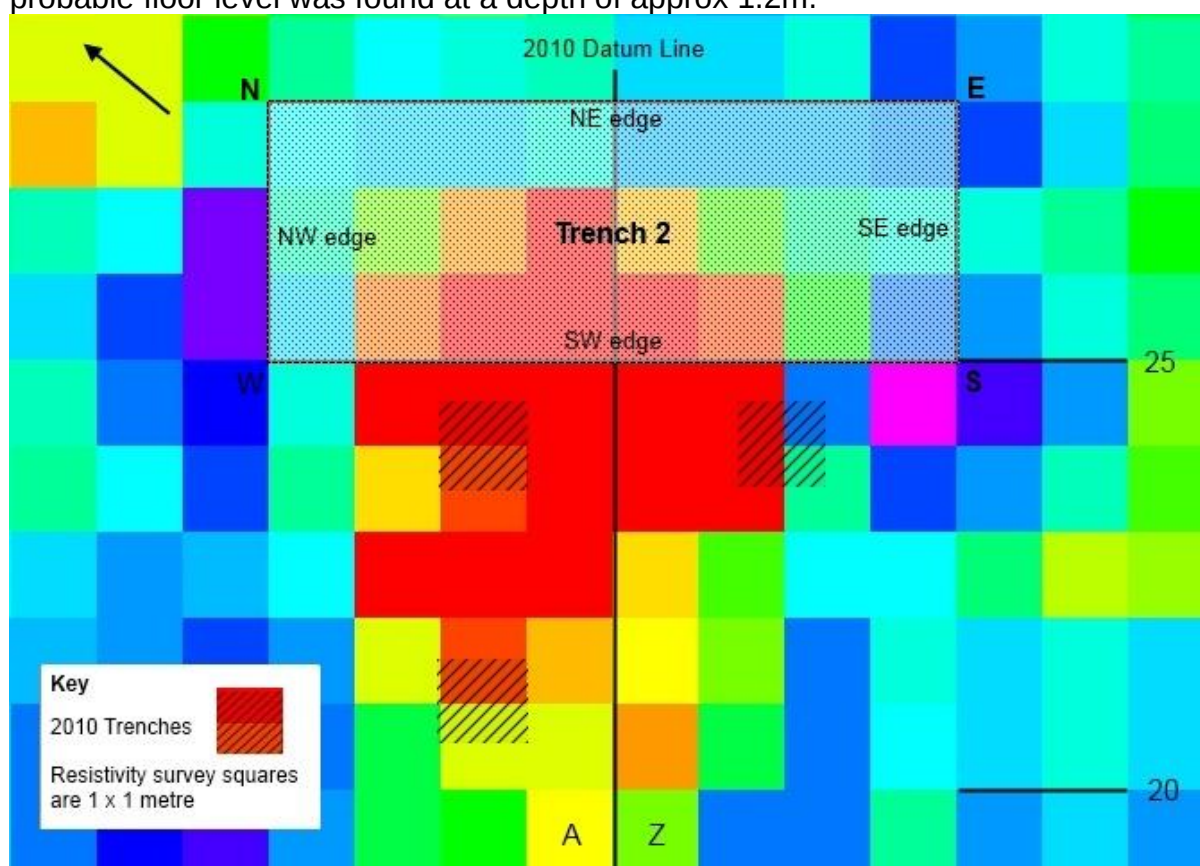


Figure 1: *The trench would be 8m x 3m.*

2. Notes about the text

The excavation of trench 2 revealed a feature that is a deep cut in natural chalk approximately 90cm wide and just over 6 metres in length with a channel joining it to the adjacent (presumed) cold bath. As the use of this feature was not determined, for want of a better word, I have used the term 'cut' when referring to it

3. The first cut and initial observations – Contexts 1 and 2

Context	Depth
1	40-50cm
2	70-80cm

As at least 40cm of top soil was disturbed through many years of ploughing a mechanical excavator was used to take us down to the first contexts. This excavation was supervised and at 40-50cm a layer of chalk (context 1) was reached along the NE, SE and SW edges. However, there was also a distinct area of disturbed soil set in from those three edges. The mechanical excavator was then used to excavate down within that disturbed area to a depth of 70-80cm (context 2).

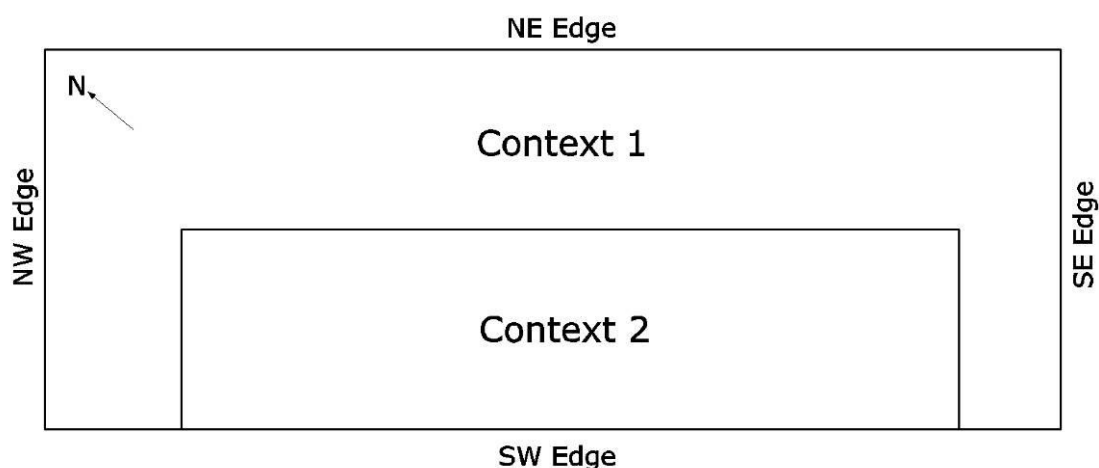


Figure 2: *Mechanical excavated context layers*

The area exposed in context 2 appeared to be of compacted sand/gravel /mortar and too hard to reasonably attempt trench wide trowel excavation. Therefore, hand trowelling was performed whenever possible, but otherwise layers were loosened and removed by spade and mattock.

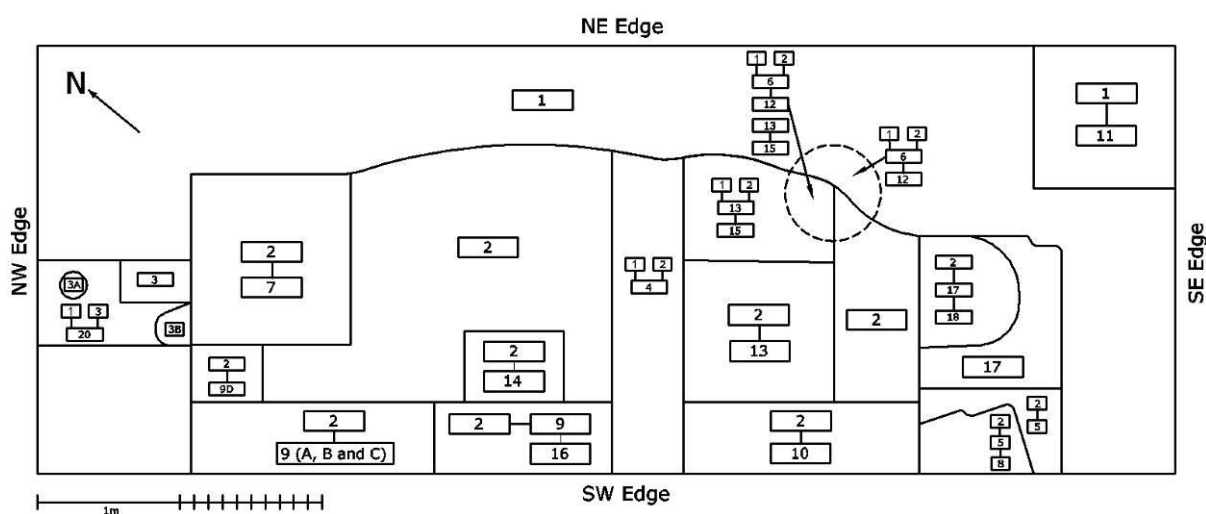


Figure 3: *The contexts (a larger version of this diagram is in appendix 1)*

Three areas of initial interest had been exposed, one showing slightly darker features in the chalk edge on the NW edge (context 3) and two showing possible burning, one in the

middle of the SW edge (context 4) and the other to the S corner (context 5). It was therefore decided that each area would proceed as individual excavations.

Other contexts followed on from there as areas were exposed and possible features seen.

4. Contexts 3, 3A, 3B and 7

Context	Depth
3/3A	45cm
3B	85cm
7	145cm

The structure of the disturbed ground in context 3 was part compacted and collapsed chalk infill and part coarse gravel/sand/mortar. Initially exposed were a possible post hole and a slot (see figure 3). There were no finds in these to date them apart from the general building materials found elsewhere in the demolition layers, including a piece of painted wall plaster.

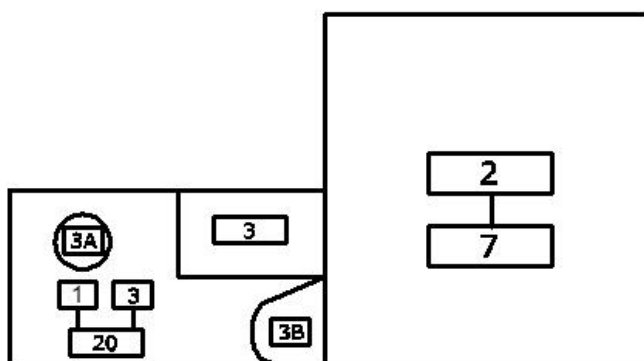


Figure 4: Context 3 and 7 plan

At a slightly lower depth, an area of looser chalk was excavated revealing an undercutting niche. Initial thoughts were that this was a feature, but was later found to be of no significance, just part of the chalk infill over a wider clay lens.



Figure 5: Context 3/3A showing possible post hole and slot



Figure 6: Context 3B showing a niche undercutting the chalk face.

As context 3 had no clear boundaries or layers, context 7 was then commenced and this was generally infill consisting almost entirely of chalk with a small number of building material finds (less than 2%). The edges on the NE, NW and SW sides of this context were chalk and at this stage it was not possible to conclude that they were natural. The base natural of context 7 was reached at a depth of approximately 145cm.

While excavating context 7, and the adjacent context 9D, a clay lens was revealed which was exposed in the initial excavation by the digger and during the early stages of context 3, but was not noted until these contexts. However, this led to context 20 which revealed that the clay lens was a significant feature and showed that the chalk edges in context 3 were in fact not natural edges but was re-deposited chalk lying over a clay lens.

General finds in contexts 3 and 7 were building materials, tesserae, pottery, plaster, oyster and a small fragment of glass. However these, like in most contexts, were mixed throughout, hence again confirming the general demolition of the site.



Figure 7: *Context 3 pottery*



Figure 8: *Context 3 plaster*

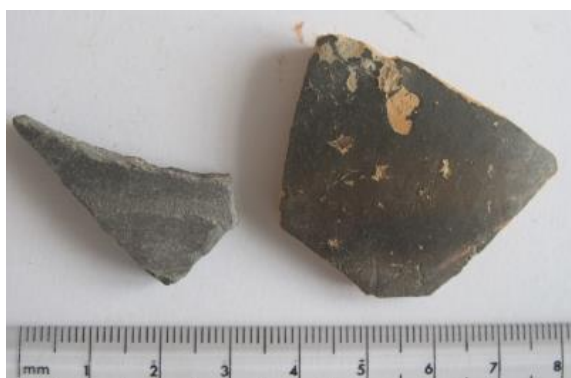


Figure 9: *Context 7 pottery*



Figure 10: *Context 7 plaster*

5. Context 4

Context	Depth
4A	143cm
4B	140cm
4C/4D	104-108cm

Context 4 was chosen as it too had a faint, but noticeable area of burning. However it too disappeared quickly and was later seen in the SW section as excavation proceeded. It was then decided to extend the cut to the full width of context 2 to the NE edge of context 1. This revealed a number of very large lumps of chalk to the SW half of the cut. Excavation was taken as far as possible without removing the lumps of chalk. It was not clear at this stage what these represented and only on later excavations of context 15 & 17/18 where their relevance was understood. As with contexts 8 and 10, there was a chalk edge immediately adjacent to the SW edge. The excavation of context 4 led to the decision to excavate contexts 9 & 10 as there were no clear edges and the chalk/mortar surface appeared to run NW and SE.



Figure 11: Context 4 in progress

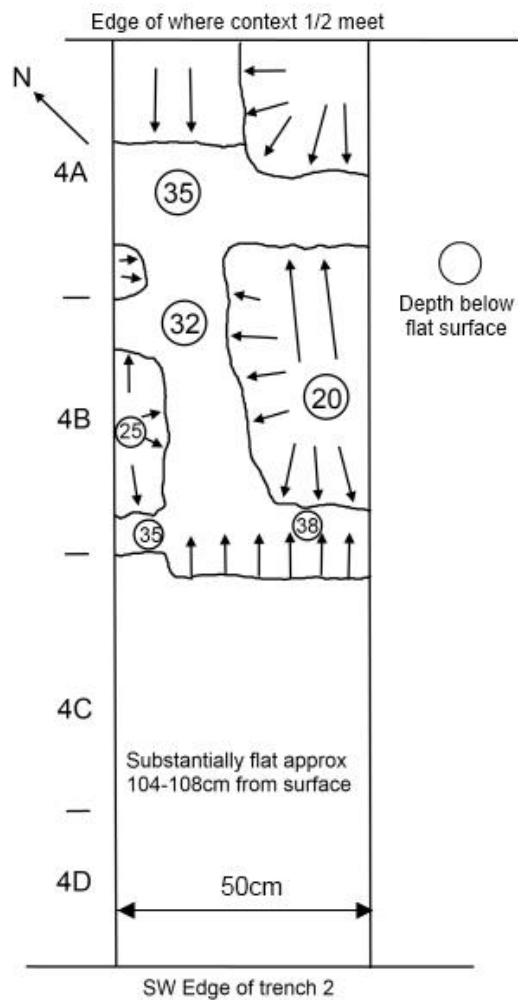


Figure 12: Context 4 plan

Finds in this context were quantities (approx 3.6kg) of building materials, a few shards of pot and bone mixed throughout the context.



Figure 13: Context 4 grey ware



Figure 14: Context 4 grey ware profile

6. Contexts 5, 8 and 10

Context	Depth
5	97cm
8	130cm

10	97cm
----	------

The burning that was visible in context 5 was found to be part of the same tipping sequence observed in the section and continued down. After initial scraping, the consistency of the deposit was found to be very coarse but relatively compact and without noticeable context changes on a horizontal plain.

A mattock was used carefully to loosen the compacted deposit until a levelling mortar layer of approximately 2cm was found sitting on the natural chalk layer at 95cm with this mortar layer rising on the SE edge by approx. 10cm. However, the mortar layer did not extend over the whole of this level and a cut into the natural chalk was revealed. This was context 8, which was then excavated revealing a cut in the chalk that dropped to the SW down to a depth of 120cm at its lowest point. This appeared to be continuing down towards the SW corner so its full depth was not ascertained.

The cut revealed by context 8 also had a mortar lining so was part of the original construction, but what its purpose was could not be determined, especially as it was not particularly even. The NW corner of context 8 also revealed that there was a chalk edge about 5-10cm from the edge of the trench. This led to context 10 being excavated, a 50cm cut along the SW edge between contexts 8 and 9. This revealed that the edge of the possible cold bath ran the whole length of context 10 along the SW edge. The levelling mortar layer also covered the whole of the top of the in-situ chalk.

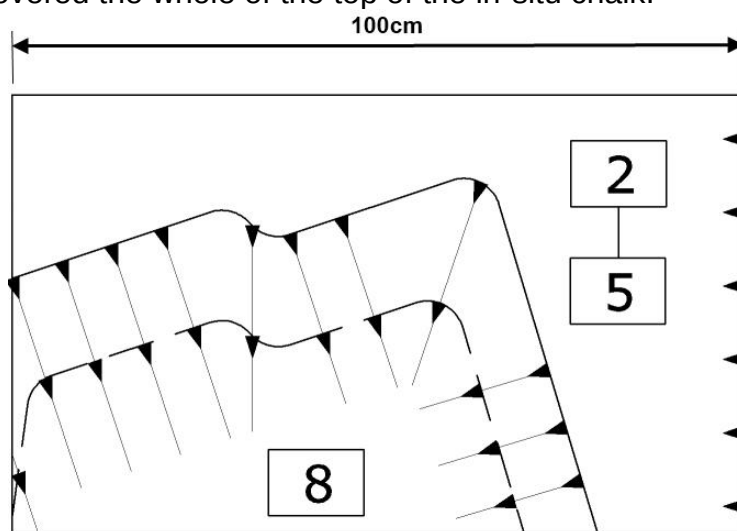


Figure 15: Context 5 and 8 plan

Contexts 5 and 8 also revealed alternate layers of burning and gravel in the SW section (see SW edge section drawing in Appendix 2) and these were certainly contemporary as there was no discernible disturbance between the layers. This is based upon the fact that the layers were not discernible during the context excavation, no matter how carefully attempted in the later adjacent context 17, so the layers were very easily mixed. In context 10 the layering appeared more horizontal with larger lumps of chalk.

These images of the SW edge near the S corner show a distinct layering of deposits below the plough layer which is tipped towards the North. This was very similar to that observed during the 2010 excavations in trenches YX235245 and B235245.



Figure 16: *Trench YX235245 from 2010 looking SW*



Figure 17: *Trench B235245 from 2010 looking SW*



Figure 18: *Trench 2, context 5 from 2012 looking SW*



Figure 19: *Trench 2, context 8 from 2012 looking SW*

The finds were the usual demolition building materials, tesserae, pot etc. within all the layers (approx 20%). There was a comparatively high concentration of tesserae (84) including 4 joined. These 4 tesserae were joined by an opus signinum mortar suggesting that although they were of relatively poor quality and were intended for a wet surface. This suggests that the chalk layer found in contexts 5 and 10 was probably from a walkway between the cold bath to the SW of trench 2 and the cut revealed by the excavation of trench 2. The only other notable point is that there was a slightly higher concentration of flint cobbles at each end of context 10, but none of these were in-situ.



Figure 20: *Joined tesserae from context 10*



Figure 21: *Opus signinum mortar*

No particular find would give exact dating, but the pottery finds suggest the demolition occurred in the later Roman period.



Figure 22: *Various pottery shards from context 5 (note very clean NVCC)*



Figure 23: *Large grey ware pottery base from context 5*



Figure 24: *A large nail from context 10*

7. Context 9A, 9B, 9C and 9D

Context	Depth
9A, 9B, 9C and 9D	Approx. 104-108cm

Context 9, like 10, was excavated to determine how far the edge of bath continued along the SW edge of trench 2.

It was extended initially for 100cm NW from context 4 with the fill being the now typical demolition mix down to a hard mortar layer as seen on where the edge appeared to disappear SW beyond the trench edge. There was an obvious cut down into the chalk starting 30cm from the NW edge of context 4. This was later excavated as context 14. Context 9 was then extended in 2 stages (9B and 9C) as far as the NW edge revealed during the initial digger excavations. The chalk edge was not visible at this stage however the levelling mortar layer was reached throughout the whole length to the NW edge and like the SE edge the mortar rose up the side by approx. 10cm.



Figure 25: Context 9B/C mortar layer



Figure 26: Context 9C mortar edge

To determine if the edge of the bath did not extend beyond the 100cm from context 4, 3 sondages were cut into the SW edge of 9B and 9C to a depth of about 30cm.

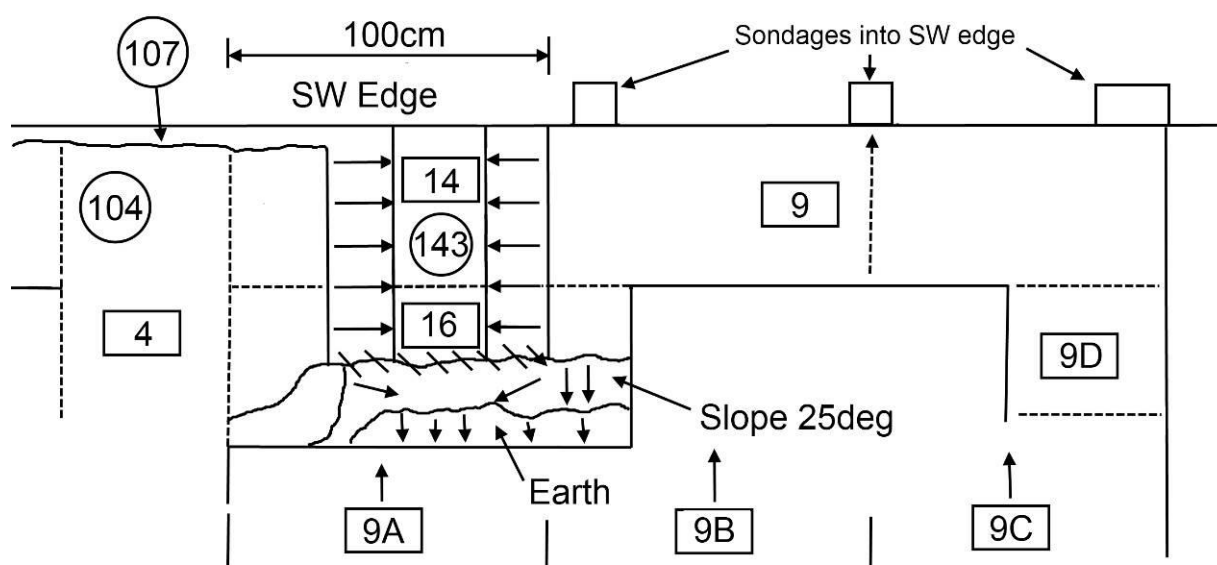


Figure 27: Plan of contexts 9, 14 and 16

These revealed that the edge was not present at least at these depths. It was not feasible to cut any deeper as the trench edge was not stable enough to be practical.

Context 9C exposed an area extending NE which was unclear. It was therefore extended as 9D to meet context 7. This context exposed a clay infill slope and the same clay lens found during the excavation of context 7, which was later excavated as context 20.



Figure 28: *Trench B235245 from 2010 showing NW chalk edge*



Figure 29: *Context 9D*



Figure 30: *Context 9B sondage*



Figure 31: *Context 9C sondage*

Finds in context 9 were mainly building material with a number of tesserae but included a piece of painted wall plaster and shards of pottery.



Figure 32: *Painted wall plaster on opus signinum in context 9C. Note the mortar lying on top.*

8. Context 14 and 16

Context	Depth
14	143cm

16	143cm
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As previously mentioned, context 14 was excavated to determine the extent of the chalk edge. With the sondages in context 9 showing there was no edge present, although not conclusive, it suggests that the chalk edge does in fact turn SW and it almost certainly lines up with the NW chalk edge revealed in trench B235245 from the 2010 excavations.

Excavating context 14 also revealed that the cut went NE through the chalk bulk exposed by contexts 4, 9 and 10. Therefore context 16 was excavated to expose this cut. See context 9 section for a plan which includes contexts 14 and 16.



Figure 33: Context 16 looking NW



Figure 34: Context 14/16 looking SW

Towards the NE of context 16, the chalk dropped again to a lower level. This was not excavated to natural due to the large lump of chalk NE of context.

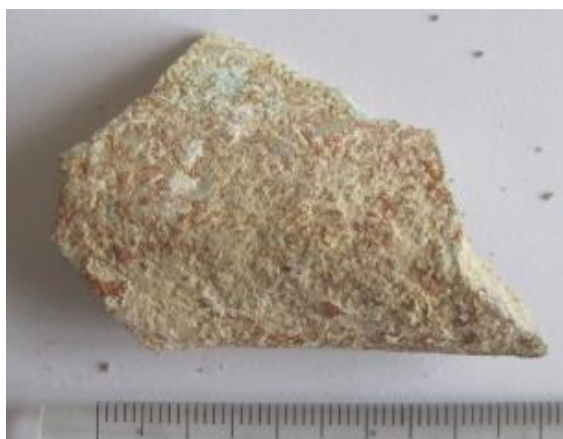


Figure 35: Plaster from context 16



Figure 36: Flint cobbles from contexts 14/16

Finds in context 14 and 16, apart from demolition rubble, included a number of flint cobbles suggesting there was a wall base close by, but none were found in-situ. Also, a piece of plaster showing flecks of blue/green which is from a corner.

9. Context 11

Context	Depth
11	Approx. 90cm

Context 11 was an area in the SE corner of context 1 which suggested a feature may exist through a change in the colour of the soil. However, excavation of this trench, while

exposing good sized pieces of opus signinum, brick, tile and even a piece of Samian pottery, it was soon clear that this was simply a depression in the chalk with demolition rubble. It was at a higher level than all other significant features suggesting that it may be contemporary with the Antiquarian robber excavations.



Figure 37: *Context 11 showing deposits*



Figure 38: *Context 11 Samian*

10. Context 6 and 12

Context	Depth
6	Approx. 50-60cm
12	Approx. 70-80cm

Context 6 was initially excavated as there appeared to be a discolouration in the surface after the mechanical excavations were completed. There was nothing particularly significant when excavated further down, however context 12 suggested there may be a feature, but this was revealed as a slight concentration of flint cobbles but nothing more. No further features were noted apart from an uneven chalk edge to the NE.

There were no significant finds in either context.

11. Context 13 and 15

Context	Depth
13	Approx. 130cm
15	Approx. 142-156cm

Context 13 was excavated to determine the profile of the possible cut exposed by context 4 and 7. It was soon found that this context was almost entirely filled with a very large lump of chalk.

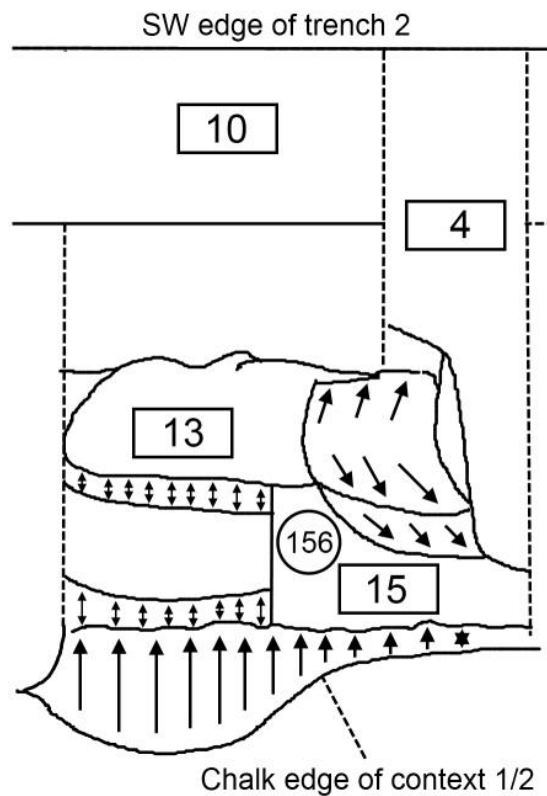


Figure 39: Contexts 13 and 15



Figure 40: Large lumps of chalk in context 13

Cleaning revealed that this lump was in fact more than one and by their appearance and the fact that soil and gravel underlying the chalk contained building material finds it was obvious that they had fallen into place. It was noted that one of the top pieces had a flat surface lying downwards on top of another.

Towards the NE edge, the chalk face was now clear to see and so this was cleaned back to reveal an uneven face. It was likely that therefore that the pieces in context 13 had in fact fallen, or been pushed, into the cut. It was also clear that the natural was below the lumps of chalk, so context 15 was excavated. This consisted mainly of sand/gravel /mortar and a quantity of demolition building material; it also contained large pieces of stone tile, probably from a roof. It also extended across the NE end of context 4.



Figure 41: *Chalk edge by context 13 and 15 viewed to the NE*



Figure 42: *Context 13 looking NW*



Figure 43: *Context 15 natural*



Figure 44: *Stone tiles from context 15*

Context 15 reached natural at a depth varying slightly, but between 142cm at the NE edge to 156cm adjacent to the lumps of chalk.

Reaching the same natural depth as that in context 7 suggested that there was a cut running from the NW to the SE. To see the extent of this, context 17 was excavated.

12. Contexts 17 and 18

Context	Depth
17	102cm
18	143-147cm

The excavations of context 7 and 13/15 suggested that there was a large cut in the chalk, separated from the possible bath to the SW and joined by a channel revealed by contexts 14 and 16. To find the SE end of this cut, context 17 was excavated down to the same depth as context 5.

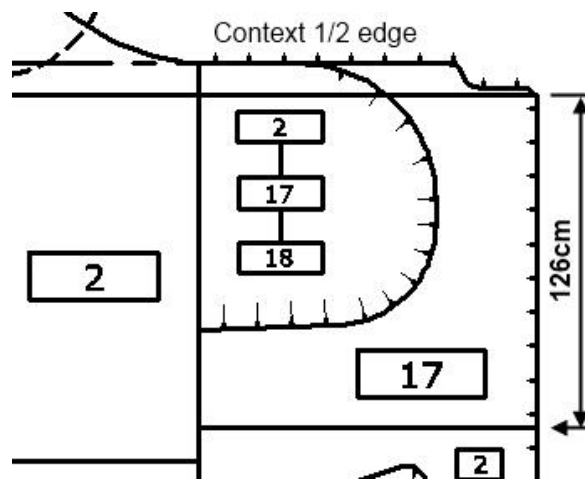


Figure 45: Context 17 and 18

The significant find in context 17 was the only in-situ archaeological feature of a small amount of flint cobbles. These were on the SE edge of the SW edge of the chalk cut and were in degraded mortar. The mortar also continued along the chalk edge to join with that in context 5.



Figure 46: Flint cobbles revealed in context 17



Figure 47: Loose surface surrounded by in-situ chalk in context 17

The NE vertical flat edge of the context appears to be part of the original construction of the bath house and extended for approximately 45cm from the S corner before becoming uneven. The fill of context 17 was the same as context 5 with alternating layers of burning and sand, gravel and mortar.

Also revealed was a looser surface to the NE of the context. This became context 18 which was excavated down to 143-147cm with an in-situ chalk mortar lined cut edge. This is in line with the cut edges and natural base levels in both contexts 7 and 15 determining that they are almost certainly a single cut.

Context 18 was almost entirely a sand and gravel mix with a few finds of building material. It did not have the layers of burning as seen at the same levels in context 8 or above in context 17. The chalk cut to the SE was smooth and rounded but not vertical and was reminiscent of the round end of a present day bath.



Figure 48: Context 18 looking NW

Also of note was the fact that the NE chalk face was not vertical, but had an 8cm overhang. The consequences of this are discussed in the conclusions.

13. Context 20

Context	Depth
20	Approx. 96cm

Initially it had been thought that the chalk under context 3 was in-situ, but the excavation of contexts 3, 7 and 9 exposed glimpses of a clay lens underneath the chalk and also the niche, in context 3, appeared to undercut the chalk.



Figure 49: Context 20, looking NW before excavation showing the clay lens.

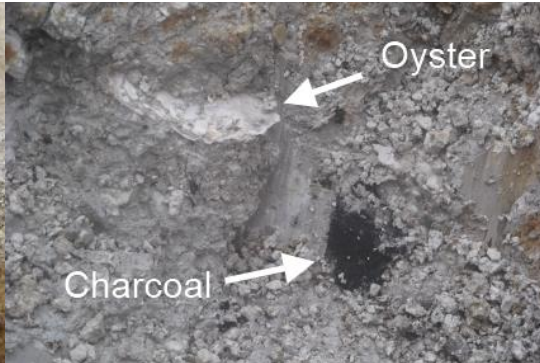


Figure 50: The clay is not clear due to chalk dust, but the oyster and charcoal are visible.

It was decided that context 20 would be excavated with the aim to clarify the chalk face at this end of the trench.

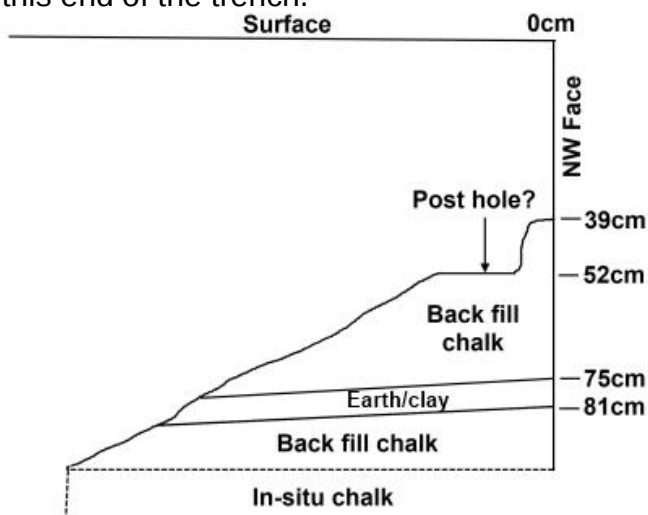


Figure 51: The SW face of context 20

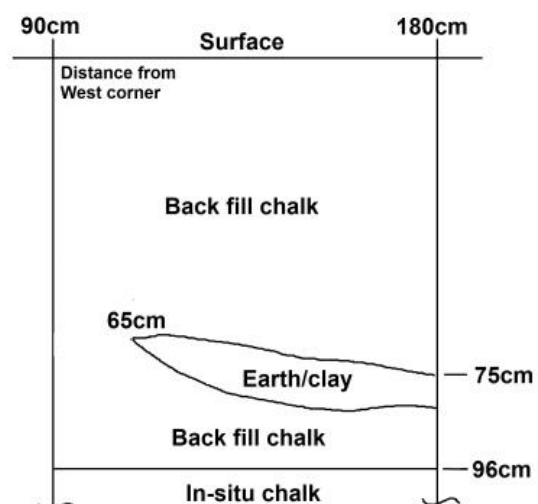


Figure 52: The NW face of context 20

The chalk was extremely compacted and initially it was thought that it was in fact in-situ, but at approximately 65cm from the surface, the chalk layer revealed the clay lens in fact continued to the very NW end of the trench. In this lens were found oyster shells, charcoal and a shard from the base of a Samian bowl, possibly a Dragendorff 38 Haselburg form. The significance of the Samian pottery in this context is discussed in the conclusion.



Figure 53: *A shard of a Samian bowl in context 20*



Figure 54: An example of a Dragendorff 38 Haselburg

Below this lens, it was almost impossible to identify if it was back filled chalk or natural in-situ chalk. As a best guess, natural appeared at approximately 96cm.

14. Final investigation of context 1

Before the trench had to be re-filled, the surface of context 1 adjacent to areas of bulk in context 2 that had not been removed was scraped to determine if there were any signs of a water supply channel to the bath and no further removal of natural chalk was found.

15. Conclusion

Trench 2 was not an easy trench to excavate. With more people and more time it may have been possible to expose the whole of the cut, but the large lumps of chalk would be difficult to remove by hand. However, while there was little in the way of in-situ archaeological structures, apart from the small flint cobble remains in the East corner of context 17, and no other evidence of walls, the excavation provided dimension to the cut and also established the NE edge of what is probably a cold bath.

A number of theories were expressed during the excavation as to what the cut was, ranging from a latrine to female pool. As the excavations proceeded, the probability of a latrine was rejected since the channel running between it and the cold probable cold bath would let effluent out. So the remaining possibilities are that it was a well, a bath basin (a separate washing area from the main bath), a cold plunge pool or even a separate female bathing pool.

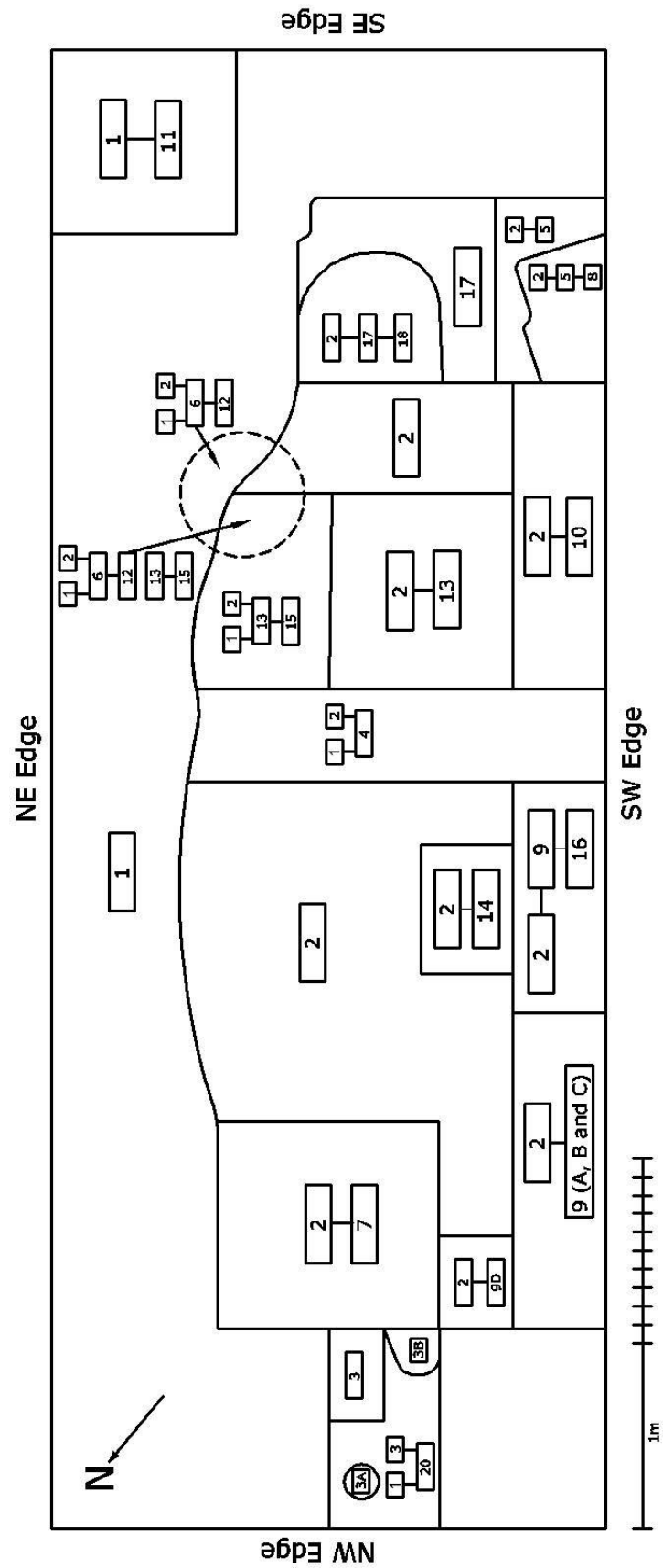
Without further excavations, it is not possible to determine exactly what the cut was, and even with that it may not be resolved, but as the chalk to the NW was not in-situ, it is possible if that area was excavated, then it could be resolved.

A clue to the destruction of the bath house is also visible in 2 ways. Firstly, considering the overhang of the NE edge seen in context 17 suggests that the chalk may have slipped over the centuries to such an extent that the NE walls collapsed as seen by the very large lumps of chalk that had fallen into the bottom of the cut. If this was demolition, it would be unlikely the chalk would have collapsed so far into the cut. Secondly, there were obviously a number of fires, all of which are likely to be contemporary as the layering exposed from the SE of the trench would be very unlikely to have been present if they had occurred at different times. Another point to note is that the layering was towards a Northerly direction so could be related to a prevailing wind assisting the fires.

Future excavations could consider extending, NE to determine the extent of the re-distributed chalk and see if any evidence of a water supply can be found. Also, although trenches B235245 and YX235245 found the NW and SE edges of the probable cold bath, the SW edge was not found so an investigation for that would at least determine its extent.

A possible layout of this area of the bath house can be seen in appendix 3.

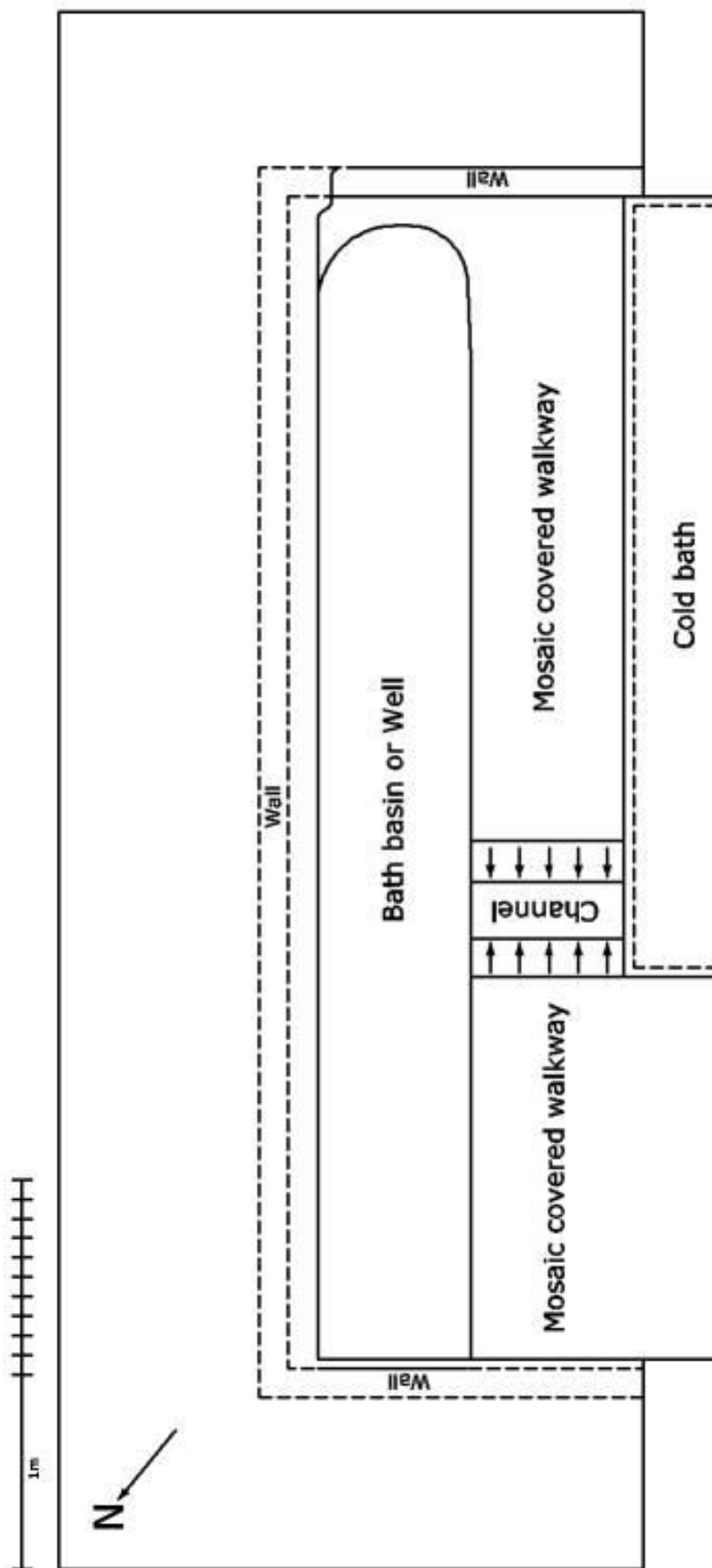
16. Appendix 1 – Trench 2 plan



17. Appendix 2 – Trench 2 SW edge section



18. Appendix 3 – Possible layout of the area of trench 2



Section 3 – Excavation of trenches 03, 04 and 05

Trenches 3, 4 & 5

Trenches 3, 4 and 5 were opened to explore resistivity survey results that suggested a linear feature running in a north westerly direction and a possible wall feature to the south east of this. Trenches 3 and 4 were placed to bisect the linear feature at points 20m apart.

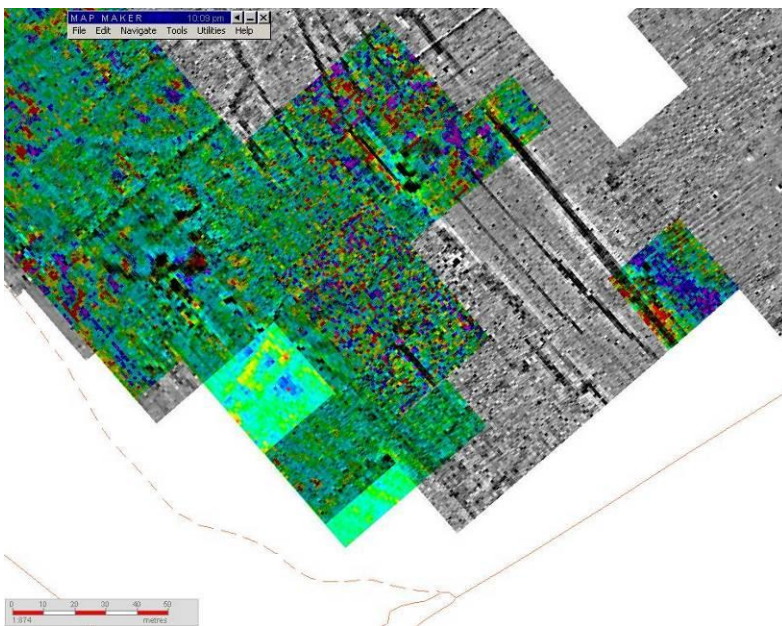
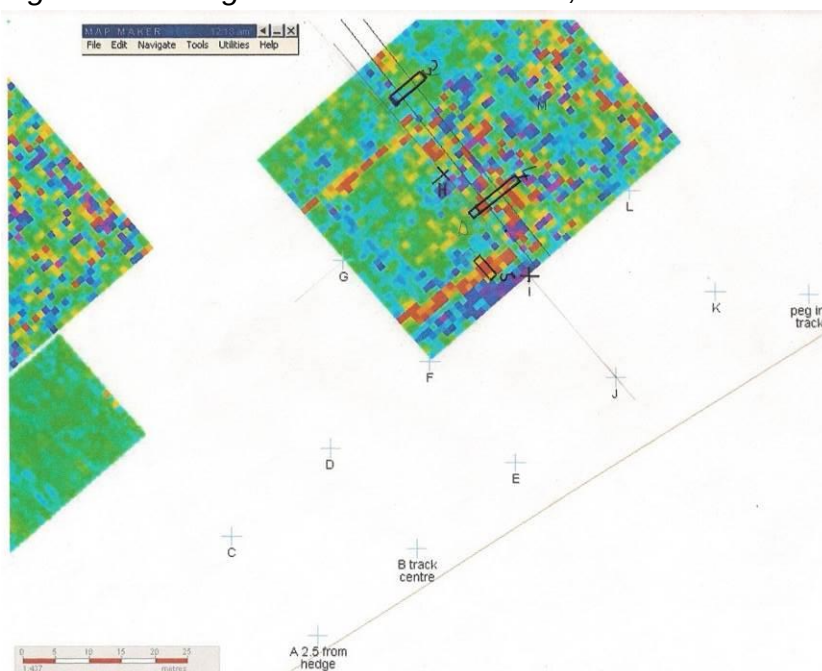


Fig 3.1: Area investigated by trenches 3, 4 and 5 is shown

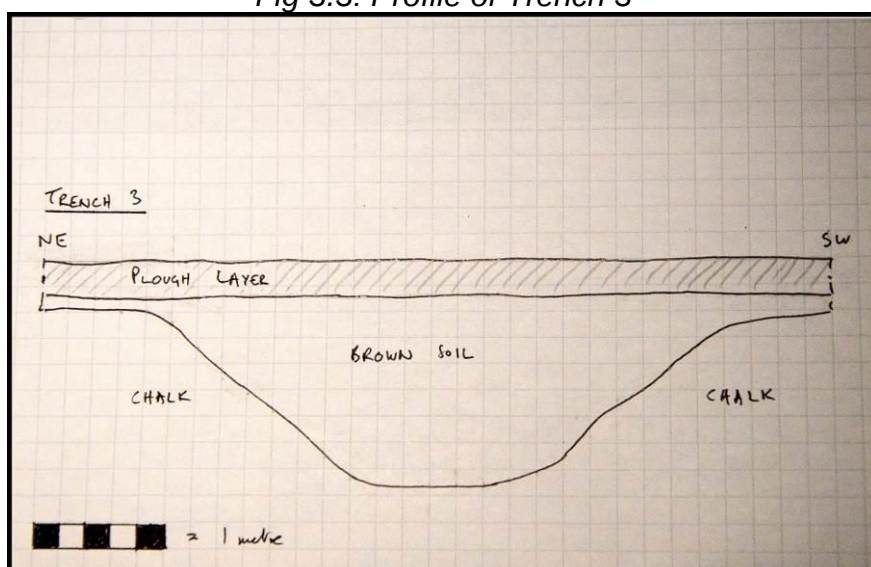
Fig 3.2: Showing locations of trenches 3, 4 and 5



Trench 3

The trench was 6m long, 1.5m wide and was mechanically excavated to just below the plough soil level. This initial excavation revealed natural chalk at a depth of around 45cm below the surface that was cut by an area filled with brown soil. The sides of the cut in the chalk were clearly visible at the higher level but became progressively less clear as the depth of the excavation increased. This was because the edge of the chalk appeared more broken and mixed with soil. The excavation showed a U-shaped profile ditch/cut that was around 4.5m wide and 1.57m at its deepest point. After the excavation was completed the base of the trench was augured in two places to test the nature of the underlying chalk/soil mixture. This found that the chalk /soil mixture continued for a further 45cm and was then replaced by solid chalk. It should therefore be noted that the trench depths shown below and in annex A may underestimate the depth of the cut by this amount.

Fig 3.3: Profile of Trench 3



Finds

The fill of the trench contained broken brick and tile and some pottery (see list of finds at Annex B). More unusual was the significant amount of animal bone (2.64kg) and a single piece of semi-polished grey/black stone. This was initially thought to be marble but Dr Nigel Woodcock of the Sedgwick Museum has suggested that this is likely to be limestone from Alwalton near Peterborough, which has a similar appearance to Purbeck marble.

There was no apparent evidence of stratigraphic layering under the plough layer and it is possible that the trench had been filled in quite quickly. All finds appeared equally spread – bones and other material were not confined to any particular depth. The pottery and tile

found seemed to be representative of the contents of surrounding surface soil and might have found its way in as a result of trench in-filling at virtually any point in time.

The piece of marble, if Roman, may indicate a high status structure in the area, although nothing similar has been found elsewhere on the site. The bone seemed to be quite fresh when excavated with the spongy bone in particular appearing white and almost translucent in some cases.

Fig 3.4: Some finds from trench 3



3.4.1 Various Roman potsherds including mortarium



3.4.2 Piece of grey semi-polished limestone – flat on both sides

Trench 4

The trench (10m by 1.5m) was placed across the same linear feature as trench 3 but extended further to the NE in order to explore some additional survey features. The linear feature/ditch was clearly exposed by the mechanical digger and was seen to align with trench 3. However, the cut was narrower (3.5m wide) and shallower (0.52m deep). Little was seen to the NE of the trench other than three slight parallel lines which appeared to be shallow plough marks cutting into the natural chalk. As with trench 3, there was no visible evidence of stratigraphic layering. It was therefore decided that little would be gained by any further excavation of trench 3.

Summary for trenches 3 and 4

We reviewed the potential dating evidence for trenches 3 and 4. The ditch-like feature may be old but we could not discount the possibility that the feature is comparatively modern. We considered several possibilities:

- The ditch may pre-date the Roman period and might possibly be connected with the “antient wall” constructed of flints and pebbles that was demolished in the 19th century (*Cambridge Chronicle*, 13 November 1818). The wall was reported to stretch for 30 rods (151 metres) that was associated with the then standing tumuli. It does not seem to be an enclosure ditch: it is entirely straight and lacks corners. The cattle bones may indicate a feasting site but they did not appear to be particularly old. We found no pre-Roman artefacts.
- It may be Roman, but the Roman material found in trenches 3 and 4 shows no particular stratigraphy and was spread equally in all levels of the fill, suggesting either a rapid in-filling or some re-use of the ditch. The feature is very straight but the width and depth appears to vary: a feature which is hard to understand in the context of other Roman work on the site.
- It may be more modern. The cattle bones found at all levels in the trenches appeared to be comparatively fresh and not stained brown like those found in the more obviously Roman occupied areas. However, the bones are broken and do not therefore seem likely to be the result of some mass cattle burial in modern times (e.g. such as those following the BSE outbreak). We note that WW1 and WW2 civil defence trenching activity is not unknown in the Cambridge area.

On the basis of the evidence revealed by our excavation, we could not reach any firm conclusion on the age or purpose of the linear feature.

Trench 5

The resistivity survey (figure 3.2) indicated the possibility of a wall and trench 5 (3m by 1.5m) was placed to cut across this feature. The plough soil was removed by mechanical digger and revealed what seemed to be unbroken natural chalk. Because the resistivity results were so strong, the trench was extended at both ends and the chalk was augered in several places. Neither the trench extensions nor the augering found anything other than solid and natural chalk. A separate note on the augering carried out in trenches 3, 4 and 5 is attached at annex C.

Annex A Trench 3 Profile measurements

Distance from NE (m)	Depth (m)
0.4	0.41
0.6	0.41

0.8	0.40
1.0	0.53
1.2	0.72
1.4	0.88
1.6	1.05
1.8	1.21
2.0	1.28
2.2	1.39
2.4	1.52
2.6	1.57
2.8	1.57
3.0	1.53
3.2	1.51
3.4	1.50
3.6	1.48
3.8	1.42
4.0	1.30
4.2	1.23
4.4	1.12
4.6	1.02
4.8	0.81
5.0	0.70
5.2	0.57
5.4	0.54
5.6	0.54

Annex B

List of material found in Trench 3

Brick and tile	11.46kg
Bone	2.64kg
Potsherds	6 (including piece of mortarium)
Marble	1 piece of grey/black marble. The piece is flat on both sides. Polished, but not to high degree. Fragment size 6 x 5.5cm and 2.3cm thick
Snail shells	ca. 20 (large)
Charcoal	11 fragments

Annex C

Note on Augering of trenches 4 &5, Nine Wells 2012 by Bill Hughes

This augering was done because no archaeological features were revealed in these trenches that were indicated on the resistivity survey. That survey showed high resistance readings possibly indicating a wall on both sides of trench 4 and in trench 5.

Trench 5

1. 50cm North West outside of trench, chalk at 27cm depth.
2. At centre of trench, augered to depth of 60cm, all chalk. N.B. JCB dug depth was 40cm, so this means chalk at depth of 1metre.
3. Outside of trench 1 metre to North West from North West end of trench, chalk at 30-40 cm.
4. 3 metres from geofiz survey point I on grid line FI on centre line of trench, layer of chalk +sandy chalk at 40-50cm depth.
5. At 1.5 metres from position I on line FI, chalk+sand layer at 32-50 cm depth (from ground level).

Trench 4

1. On NE side of trench 7 metre from grid line HI where there was earth (probably remnant of plough line), augered to depth of 40cm, chalk at 30-40cm.

I also dug out sample from bottom of trench 5 and I am convinced that it was in situ chalk.

Geofiz team also did a resistivity slice across Trench 5. This also did not show any wall etc.

All this augering confirms that there are not walls/archaeological features.