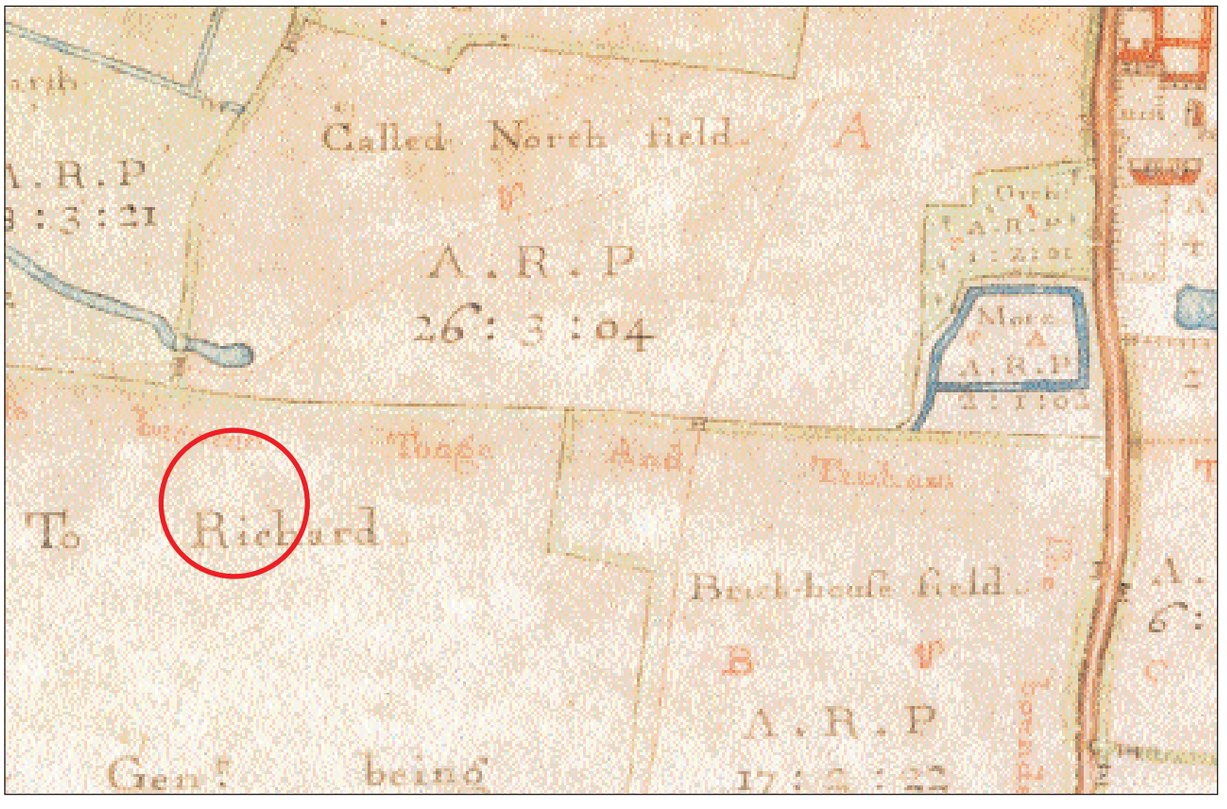

An archaeological investigation of the Roman octagonal bath-house at Bax Farm, Teynham, Kent
2006 &2009

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Summary

In the summers of 2006 and 2009 about forty archaeological students and members of the KAFS met at Bax Farm, just to the west of Faversham, and adjacent to Watling Street, to investigate the probable site of a Roman villa found by field-walking and test-pitting as part of the Swale Archaeological Survey by Paul Wilkinson in 1998 (Wilkinson 2000).

The first evaluation trench in August 2006 focussed on the highest concentration of surface finds and exposed a cornucopia of archaeological features including the concrete base of a large horizontal corn mill, a sunken road or 'hollow-way'. Anglo-Saxon buildings and the remains of a massive stone-built Roman octagonal bath-house.

The masonry structure, c.14.5m across, enclosed a central octagonal frigidarium pool over 4m across. Some rooms had underfloor heating, with alcoves containing the remains of hot plunge baths. The excavated base of a rectangular pillar suggests the inner octagon of the bath-house was arcaded.

Roman coins found in situ suggest the building was built at the time of Constantine (330-335AD). In the early 5th century the bath house was rebuilt and a smaller circular pool built over the central plunge bath. The water brick conduit was blocked off, and a lead pipe - still in situ- installed to drain the pool and fountain whose base, decorated in blue fresco still survives.

This elaborate and exotic building may have its roots in buildings constructed in Trier and Rome by Constantine as Christian baptisteries in the 4th century or even earlier exotic bath houses in the eastern Mediterranean.

In Roman Britain octagonal buildings of this type are to be found in the West Country at Lufton and Holcombe, and at Loose near Maidstone. Indeed there may be others investigated but not as yet published.

The function of these octagonal buildings has often been discussed (Todd & Henig et al) but most experts keep coming back to the idea that the astonishing octagonal frigidarium in the centre could have been used for Christian baptism or even Jewish sacred bathing, a scenario reinforced by the finding at Bax Farm of a Roman lead seal probably depicting the Jewish menorah.

Most rooms at Bax Farm had underfloor heating as well as alcoves which contained hot plunge baths. It is logical to assume that above the central pool and its fountain was a vaulted ceiling carried on arcading or columns.

Some elements of a unique stucco ceiling had survived, and there was probably a large dome set on pendentives that would have echoed and reflected the sound of cascading water from the central pool with its statue facing the entrance hall, changing room or narthex.

Ceilings such as these would have been possible with the internal columns or arcading bearing the vertical pressure, and the surrounding ground floor rooms with their walls set as 'spokes' providing a buttressing effect to counteract the outward thrust of the central clerestory tower.

This is very sophisticated Roman engineering indeed and belongs more to the late Roman and Byzantine Mediterranean world rather than on the edge of Empire of Roman Britain in the mid 4th to the early 5th century.

Paul Wilkinson

2. Aims and Objectives

The Research Design was written prior to the investigation starting and concerned an area of land at Scotlands Field, Bax Farm, Teynham, near Faversham in Kent. The site centre is taken as TQ 9480 6421. This paper is an interim report based on the format of a Archaeological Post-Excavation Assessment with some additional specialist reports still awaited.

The land is in the ownership of Oliver Doubleday and is currently under arable cropping. Archaeological investigation has shown that the Roman monument is not being seriously damaged. The farming regime recently implemented by Mr Doubleday is to exclude deep ploughing which means the buried monument and its surrounding archaeology can be preserved in situ.

In September 1986 Mr Brian Philp undertook some work on the site (KAR No. 86: 121) but in the absence of a report an ideal opportunity had arisen to carry out an archaeological training excavation on a substantial Roman monument of unknown purpose and date.

The Kent Archaeological Field School (KAFS) is a non-profit making organisation with about 800 members. It is growing rapidly and committed to disseminating information about the techniques used in practical fieldwork and recording. To this end a number of training excavations have been carried out on an annual basis on sites either not fully understood or under threat from farming activities.

During May and August 2006 investigation by the KAFS with geophysical survey and test pits of the area identified by Paul Wilkinson during earlier field-walking revealed a large Roman stone building with additional Roman buildings nearby.

The initial excavation took place during September 2006, with complete excavation of the octagonal building in August, September 2009. Access to the site during these periods had been agreed with the landowner and farm manager. The site was reinstated after excavation in order to prepare the land ready for sowing during the autumn months.

Fig. 2. The site (ringed in red) is located on an 'island' probably surrounded by intertidal marsh before the sea walls were built in the 13th century.
A possible Roman road (A) passes the site on the west site and ends at a possible harbour or landing place on the edge of the Swale Channel.
Fresh water springs are still active (B) on the east side of the site.

3. Methodology

Archaeological Investigation
Investigation in May 2006 was carried out by the hand digging of test pits on areas of potential structure identified by geophysical survey and field-walking. The test pits were one metre square and revealed Roman structure, burnt Roman material including charred wood, and soot at 1.03m below the field surface.

After discussions with the owner work started in August 2006 and was resumed in 2009. Excavation was carried out using a 360° mechanical excavator fitted with a toothless ditching bucket, removing the topsoil overburden to the top of the first recognisable archaeological horizon, under the constant supervision of an experienced archaeologist. Exposed surfaces were subsequently hand-cleaned to reveal features in plan and carefully selected cross-sections through the features were excavated to enable sufficient information about form, development date and stratigraphic relationships to be recorded without prejudice to more extensive investigations, should these prove to be necessary. All archaeological work was carried out in accordance with the KAFS Method Statement and IfA standards.

The KAFS single context recording system was used to record the deposits. A full list will be provided in the final report. Layers and fills are recorded **(100)**. The cut of the feature is shown **[100]**. Context numbers were assigned to all deposits for recording purposes and detailed on pro-forma KAFS context sheets. Plans of all features were made using a scale of 1:20, with sections recorded at 1:10. A full photographic record of all stages of the excavation was kept, which included working shots showing working constraints and conditions.
In undertaking this archaeological work the principles set out by the Institute of Field Archaeologists (IFA) were adhered to. The IFA defines an excavation as being:

'...a programme of controlled, intrusive fieldwork with defined research objectives which examines, records and interprets archaeological deposits, features and structures and, as appropriate, retrieves artefacts, ecofacts and other remains within a specified area or site on land, inter-tidal zone or underwater. The records made and objects gathered during fieldwork are studied and that results of that study published in detail appropriate to that design' (IFA 1999, 2).

Fig. 3. Recording on site to a 1:20 scale was supplemented by a full GPS survey.
The results of both surveys were overlaid and the final drawings, again at 1:20, prepared, hand drawn then digitised, and which will form part of the site archive. Context sheets were completed by the student participants and section drawing likewise completed. A full photographic survey was undertaken, which again will form part of the site archive.

4. Archaeological Sites and Monuments Record

The Roman complex at Bax Farm probably had river access to the Swale estuary by boat from a small harbour or creek to the north of the villa site. Road access to Watling Street, some one and a half kilometres (nearly 1 mile) away, was by a road which ran in a straight line in surveyed stretches, and changing alignment on high points (Fig. 2).

The possible Roman boundary to the east is a feature that runs for some 22 kilometres (13 miles) from the Swale, south to Pilgrims Way. For most of its length it is ditched, banked, and straight, changing alignment on high topographical points (Fig. 3). This surveyed boundary is a parish boundary for most of its length and also the dividing line between two groups of parishes, two minsterlands and two Jutish *regiones*.

Everitt was not aware that this feature was ditched but suggested, "this eastern boundary of Tonge may have marked the division not only between two minsterlands and two Jutish estates, but between two Romano-British territories, respectively based on Roman *Durolevum* at Faversham and the Roman settlement at Milton. At this point, therefore, the ecclesiastical topography of Kent perhaps affords another momentary glimpse into the Romano-British world beyond the Jutes" (Everitt, 1986).

The area of the Roman villa estate at Bax Farm was probably bounded to the west by the Roman villa estate at Mere Court, to the north by the Swale, to the south by Watling Street, and to the east by the boundary just described. The area contained could be some 1,950 acres (789 hectares).

Fig. 4. The surveyed ditch and bank (left) divided east and west Kent, and as yet has not been entered in the Historical Register (HER). In some areas the bank can be seen on the west side of the ditch and the ditch is a parish boundary for most of its 22km length.

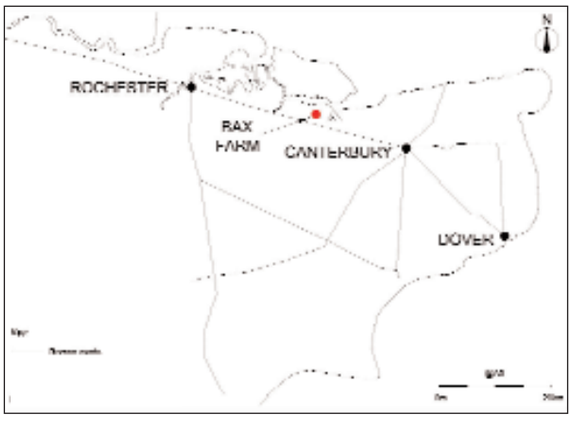


Fig. 5. The location plan (above) shows Bax Farm adjacent to Watling Street and situated between the Roman towns of Rochester and Canterbury. Along this stretch of Roman road some 22 Roman villa estates have now been identified.

In addition to the assessment of previous archaeological investigations in the area, it is recognised that the Historic Environment Record (HER) held at Kent County Council contains sufficient data to provide an accurate insight into catalogued sites and finds within the study area and the surrounding landscape. As a result a search was carried out within a 500m radius of the study area in January 2009. The most important sites are listed below: For further information contact the Heritage Conservation Team at Kent County Council.

HER Number TQ 96 SE 22 - MKE355. Possible Roman villa, Deerton Street, Teynham Fieldwalking finds and uneven growth of fruit trees in an orchard indicated a possible archaeological feature of Roman date. Subsequent extensive excavation revealed the site of a large Roman building, probably a villa. There are indications of other Roman buildings nearby.

HER Number TQ 96 SE 23 - MKE355. Possible site of a Roman Villa at Buckland Farm, Teynham Reports from 19th century antiquarians and archaeologists indicate the presence of a small Roman villa near the (now ruined) Buckland Church. No evidences visible now, however, and it is possible that the villa is actually the Deerton Street one, listed under TQ 96 SE 22, 95 and 1055

HER Number TQ 96 SE 67 - MKE16607. Struck flints and flakes, Peete Field, Teynham Evidence of Neolithic flint-working was found on the east side of the valley at Peete Field, Teynham. This consisted of twenty-three struck flints and eight flint flakes. The flakes had been removed from the flint cores by the use of soft hammers. Five of the flakes were blade-like in shape.

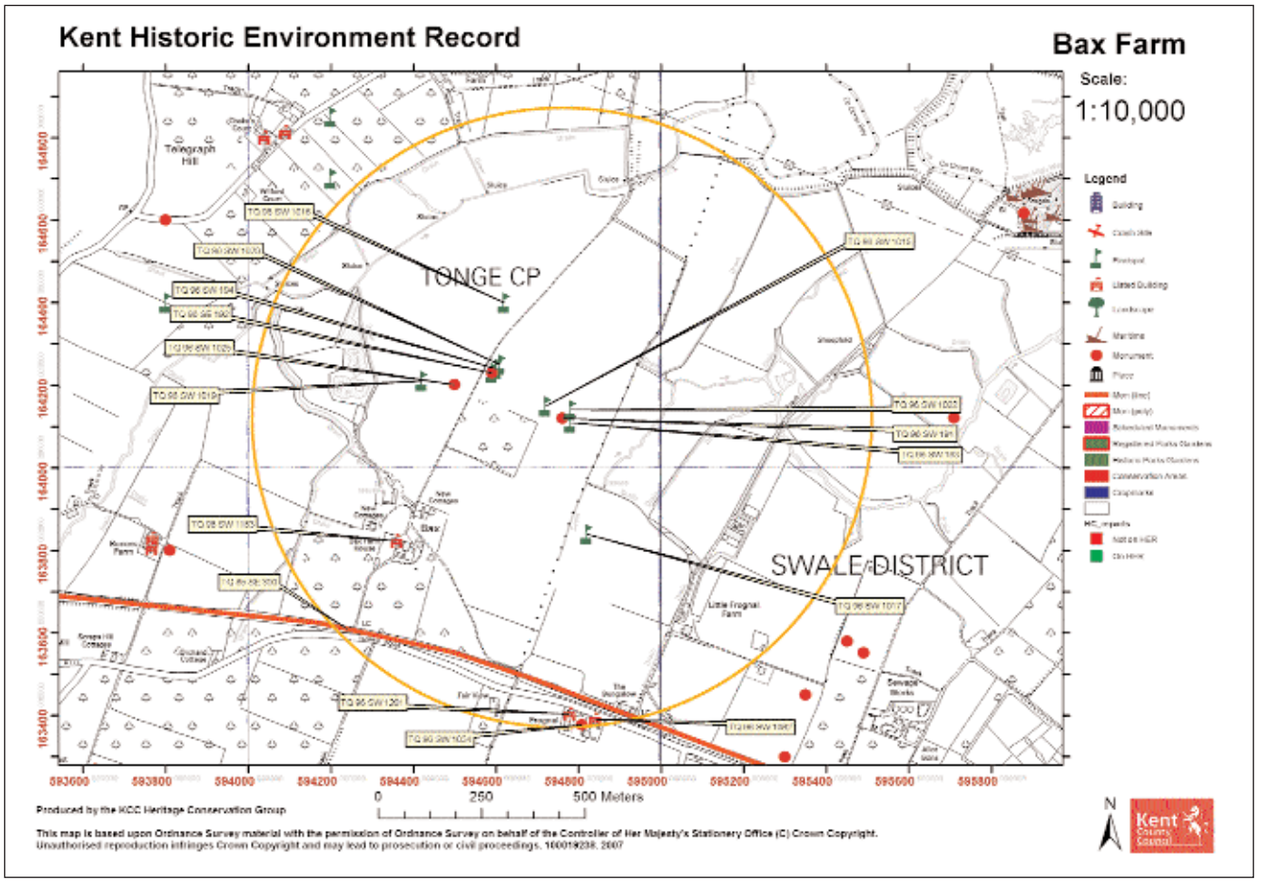


Fig. 6. The Historic Environment Record (HER) of Bax Farm (courtesy of KCC).

5. Archaeological & Historical Background

Much has been made of by academics of the unusual and exotic 4th century structures of Holcombe, Lufton, Littlecote and others in the west of Britain. Bryn Walters writing on these structures suggests, certainly of Littlecote with its tri-conchall hall, that “these are not common before the early 6th century and is a structural element of ecclesiastical architecture which evolved in the Aegean area of the Eastern Empire” (Walters 1983).

Both Holcombe and Lufton bear an uncanny resemblance to Bax Farm in Kent. All three are large octagonal structures with Bax Farm being in the middle range of size at 14.5m. Holcombe is about 16m and Lufton 8.5m. All have a central pool, and all have buttresses holding up a central clearstory tower. All three do not seem to have large associated structures attached to them but a simple rectangular building. At Holcombe Bryn Walters observes that “the symmetry and construction of the building was poor, whilst at Lufton the large buttresses seem only to have been an afterthought’ (Walters, 1996: 152). This is certainly the case at Bax Farm and the writer also concurs with Bryn Walters “that the interior belongs more to the later Roman and Byzantine world, where the techniques of construction for such complex vaults in tile and concrete would have been applied, but might have been outside the experience of local (Romano)-British builders” (Walters, 1996: 157).

Michael Todd is of the opinion that these are ecclesiastical structures and writing in the Oxford Journal of Archaeology in 2005 suggests that:

“The scale and pretension of these buildings (Holcombe and Lufton) are not to be underestimated. In both cases there structures may have risen to a height of eight to ten metres. This is far higher than what was required of a cold plunge bath, not least in the British climate. The architectural effect of both buildings was clearly directed outwards, not inwards. Both would have been visible from some distance. If bathing was not the purpose, what was their function? Although this cannot be proved, their context in 4th century villas encourages interpretation to a Christian milieu, and the most obvious link is with the central rite of baptism”

(Todd, 2005: 309-10).

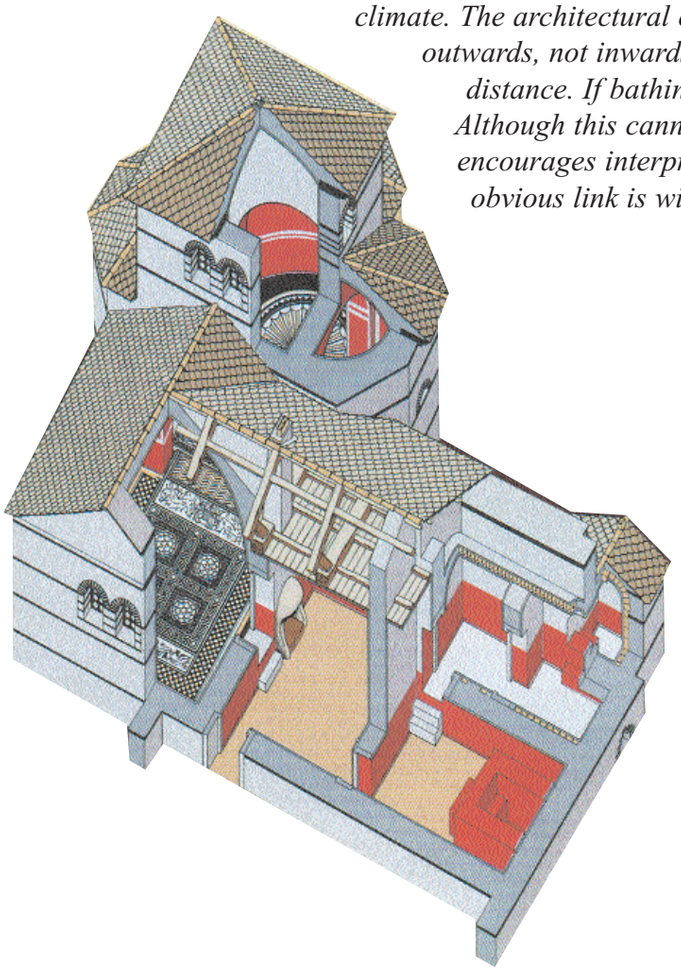


Fig. 7. Reconstructions are always problematic but this drawing by Luigi J Thompson from the front cover of ‘Architecture in Roman Britain’ (CBA Research Report 94) shows the tri-conch room from Littlecote Roman villa in its full glory. Bryn Walters writes that such a building is unique in Britain and not common in the Roman Empire before the 6th century AD.

Certainly the polygonal exterior is unusual and connects with Bax Farm, Lufton and Holcome but the internal layout can be traced back to contempory buildings such as the trilobed triclinium *(triconchos)* at the so-called Piazza Armerina in Sicily. The date of build for the Piazza Armerina is thought to be AD320-330, a little earlier than the date for Littlecote of AD360-365.

Martin Henig writing in response advocates caution and prefers the interpretation of these structures as fountain rooms or grand reception rooms and asks where are the associated churches? (Henig, 2006)

But where is the rest of the sumptuous villa at Holcombe and Lufton to justify such a grand reception room? Henig also points out that the use of: "polygonal structures were almost the defining motif in late Roman architecture and art, from baptisteries to the bastions of city walls"(Henig, 2006: 105).

Neither author cites any examples of other stand-alone octagonal bath-houses, of which none are known to the writer, or octagonal reception or cold rooms embedded in bath suites of which there are many. Indeed a close look at the plans of both Holcombe and Lufton indicate that they both seem to have functioned as bath-houses. At Holcombe Rooms 21 and 26 were furnace rooms- similar in layout to Bax Farm. Lufton has a complete suite of bath rooms with a furnace to the east of Room 10 which itself has hypocaust heating and a hot plunge bath over the furnace on the east wall. The adjacent room to the north (Room 12) is also hypocausted and is likely to be the warm room. It could be that the octagonal structures at Lufton and Holcombe could just be as Martin Henig postulates grand reception rooms, with a fountain and clearstory lighting, possibly to impress paying guests, tenants or clients in what may be for all intents and purposes a public bath in a rural setting.

Public and Imperial baths which include hexagons and/or exotic architecture include the small baths at Hadrian's villa at Tivoli. Built by Hadrian (117-138) it has long been considered a rare gem of bath design with its central and dominant feature of a tall, cross-vaulted *frigidarium* and the adjacent large octagonal hall which served as a reception and social hub to the entire bath complex.

The Antonine Baths at Carthage dating from about 145 is at nine acres (3.64 hectares) the largest of all Imperial baths in North Africa. Built on a spectacular site on the edge of the sea the front suite of rooms

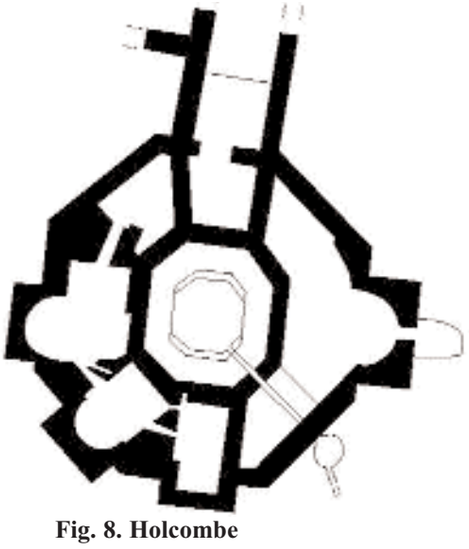


Fig. 8. Holcombe

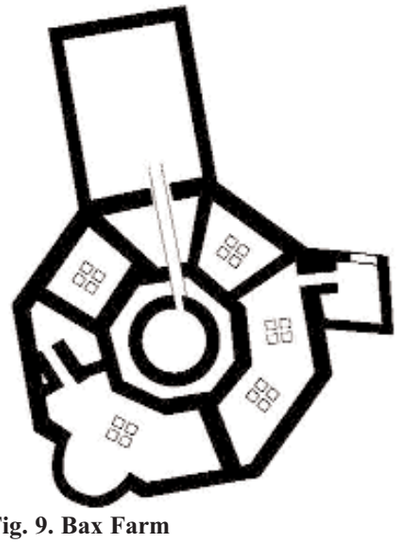


Fig. 9. Bax Farm

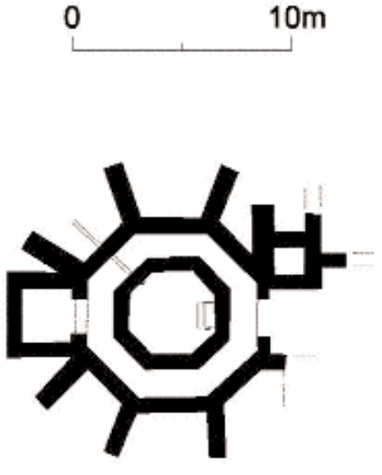


Fig. 10. Lufton

Three examples of an octagonal bath-house have now been excavated in sufficient detail to establish a type series. Holcombe and Lufton, both in the West Country and Bax Farm (middle) in Kent.
All date from the 4th century and all have an octagonal structure, both as an outer and inner wall. Bax Farm and Holcombe have internal radiating buttresses whilst Lufton has external radiating buttresses similarly to the poorly recorded example from Loose near Maidstone in Kent (right and page 16). Both Bax Farm and Holcombe can be probably be dated to the same period by coins with Bax Farm dated by a coin in the fabric to AD330-335.

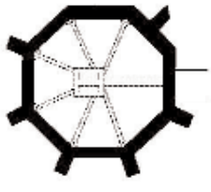


Fig. 11. Loose, Maidstone

stretch 200 metres and comprise seven octagonal and hexagonal heated halls with the larger central octagonal room functioning as the *caldarium.*

The famous Hunting Baths at Lepcis Magna, protected by sand dunes for centuries have survived almost complete. Two octagonal heated rooms are the central feature and social hub with the rectangular *frigidarium* to the north and two small *caldaria* accessed from the two central octagonal rooms.

The Princeton Antioch Expedition of 1930s located six public baths in the city, one of which, Bath C is the only Imperial bath found so far in Antioch. Fikret Yegul says:
"An opulent establishment, renowned for its beautiful and excellently preserved mosaic and marble *opus sectile* floors" (Yegul, 2010: 189). The two central halls are octagonal in shape, the northern room served as a entrance hall and possibly *frigidarium* with its central octagonal pool. The smaller octagonal hall to the south was a *caldarium*.

Yegul says that: "these halls functioned as social gathering places and community centres; they reflect a new emphasis on political and cultural concerns for assembly and entertainment in these small, successful merchant towns with mixed and heterogeneous populations" (Yegul, 2010: 192).

Octagonal halls with a central octagonal plunge pool and interpreted as a *frigidarium* can be seen as part of the Roman Empire's rich architectural bathing repertoire, but is that enough of a link to the octagonal bath houses in Britain and indeed the hundreds of Christian octagonal baptisterys found throughout the Roman Empire?

The Christian communities borrowed basilican and mausolea architecture for their early churches (mainly in the east), and probably borrowed the octagonal bath-house hall with central cold plunge pool for their baptisteries. Indeed some baptisteries are thought to have their beginnings as part of Roman bath-houses.

Butrint, located in southern Albania, on a peninsula near the coast and overlooking the Straits of

Figs 12, 13. The configuration of the type is seen in the Lateran Baptistery in Rome (above) and the reconstruction computer drawing of Bax Farm (left). The Lateran was initially built by Constantine in c.AD315 and partly re-built by Pope Sextus III (432-40).

Corfu, the site was originally excavated by an Italian Archaeological Mission led by Luigi Maria Ugolin1 in 1928-43.

In 1993 Richard Hodges and colleagues started a five year programme of investigation of the Baptistery and Triconch Palace. Of particular interest is their re-excavation of the baptistery, an octagon of 14.5m diameter, the same size as Bax Farm. Hodges has suggested the adjoining Roman bath-house was built during the 4th-5th centuries with the construction of the baptistery in 525-50. The 6th century eight-leafed mosaic floored octagonal bath-house sits within a square building of the existing earlier bath-house and it may be that an earlier fountain room with apse and central plunge pool was rebuilt as a baptistery with central font in the early 6th century (Hodges *et al* 2004: 176-89).

It is not an unusual sequence, Pellicioni has demonstrated that the Constantine baptistery of the Lateran Basilica in Rome was built over the *frigidarium* of the earlier baths (Pellicioni 1973).

Hodges says: "It is possible that baptism was carried out in Butrint in a late Roman bath building, prior to the erection of a purpose-built structure immediately over the site (Hodges 2004: 185).

Having a baptistery attached to a bath-house makes sound sense. The water supply is available as are large heated rooms for the throng of people awaiting baptism; which usually took place on the eve of Easter Sunday. The number of people attending could run into thousands if the contempory sources can be believed and it seems most of the fonts investigated seem to have similar plumbing with the water, sometimes heated, arriving at the font through a lead pipe with no sign of a drain.

But why an octagonal-shaped room? It is possible that the octagonal pagan temple at Nettleton Shrubs Wiltshire, was rebuilt in the mid 4th century as a Christian chapel with some of the internal buttress walls partitioned off to form a cruciform-shaped internal space (Wedlake, 1982: 50). No other octagonal chapel or church has been found in Roman Britain but octagonal pagan shrines abound with Weycock (18.28m), Caerwent (18.28m), Paganshill, Chewstone (16.76m), with Chassenon (21.00m), and Alise-Sainte-Reine (18.28m) from France.

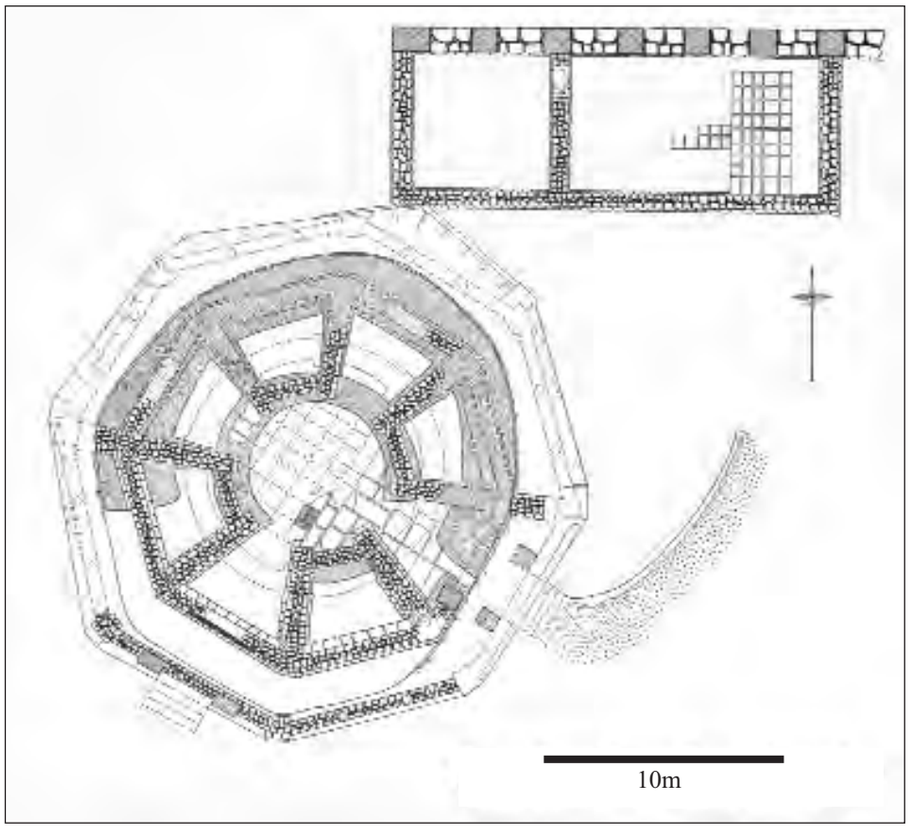


Fig. 14. The religious building at Nettleton Shrubs is most unusual. David Petts writing in 2003 points out that the building started life as an Romano-Celtic temple but in the early 4th century the interior layout of the building was re-configured and all of the exterior entrances blocked apart from the eastern entrance. (Petts, 2003:73). The interior space was now cruciform-shaped and is thought to have been established as an early Christian church. The new entrance points towards sunrise which is a known early Christian attribute.

Further afield there are any number of octagonal and quatrefoil churches with the Golden Octagon Imperial church in Antioch built by Constantine in 327-41 being the earliest and finest example.

David Petts writes that: “it seems unlikely that a small church in Western Britain (Nettleton Shrubs) should be taking on the architectural innovations being developed in the eastern Empire on such a reduced scale at such an early date” (Petts, 2003: 72).

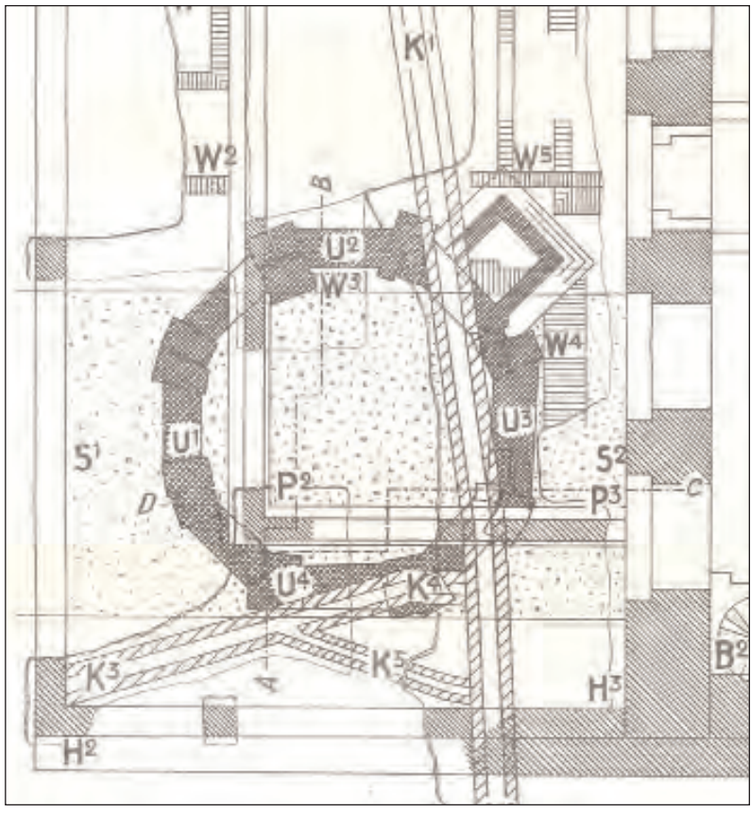
However, in 306 Constantine had started his imperial career at York in Britain going on to become master of the Roman world. Constantine was the first Christian Emperor who also introduced tolerance to Christianity in the Roman state.

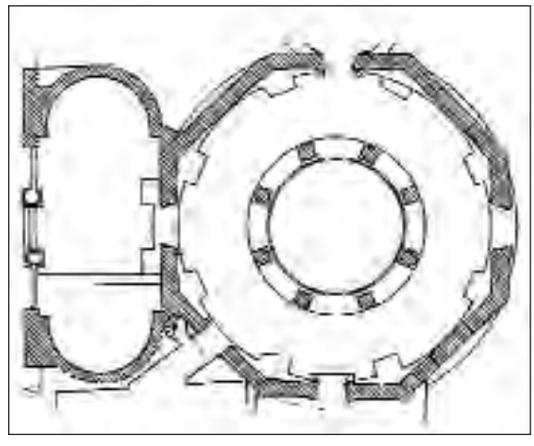
It is probable that all three excavated octagonal bath-houses found in Britain; Bax Farm, Lufton, and Holcombe were built during the reign of Constantine and may have been influenced by the emperors aspirations whilst still in Britain.

If such structures had been found on mainland Europe it is likely that the excavators would have identified them as Christian baptisteries as it seems there are no examples of this type of structure in Europe or Africa other than as Christian baptisteries.

One of the first octagonal building that may have been constructed by Constantine in 307 was an octagonal structure in Trier some 13.5m in diameter adjacent to his later Audience Hall (*Aula Palatina*). Excavated in 1913 by German archaeologists its function could not be determined. Edith Mary Wightman considered it late 3rd century and states “it is of unknown origin and purpose” (Wightman 1971: 106).

In 312-3 Constantine chose the site of St John Lateran for the first cathedral to be built in Rome. Its name being derived from the still standing *domus* of T. Sextus Lateranus. The hexagonal baptistery at about 20m diameter was built, just as at Butrint, over an existing circular structure dating from the late 3rd century, and probably part of a bath-house complex complete with a





Figs. 15, 16. The enigmatic building at Trier (left) some 13.5m in diameter and built adjacent to Constantines later Audience Hall. The Lateran Baptistery (above) seems to have been rebuilt by Constantine - the circular structure with engaged columns in black outline- is the earlier Roman bath-house.

natural spring which was later utilised to supply the Christian octagonal font. Of interest is the large entrance hall or *narthex* which is a feature of Bax Farm, and its central octagonal tower with clearstory lighting, again, as probably built at Bax Farm.

The Lateran plan was taken up, enriched, when the octagonal baptistery of Milan was built in about AD350, or thirty years later than this under St Ambrose.

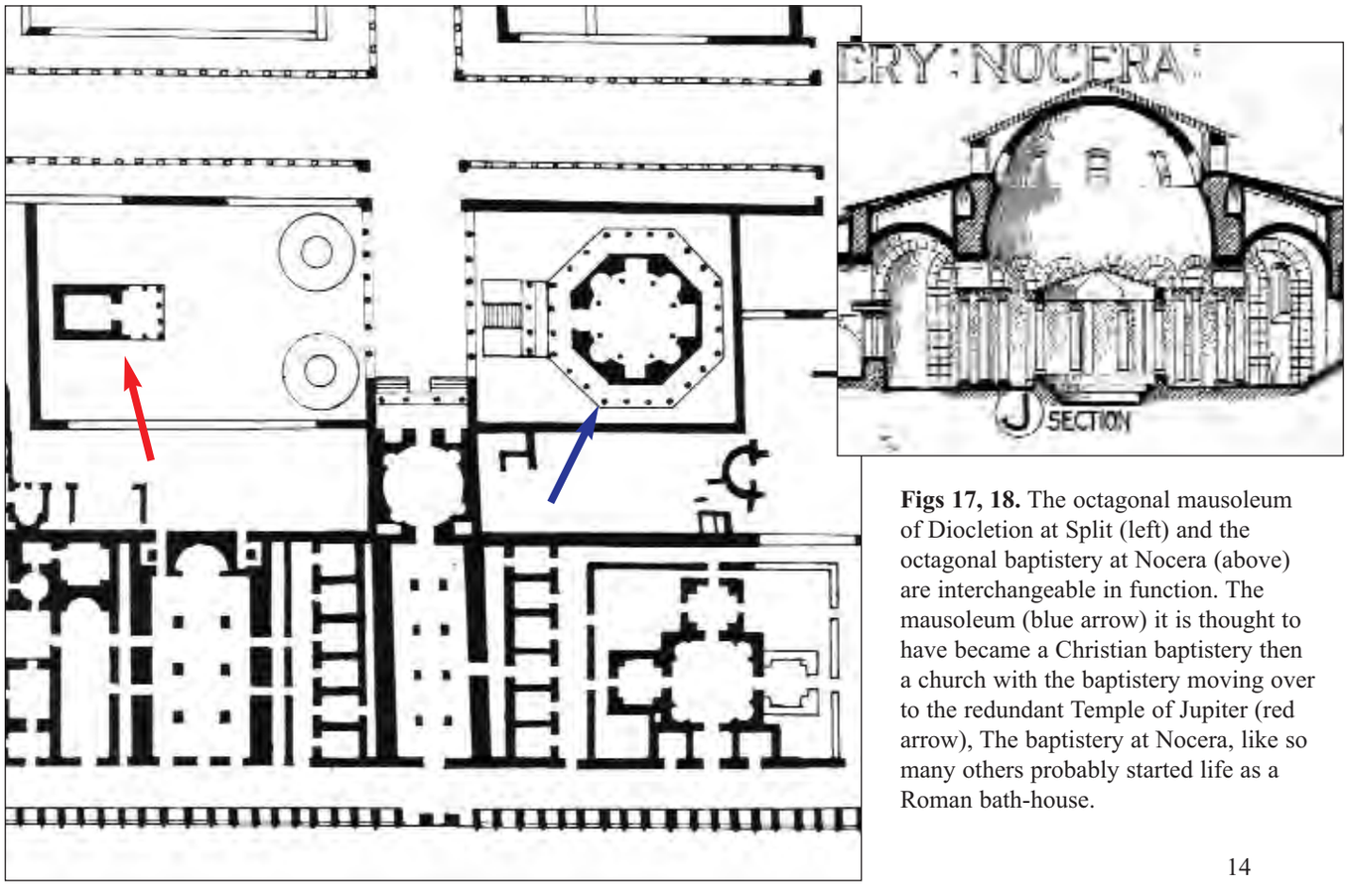
Ambrose provided an inscription alluding to the number symbolism of the building, an octagon, its sides expanding in semi-circular niches, a domed centre room; and in the centre the eight-sided octagonal font.

The marble inscription found on the wall of the Milan baptistery during excavation reads:

Eight-niched soars this temple of sacred rites
Eight corners has its font
Right is it to build this baptismal hall about the number eight
For here the people are re-born

In Christian symbolism the number eight represents eternity and rebirth, because the world was created in seven days with life starting on the eighth day and Christ rose from the dead on the eighth day. For early Christians eight was the number which symbolised the resurrection of Christ and the formation of the New Covenant.

The octagonal plan survives at the baptistery at Grado (c. 450) and at Frejus and Albenga. In some baptisterys the octagonal core expands in niches projecting outwards as at Nocera, or surrounded by ambulatory rooms, square at Aquileia (c. 450), Riva San Vitale (c. 500) and



Figs 17, 18. The octagonal mausoleum of Diocletion at Split (left) and the octagonal baptistery at Nocera (above) are interchangeable in function. The mausoleum (blue arrow) it is thought to have became a Christian baptistery then a church with the baptistery moving over to the redundant Temple of Jupiter (red arrow), The baptistery at Nocera, like so many others probably started life as a Roman bath-house.

octagonal in the Baptistery of the Arians at Ravenna (c. 480).
The baptistery of the Orthodox (Neonian Baptistery) is probably converted from an earlier Roman bath-house, of which the marble wall decoration of porphyry discs and green marble rectangles almost certainly belongs.

The building is constructed of brick and topped by a dome constructed of Roman concrete poured round a web of hollow ceramic tubes to save weight. However the roof is not Roman having been rebuilt in c. 530 by Bishop Neon.

The octagonal baptistery plan is rare but not unknown in the east at this early date. Examples include the baptistery adjacent to the church of St Mary at Ephesus (c. 480). Other Christian octagonal buildings in the east include the Church of the Nativity at Bethlehem where an octagonal structure was built possibly on the orders of Constantine before 333. In the centre of the building there was a wide circular opening which pierced the rock roof of the grotto where tradition had suggested Christ was born. In 333 the basilician church attached to the octagonal building was visited by a pilgrim from Gaul who remarked on the church "built on the orders of Constantine" (Krautheimer 1965: 60).

Fig 19, 20. The octagonal buildings of Ravenna, the Neonian Baptistery, the Arian Baptistery (above), the San Vitale Basilica, mostly date from the early 5th century and are the same configuration as Bax Farm built some 200 years earlier. One at least, the Neonian Baptistery is a converted Roman bath-house. The baptistery works by having an ante-room or *narthex* where the *catechumens* were instructed before baptism. On entering the main octagonal part of the building a central baptismal font was in the centre and it was here that those to be baptised were immersed. The design of octagonal Roman bath-houses and early Christian octagonal baptisteries were one and the same which may suggest the transition of function may be difficult to see in the archaeological record.

In Kent the function of the octagonal room attached to the main villa at Loose, Maidstone has not been determined (Fig. 21). The villa was excavated by Hubert Bensted in 1870 and the Kent Archaeological Society paid for the work. The only surviving record is a short article in Vol X of the *Archaeologia Cantiana* . The site is located in a hop field (1870) near Upper Stone Street. Only a portion of the foundations were exposed and the excavator considered that there were more rooms to the west and south. A view reinforced by the earlier discovery and robbing of stone foundations in this area.

The surviving walls of Kentish ragstone were about two feet thick and mostly set in lime mortar. It was recognised that three rooms were heated by a hypocaust system with the octagonal room, which was about 24 feet in diameter (7.13m) having radiating flues cut into the natural soil and lined with tiles. The floor was tessellated as were some of the adjoining rooms. The octagonal room, probably a tower with clearstory lighting was externally buttressed with eight engaged piers. Two of which are conjoined walls (Roach-Smith, *Arch Cant* Vol. X: 163-172). The site is now unknown and its exact location in doubt (HER Archives KCC).

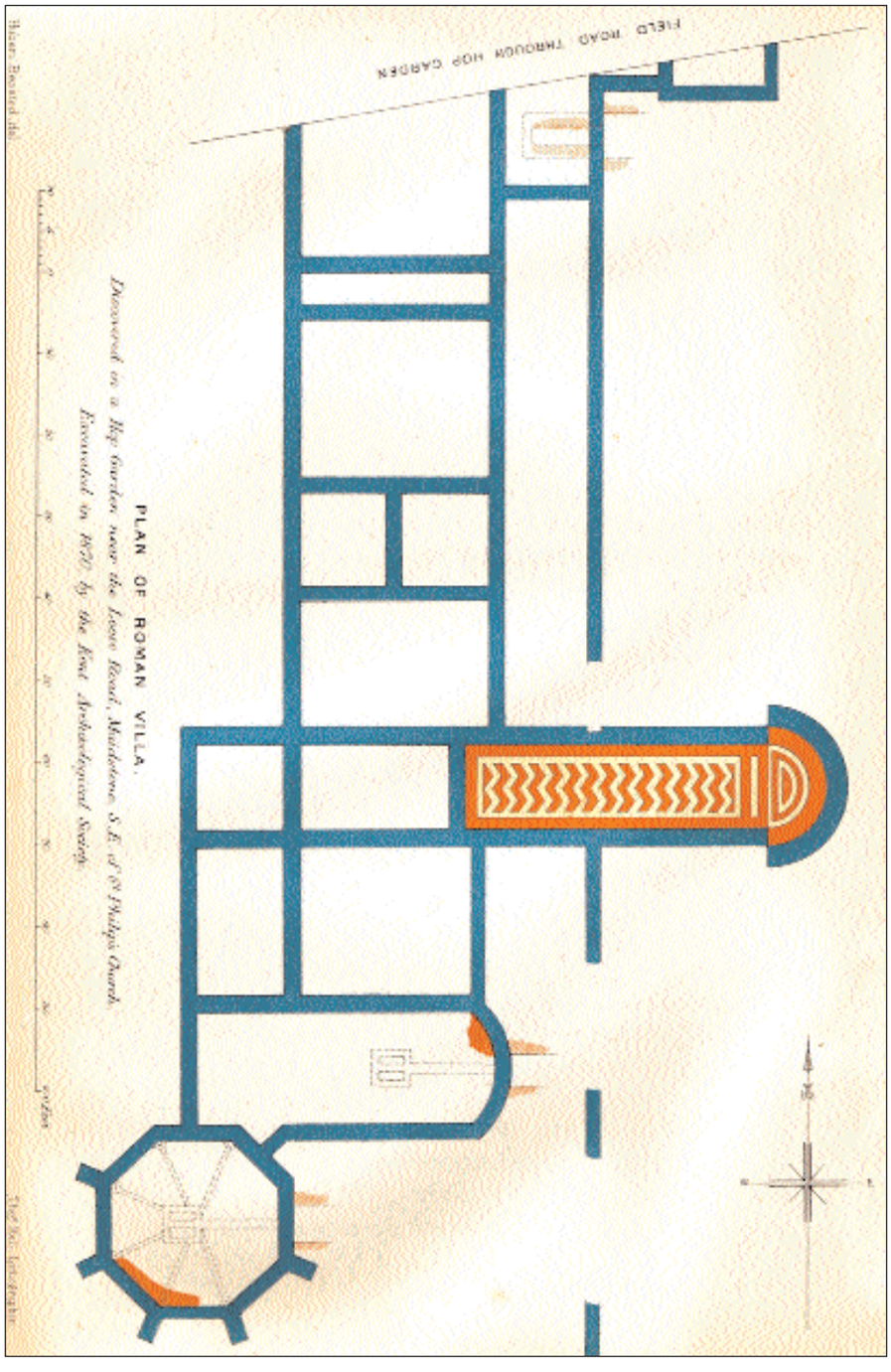


Fig 21. The octagonal room attached to the Roman villa found at Maidstone in Kent is smaller than Bax Farm, Holcombe and Lufton.
Of particular interest is that both the octagonal room and the adjacent room are heated by underfloor flues which may suggest that they were both part of a bath-house complex. The outside buttresses suggest the octagonal room could be a tower.
The long corridor with a simple mosaic opening out into an apse is also of interest.

6. Documentary Evidence

The field-walking notes compiled by Paul Wilkinson on 18th July 1998 at Bax Farm were part of an extensive field survey commissioned by Swale Borough Council (Swale Survey 2000) and say:

"With newly discovered Roman villa estates along the Swale spaced an average of 2.5 km apart it was no surprise that a large Roman villa site was quickly located through field-work at Bax Farm. The site was found after the Roman villa site at Deerton Street had been located by the Swale Survey Team, and before work had started in fields west of Bax Farm. The site itself is geologically similar to Teynham Court Farm, a 'spine' or peninsula of brick earth running north as a finger into the marshland of the Swale Estuary. Freshwater streams run to the east and west of the site. The west stream feeds Tonge Castle and is being fed by the Spring of St. Thomas Beckett immediately adjacent to Watling Street at Bapchild, its name a usage of the rare Anglo-Saxon term *celde* for spring. The east stream was probably utilised by the Roman villa at Bax Farm as a water supply and presumably water transport could use the stream to access the Swale Channel via Conyer Creek" (Swale Survey 2000).

The Swale Survey found numerous find spots of Iron Age and earlier pottery which could indicate settlement from the late Bronze Age, through the Iron Age and into the Roman period.

In September 1998 an intensive 10m gridded field-walking exercise was carried out at Scotland Field, Bax Farm, Teynham A report on the retrieved artefacts was compiled by Canterbury Archaeological Trust:

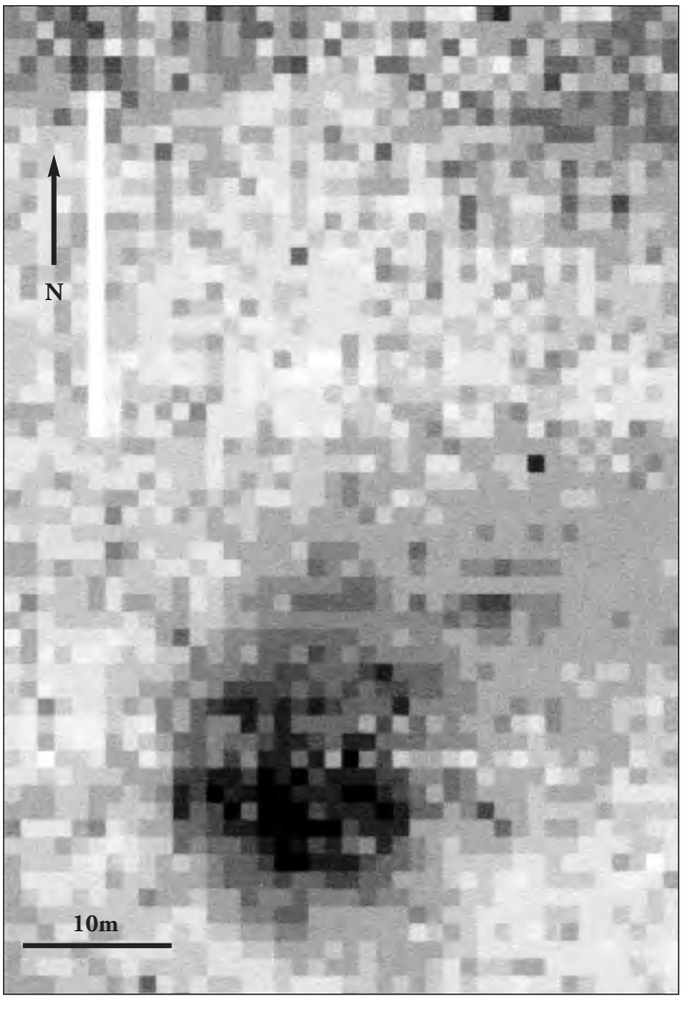


Fig. 22. The geophysical survey by Malcolm Davies (left) pinpointed a number of buried structures which coincided with the field-walking results. Above, the main octagonal building after excavation in 2006 showing the mass of material picked up by geophysical survey.

"The field-walked pottery from Bax Farm is characteristically very mixed in nature. The Roman pottery was accompanied by pre- and post-Roman material. The Roman pottery ranges in date from the late first to the fourth centuries AD. Pottery types include, Samian ware, Black-burnished ware, fine oxidised Upchurch type ware, Belgic shelly ware, Brockley Hill mortariums, Dressel 20 amphoras. Other finds include mosaic tesserae, late Roman window glass, a worked elephant ivory object, a white clay figurine, copper alloy boat nails, and a late Roman enamelled mount".

A geophysical survey was conducted by Malcolm Davies. The results indicated a masonry Roman structure just below the possible main building on the south-east slope overlooking Conyer Springs.

The geophysical survey of this lower structure indicated a size of 15 by 18 metres (33 by 59 ft). Further up the slope the larger building, 40 by 20 metres (130 by 65 ft) was located and proved by keyhole investigation. Both Roman buildings were contained inside a rectangular boundary wall and ditch measuring some 45 by 62 metres (148 by 203 ft). Most of the Samian pottery sherds were retrieved in the southern area of the larger building.

Fig. 23. Static aerial photograph of the Bax Farm site showing in considerable detail the complexity of the building as it nears complete excavation by the KAFS in 2009. The central pool was built over an earlier, larger plunge pool and is dated by pottery to the early 5th century. Leading to the pool can be seen the stone and tile conduit which was blocked off and its feed reduced to a small lead pipe- found still in situ.
The furnace house can be seen top left and the apsed room on the right. The large changing room or *narthex* can be seen bottom left. Scale is indicated by the two archaeologists cleaning features prior to photography.

7. Construction of an Octagonal Building

How do you plan an octagon with eight equal sides (an equilateral octagon) without doing any calculations other than measuring the size of the square that will be used to draw the octagon?
An explanation of how this works is derived from Vitruvius, the Roman architect:
1. Measure a square the same size as the octagon that you want to build. Position two lines from corner to corner making an "X".
2. Using another line, place one edge on the intersection of the "X" and put a mark at one corner of the square.
3. A compass or length of rope can also be used for this step. Set the point of the compass on one of the corners of the square and open it to the "X".
4. With the mark at the corner of the square, put a mark on the square at the end of the length of rope. Continue with both sides of all corners until there are eight (8) total marks on the square.
5. Mark a line between the two marks nearest each corner and rub out the marks of the corners of the square and the "X" to complete the equilateral octagon.

Or you can utilise the Pythagoreans Theorem, which is A∑+B∑=C∑
To calculate the length of the hypotenuse, or "C" in the building (which is the length of one of the octagon sides). The length of one side of the square of your projected building is 5 metres, so 1/2 this length is 2-1/2m. Since all sides of the square are equal, "A" and "B" are both 2-1/2". This is the equation: (2.5)∑+(2.5)∑= C∑ 6.25 + 6.25 = 12.5. The square root of 12.5 is 3.535 so "C" = 3.535.

Vitruvius, writing at the time of Augustus explains proportions of buildings, and of particular interest the ideal proportions of circular buildings including the central tower or cella. The central tower should have a diameter equivalent to the height of the columns. The columns should be of a height equivalent to the diameter taken between the outer edges of the cella walls plus the architrave height of one half of the thickness of a column which is one tenth of their height including the capital and bases. The proportions of the rotunda, excluding the finial, is equivalent to one half the diameter of the whole work (Vitruvius Book IV: Chapter VIII).

If we take the diameter of Bax farm octagonal building as 14m and the diameter of the inner octagon as 5m the height of the central tower will be 12.50m excluding the finial.

With a central tower potentially this high a system of deep foundations would be needed, but at Bax Farm and indeed Holcombe and Lufton the foundations of the central tower have been compromised by the digging of a central plunge pool.

The problem to overcome is lack of stability or you get ‘lean’ as with the Leaning Tower of Pisa. The solution would be to have radiating buttresses, internally inside the outer building as at Bax Farm and Holcombe, or external as at Lufton and Loose.

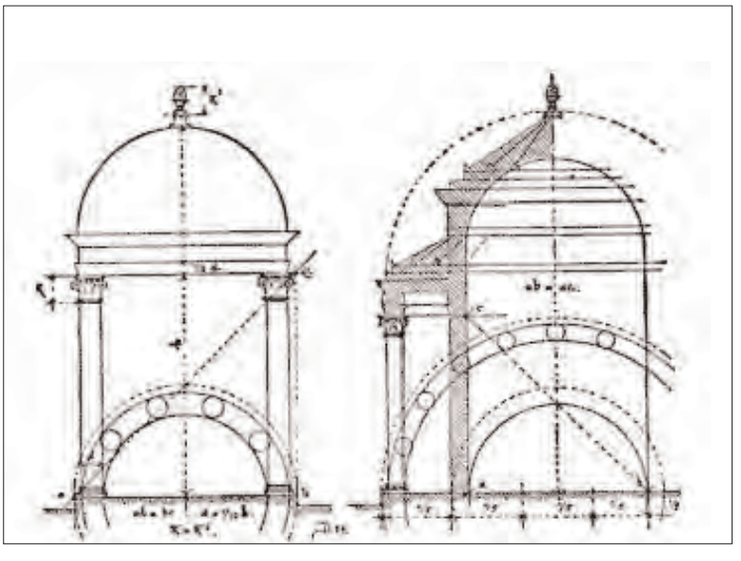


Fig. 24. The drawing produced by Prof. Durm (above) are based on Vitruvius and show how the proportions of a central tower (right) plus the domed roof could look.

Bax Farm is a very sophisticated building indeed, the laying out of the two octagons, the proportions of the outer and inner octagonal structures, the strength of the radiating buttresses, the construction of the plunge pool and associated conduit. The build of the hypocaust system so it give a constant flow of heat and hot water.

The arcading which ran round the inner octagon would have been a difficult build. At least eight arches would have to be constructed, not in a straight run but in interlocking segments.

However, there is another problem to overcome and that is how to sit a dome on top of a square or polygon. A Roman builder had to understand the engineering principles when constructing arches and vaults. A dome is a vault of segmental or semicircular section erected on a circular base. If the base is not circular as at Bax Farm an intermediate member must be inserted to effect the transition between square and circle. This can be done by means of a pendantive or squinch, whose curvature is that of a dome whose diameter is the diagonal of the original square. True pendantives occur very late in Roman work, and although there is no evidence for a pendantive at Bax Farm it is difficult to see how the dome (if there was one) could have been built.

Interestingly, there are pendantives of sorts in the octagonal rooms at the Baths of Caracalla in Rome dating from AD212-216, and in Hadrians baths at Tivoli.

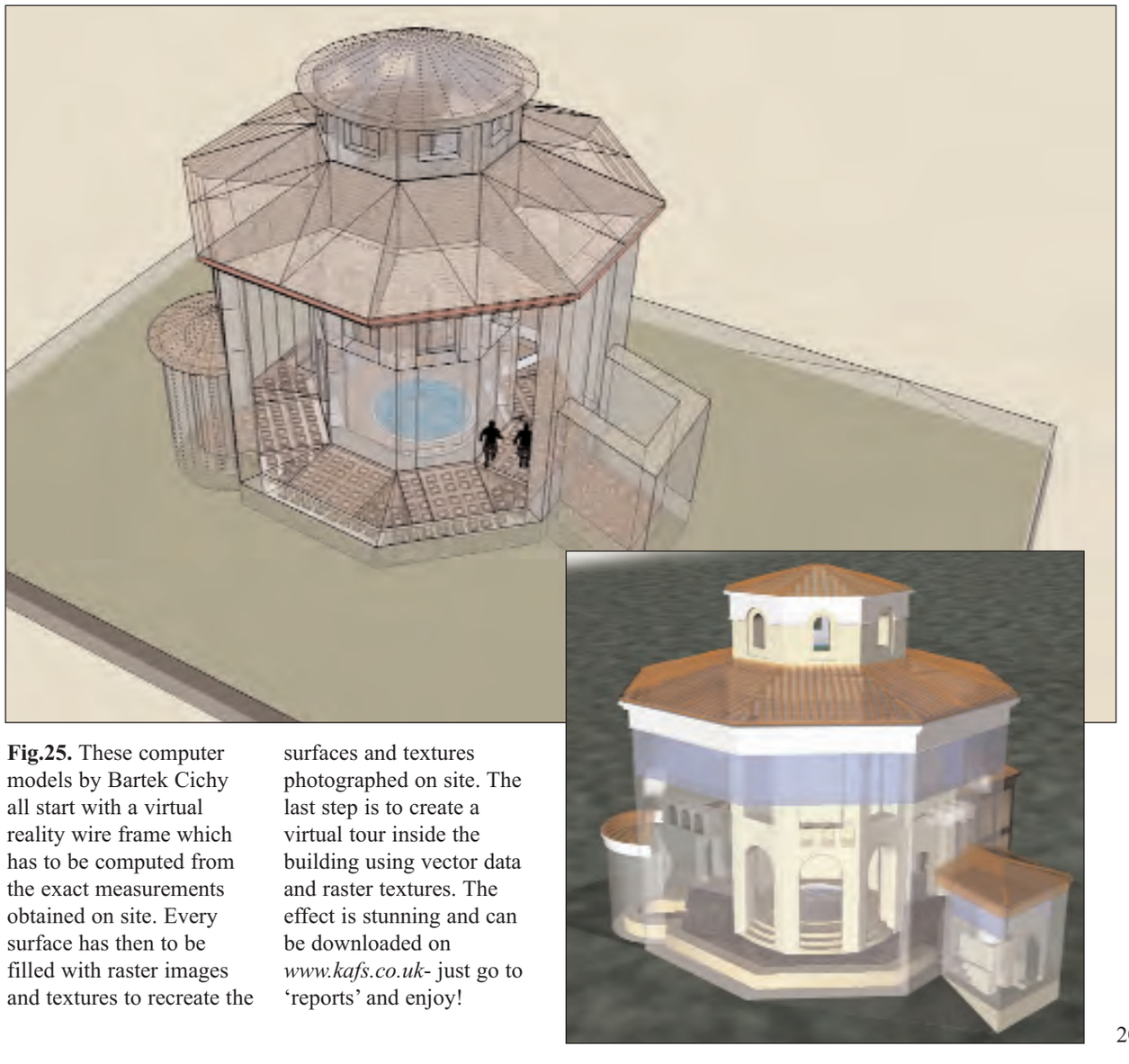


Fig.25. These computer models by Bartek Cichy all start with a virtual reality wire frame which has to be computed from the exact measurements obtained on site. Every surface has then to be filled with raster images and textures to recreate the surfaces and textures photographed on site. The last step is to create a virtual tour inside the building using vector data and raster textures. The effect is stunning and can be downloaded on *www.kafs.co.uk*- just go to 'reports' and enjoy!

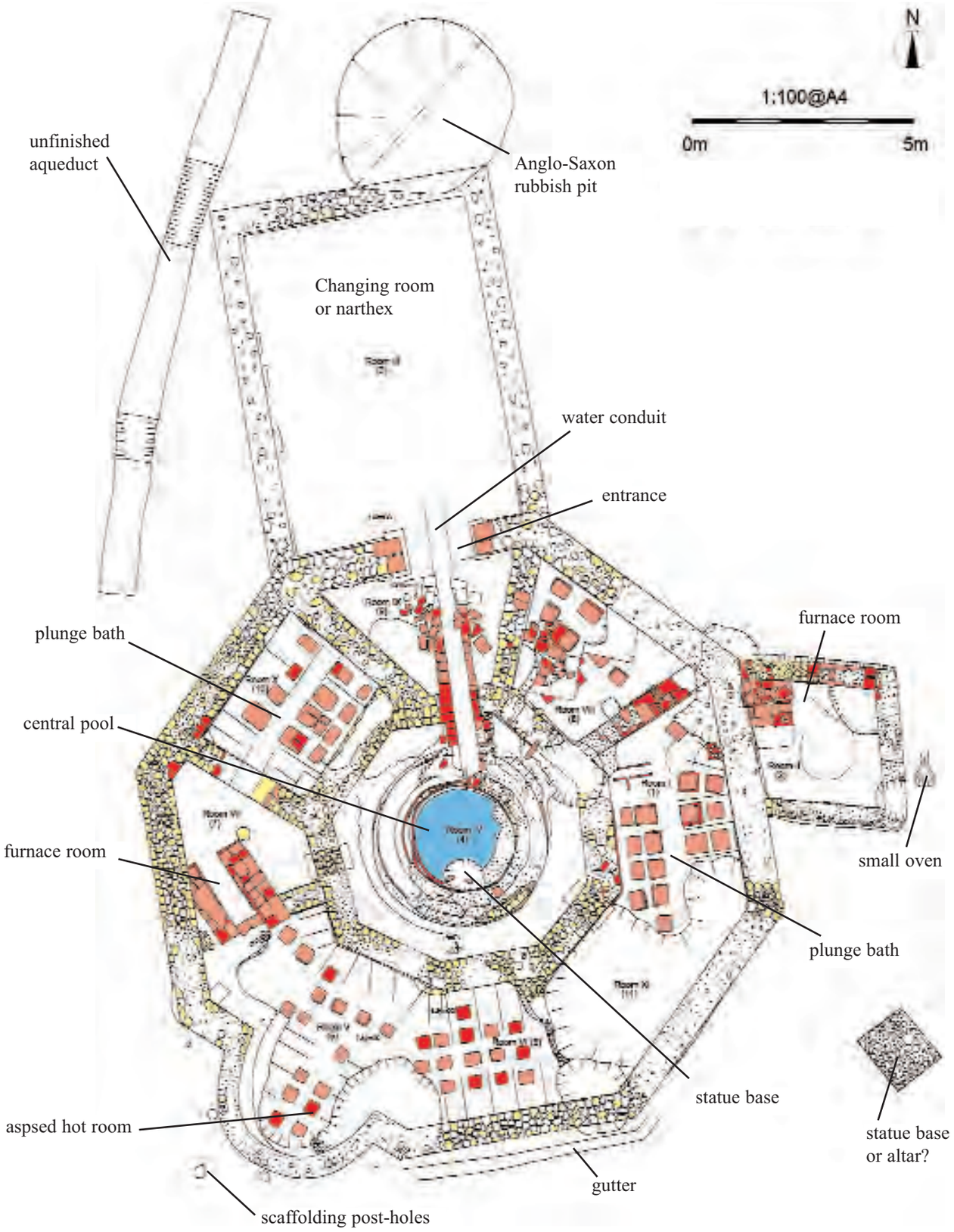


Fig. 26. Ground floor plan of the building showing the various rooms arranged around the central pool. The two furnace rooms are labelled, one (Room 7) is internal and heated Rooms 5 and 10, whilst the external furnace room (Room 2) heated Room 1. Inside Room 2 you can see the location of the furnace walls (the one to the south robbed out) and the curve of the early Saxon oven that utilised the north doorway as a flue. To the right of this the Roman key to the door lay on the original floor where it was dropped sometime after the building was abandoned. To the north can be seen a large unheated changing room or narthex and to the west the unfinished water aqueduct.

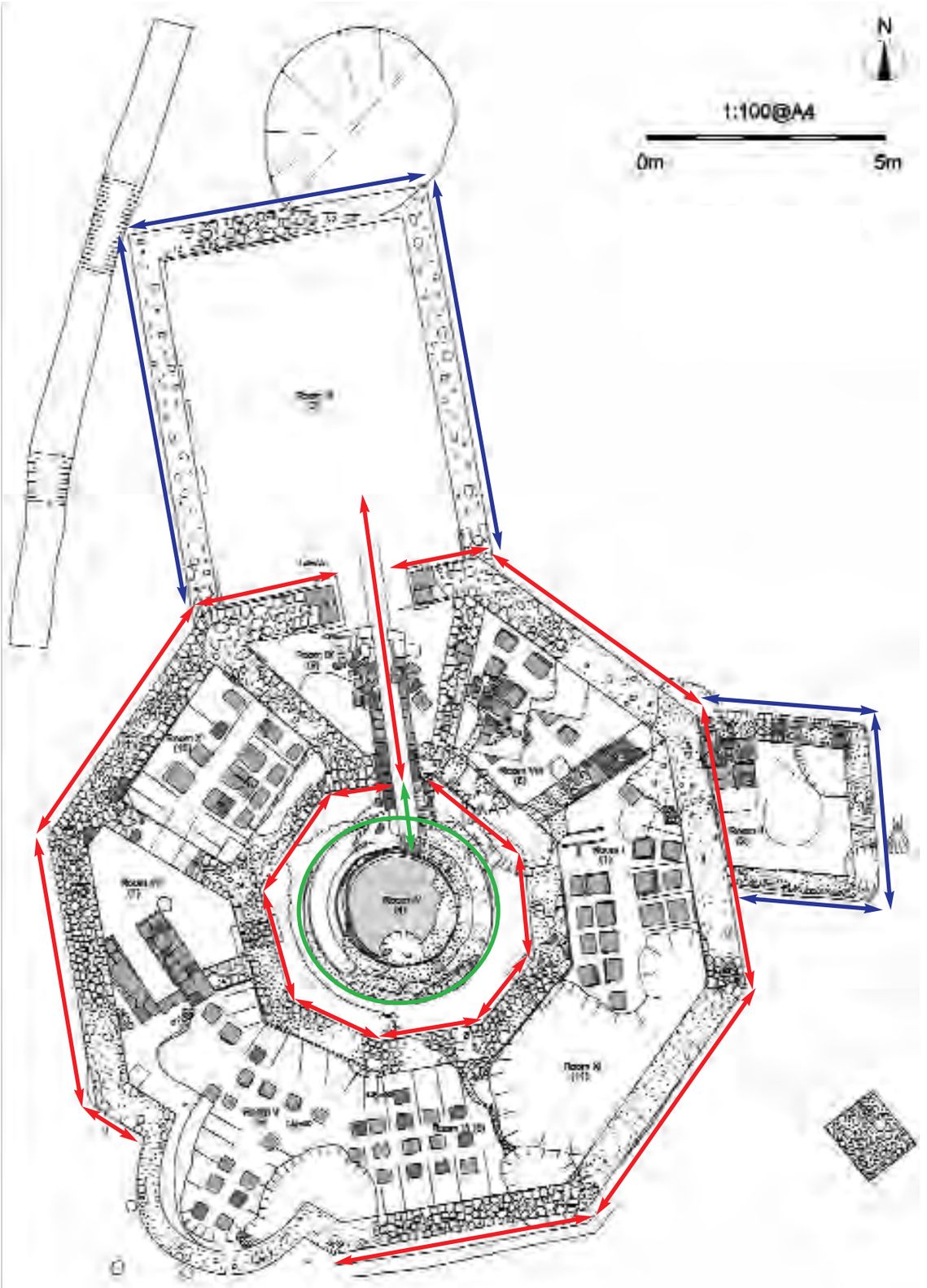


Fig. 27. The building was built or rebuilt in three phases. The first phase (red lines) was built in an excavated base or foundation pit and the external walls butted up to the external vertical edges of the brickearth. The build was of two octagonal rings joined by radiating buttresses which were also room dividers. A Roman coin of Constantine minted in Arles found in this masonry is dated to AD330-335. The apse in the first phase build was probably of two storeys as the only scaffolding post-holes found were clustered around the apse. The external furnace room (Room 2) was built onto this structure (blue arrows) as was the changing room or narthex (Room 3). It is impossible to say when this happened- it could be a matter of weeks or years although the pottery sequence suggest the former. The central plunge pool (green arrows and circle) was re-modelled in the early 5th century and was no longer a plunge pool, but an ornamental shallow pool with possibly a statue facing the main entrance from Room 3.

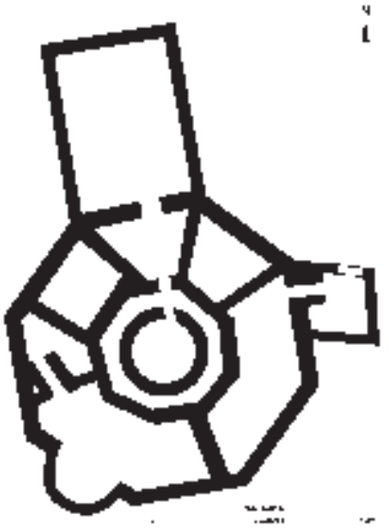


Fig. 28. The octagonal bath-house at Bax Farm (left) only survives as a badly robbed out stone structure. The building was used as a quarry throughout the Middle Ages with pottery found in the robbed out sections of the Kentish ragstone foundations dating from the 12th and 13th centuries.

The complexities of building an octagonal building are shown in this painting by G. Albertini of the Basilica of San Vitale in Ravenna (**Fig 29** above). Dating from AD 547 some 200 years after Bax Farm its shows the central plan consisting of an octagon divided into eight massive pillars into a central space and a surrounding ambulatory. The pillars rise above the balcony level to support the great dome by way of spherical pendentives. The dome is constructed with hollow amphorae and roofed in Roman tile. The interior, unlike Bax Farm was decorated with spectacular mosaics.

Fig. 30. On any day of the excavation there would be at least 40 archaeologists on site (above), all of whom had dedicated tasks to perform. In the picture (left) you can see an archaeologist (Julie) filling in context sheets whilst her colleague (Emily) measures features. Another archaeologist (Catherine) is excavating a post-Roman kiln whilst in the background another archaeologist is taking masonry samples. All this means that there will be data available to write the report.

8. The Building Sequence (Archaeological Narrative)

The Roman octagonal bath-house at Scotland Field, Bax Farm is in the parish of Tonge and lies c.1.45km to the north of the hamlet of Radfield, on a shallow south-east facing slope of a hill leading down to fresh water springs (Conyer Springs) which lead to the moated medieval farm of Frognall. The springs flow north past the east slope of the Roman octagonal building to the Swale Channel some 2km away (Fig. 2).

To the the west of the site a freshwater stream feeds the remains of the moat of the medieval castle of Tonge and encircles the Roman hill site before joining with the east stream. This west stream originates in the Spring of St. Thomas Beckett immediately adjacent to Watling Street at Bapchild, its name a usage of the rare Anglo-Saxon term *celde* for spring (Gelling 1976).

The east stream was probably utilised by the Roman complex at Bax Farm as a water supply and presumably Roman water transport could use the stream to access the site through the Swale Channel via Conyer Creek'

The slope on which the site is situated is a low Brickearth hill with outcrops of Head Chalk. The height ranges from 17m OD to 5m OD with the site about 8.50m OD.

A good command of the Swale Channel is available from the site of the Roman octagonal building and it would also have been visible from the Roman road of Watling Street some 1.45km to the south.

Roman sites in the vicinity (Fig. 6) include the Roman villa buildings at Mere Court about 2.25km to the west and the Roman villa buildings at Deerton Street 2.85km to the east. Other Roman buildings include a probable Romano-Celtic temple adjacent to the ruined church at Buckland about 3.00km to the east, a Roman villa complex overlooking springs at Luddenham about 4.80km to the east and a probable Roman temple and other buildings underlying Teynham church 2km to the east. Roman buildings have been located by geophysical survey and test-pitting in the same field as the octagonal bath-house and may be part of the same settlement or complex

Introduction

From the excavation in 2006 of the Roman octagonal bath-house at Bax Farm it is clear that the building is not isolated as Roman buildings, roads, ditches and Roman agricultural activity abound in the vicinity of the site. Dating evidence gathered by field-walking also suggest activity from the Prehistoric, Bronze Age, Iron Age through to the Roman period, continuing into the Anglo Saxon period and up to the 14th century. This continuation of settlement and agricultural activity has been previously encountered at numerous Roman sites along the Swale/Watling Street corridor. (Wilkinson 2000).

Following on from field-walking and a geophysical survey (Fig. 22) gridded 1m square test pits were dug on areas of high potential and exposed Roman masonry structure at 1.03m below the surface of the field in test pits 008 and 011. Large quantities of burnt Roman building material, soot and charcoal were revealed. The 176 pottery sherds retrieved from these two pits have a date range from Mid-Late Iron Age to the Early Saxon with the majority of sherds Roman and dating from c.AD250-370 (Lyne 2006: 3)

In August 2006 an evaluation trench 2m wide and 30m long orientated north-south was cut across the most promising test pits. Numerous features were revealed including the concrete base of a

Roman corn mill (078) dated by pottery to c.270-370, a wide Roman road surface (Fig. 32), post holes, ditches, and the stone walls of a substantial Roman building.

In the area of the stone building the topsoil (01) and subsoil (02) were removed by hand so that an area excavation could be carried out. As the investigation got under way evidence started to accumulate that a number of the features in the initial evaluation trench were Iron Age, Late Roman (AD350-420) and Anglo-Saxon with pottery dated between AD450-600.

The Roman building, evidently a bath-house, was well built of Kentish Ragstone blocks and large knapped flint nodules set in a cream/yellow lime mortar. Initial investigations revealed part of a large apsed room (Room V) on the south-west side and immediately adjacent, but separated by an internal furnace room (Room VII), a large hot plunge pool built above a hypocaust system with still-standing hypocaust *pilae* columns and *opus signinum* vertical tanking (Room X).

Parts of the Roman floor surface were still in position and was finished with a tessellated floor made of cubes of stone and tile coloured black, red, white and yellow, all set in a thick floor of pink *opus signinum*. Painted plaster was found in large quantities with yellow ochre, Pompeii red and white the dominant colours.

The large amount of Roman roofing tiles in the demolition rubble suggest the roof of the building was tiled with *tegula* and *imbrix* tiles.

It was apparent the building was an octagonal building of a type previously recognised at Holcombe and Lufton in the West Country. At Bax Farm an outer octagonal ring of substantial masonry was buttressed internally with walls radiating from an inner octagonal ring of walls which enclosed a circular plunge pool/fountain feature (Room IV). The central pool was probably fed from a brick built water conduit. The pool had been re-built on a number of occasions, and in its final phase as an ornamental shallow pool with a standing statue facing the entrance/exit to the north and through a large changing room or *narthex* (Room III).

Figs. 31, 32. Work in 2006 included investigating the Roman hollow way, Iron Age ditches, and Anglo-Saxon postholes (above). The base of a large mill stone of an unusual type (left) wa revealed to the south-west of the hollow way.

For the purpose of simplicity the results from the 2006 and 2009 campaign will be discussed together as the work of 2006 was overlapped by the excavation of 2009. Context recording numbers for the 2006 work start at (003) and 2009 start at (900).

General description

The outer ring of walls (Phase 1) about 14.5m in diameter and 76cm thick were built of Kentish Ragstone blocks (23x13cm) and large knapped flint nodules (18x16cm) set in a cream/yellow lime mortar, no tangible inclusions but samples were taken (040). On the south-west side seven courses survived to a levelling course of a single Roman tile 38mm thick. The height of foundation and wall to this point was 1.02m above the sub-floor. In places on the north-west wall another course of Kentish Ragstone blocks over the Roman tile had survived.

It seems likely that the octagonal shaped building footprint had been dug into the brickearth and the walls and associated substructure built into this cavity. There was no single trench cut for the exterior wall of the octagonal building, but there was for the attached furnace room (Room II).

Possible scaffolding holes were located around the south-west apse (Room V) suggesting the apse could be above one storey. Pottery found in one of the holes (014) is Thameside greyware dating to c.180-370. To the east of the apse the remains of a gutter drain (939) cut into the natural brickearth and about 24cm wide and 8cm deep filled with demolition material was noted.

The inner octagonal masonry ring wall (below), about 7.10m in outside diameter, and some 70 to 80cm in width was built of Kentish Ragstone. The same build as the outer wall and the colour and texture of the lime mortar also suggest the same phase.

Radiating from both concentric walls were six internal stone or tile buttresses with an average width of 60cm, again colour and texture of the mortar mix suggest a contempory build with the

Fig. 33. The 2006 excavation (facing south-west).

inner and outer octagonal walls, and indeed the original build of the central circular pool.

The inner central circular pool (Room IV) was constructed of dressed Kentish Ragstone (as much as you can dress Kentish Ragstone) with an outside diameter of 3.90m and an inner diameter of 2.27m. It had been faced on the inside with a 40mm thick layer of *opus signinum* with some small cubes (1cm) of coloured mosaic surviving on the vertical face which may suggest there was originally a pool mosaic (below).

Feeding the central pool was an impressively brick-built, again Phase 1, barrel-vaulted or corbelled small tunnel (068) infilled with demolition material (935) which included fresh sherds of Alice Holt pottery dated to c. 270-400.

Piercing the outer octagonal ring were three rooms, to the north a large rectangular room (Room III) about 5.20m in width and 7.30m in depth with a floor of *opus signinum*, The wall foundations of this cold room were not as substantial as the main building and may suggest a single storey or even a timber frame. This room had been built on to the main octagonal structure. The main entrance to the octagonal baths was through this room suggesting the room could have been used as a changing room if just a bath-house or *narthex* if a baptistery.

To the east a small square building (Room II) at about 2.65m in internal width and 2.90m in internal depth with a door on the north side at one metre wide. This room was the furnace house. The key to the back door was found on the floor just inside the entrance. The flue to the furnace was situated in the north-west corner of the room and would have been used to heat Rooms 1, XI, and VIII. There was another furnace heating the building in the internal Room VII which may also have heated water from the adjacent aqueduct if it had been finished.

The final room built beyond the octagonal wall is the apsidal room on the south-west side of

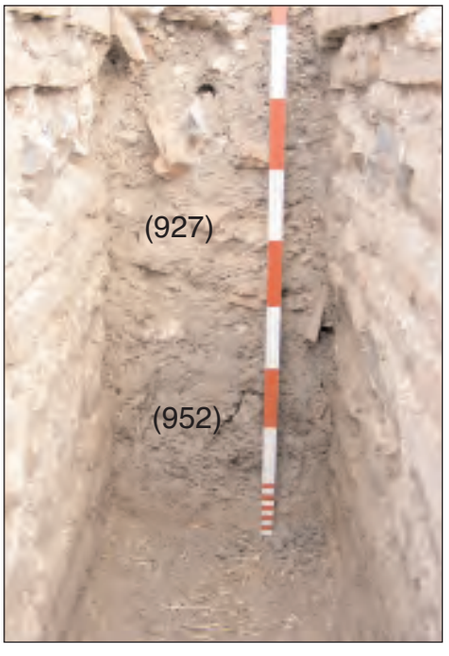
Fig. 34. The 2009 excavations (facing south-east).

the structure (Room V). Because scaffolding was probably used in the build the apse it could have been above one storey making Room V very impressive indeed. To enhance the aspect of the room which faces south-west there was most likely a large window which would have brought solar heat into the hot or warm room in the early afternoon- traditionally when Roman baths were at their busiest.

The layout of the octagonal structure was not as proficient as it could have been. It is obvious the builders were able to build the structure but were not able to set out such a complex building. The inner octagonal ring, probably the foundations of a tower, and pierced by a colonnade or multiple doors, has not got the right consistent angles (135 degrees) for an octagon. For any regular polygon, where 'n' is the number of sides, each interior angle is [(180n - 360)/n], or rearranging to deal with smaller quantities, [180-360/n]. So for n-8 you get 180-45 -135 degrees.

Consequently the build is on a twist which means the internal buttresses (to hold up the possible tower) do not connect with the internal angles of the outer octagonal wall.

The main door into the baths from Room II into Room IX is not central in the wall and the Room IX it leads to is even more slewed because of the original setting out. The brick built conduit seems to end just under the entrance to Room III and there is no obvious way for it to work as a water conduit, again it is another structure which is skew to the central pool. At some stage it was blocked off near the central pool and a lead pipe inserted to feed the pool. The water drains from the pool through a ceramic pipe on the east side which led to the hypocaust sub-floor surface in Room VIII. It had obviously been used as shown by the large amount of sediment deposited here.



Figs, 35, 36. The conduit which would have fed spring water to the central plunge pool was built of alternate strata of double thickness Roman tile and knapped flint blocks. The base is of *opus signinum*.

The aqueduct (077) was cut into the natural soil and ran across the north-west corner of the building north-east towards Conyer Springs. It was not finished and only sections were dug. There was no obvious end use in place at the bath-house. It is likely to have been planned to run overland to the springs which are now 246m away. However, the water level would need to be raised at least 9m at the water source to allow flow to the bath-house which would have entailed building a water tower fed by a wheel or pump at the source.

Room by Room description: Room I (1)

Room I is situated on the east side of the building and measures 5m (on its longest side) by 2.56m. The room is sloped from both the west and east walls giving a v-shaped profile to the base of the room. 17 *pilae* tower still survive which would have allowed hot air from the adjacent furnace in Room II to circulate under the suspended *opus signinum* floor and enabled a level heated surface to the hot room (*caldarium*). The *pilae* bricks are 43x42cm and 3cm thick set with *opus signinum* mortar. The *opus signinum* sloping sub-floor they sit on is a layer about 3cm thick laid on a bed of off-white lime mortar mixed with gravel.

This type of v-shaped floor is more usually seen in a tile kiln, but seems to be a feature of Kent bath-houses as it is also found at Lullingstone and Little Chart Roman bath-houses (Rook, 2002: 30-31).

The room is vertically tanked on the west side with a layer of *opus signinum* about 20mm

Fig 37. The furnace room (Room 2) on the north-east side of the octagon building had been built later than the main building, but how much longer is impossible to say, it could be as little as a week. In the photo-graph (left) the red arrow shows the direction of hot gases from the furnace into the main octagonal building. Still discernable is a 'flume' of ash flowing into the underfloor hypocaust system of Room 1. The blue line rectangle indicates the position of the left-hand side furnace wall. Joining the two walls would probably have been a brick arch supporting water tanks which could have provided hot water for the bathers.

thick, and probably was also on the east wall but this wall has been robbed out.

A flume of soot was revealed fanning out from the adjacent furnace room and sitting on a deposited surface of charcoal and soot some 9cm thick (910), Sherds of C2B (Late Roman hand-made grog-tempered ware with a date of 370-420) were retrieved from this fill.

A fragment of a *tegulae mammatae* was also retrieved from the demolition fill (905) of the room. Pottery from the demolition fill has a wide date range from 180-650 but the eight coins retrieved include Tetricus II (270-274), Constantine I (318-324), Gallienus (253-268), Constantius II (335-337), Constantine (330-335), Constans (335-341) and Constantine I (307-318). The room has not been previously excavated.

Room II (2)

The adjacent furnace room situated on the east side of the building has internal measurements of 2.65m by 2.95m. Built at a rather odd sub-rectangular angle this room is part of the original build but with narrower foundations at 48cm wide.

There is a doorway built into the north wall, the width of the door was about 1m, and the key for the lock was found 'under the mat' on the inside of the room.

The inside of the room had been decorated with painted plaster, mostly rectangles or squares of 'Pompeii Red' with an off-white background (932). The room was full of demolition material, a mix of roof tiles, both *tegula* and *imbrix*, nails, lime mortar lumps, flints, pottery, soot and charcoal (906). One coin was retrieved from the spoil from this context and is of Constantine II (335-341). The room had not been previously excavated.

On excavation the first feature that was exposed was a large kiln built into the rubble of the demolished room. The circular part of the kiln (904) was inside the room whilst the flue was built into the remains of the north doorway. Pottery found is ES1, a silt-tempered handmade

Fig. 38. Furnace Room (Room 2) looking west. In the debris of the furnace room an Early Saxon kiln or oven had been built into the remains of the structure. An earlier small oven (below **Fig. 39**) had been built outside the room- just big enough to cook lunch (red dot).

fabric dating to about c.450-650. On removing the kiln the remains of an earlier brick-built furnace structure was exposed in the north-west corner of the room. Overall measurements are 1.50m width with a central flue of 49cm. The base of the flue, orientated west-east, had been constructed of upturned *tegula* tiles, badly burnt by exposure to fierce heat.

The flue wall on the south side (948) had been removed but the flue wall on the north side had survived. This was well built of Roman brick set in *opus signinum* faced with a thick (30cm) vertical face of *opus signinium* severely burnt. A coin found in the soot of the flue is of Constantine dated to 335-341.

Environmental studies of the large quantity of soot and charcoal retrieved from Room 2 is on-going but initial results indicate the fuel used was coppiced oak and elm with some chestnut.

The interim report states:

'The charcoal fragments identified so far are dominated by Oak and Elm. Some of the oak fragments might be Sweet Chestnut, fragments of hazel were also present. The seeds present are very low in number and likely to be intrusive' (Gray, 2010).

Further work is required to see if the fuel used was charcoal or wood.

The floor (965) of Room 2 was constructed of *opus signinum*, again with a badly burnt surface. In the north-east corner a shallow pit had been dug through the floor exposing the natural soil which is Brickearth, again this surface was badly burnt. The fill of this pit (964) included Early Saxon pot (ES5) dated from 450-650. Artefacts included melted remains of lead and Roman glass.

The stone walls had been robbed on both the east [909] and south [956] sides of Room 2, on the south down to the deepest foundations. Pottery found in the backfill date this event to 13th-14th centuries.

The brick walls on the north side and the south side of the flue had also been robbed which

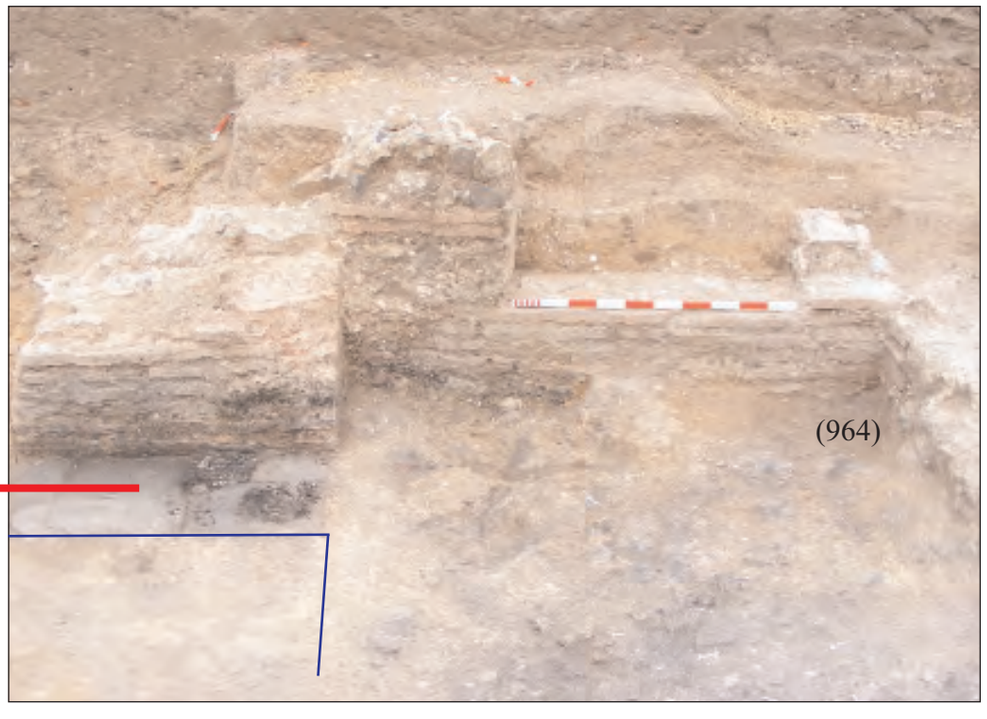


Fig. 40. Furnace room doorway on the north side is just over a metre wide. The direction of the flue is indicated by the red arrow whist the missing brick pier of the furnace is indicated in blue. The Early Saxon shallow pit (964) is located in the north-east corner. The Roman key to the door was found on the floor.

unfortunately removed any evidence of a furnace arch, or indeed whether a water tank was situated here and heated by the furnace. However, the layout of the two brick piers with a central flue strongly suggests the piers would have held large water tanks to be heated by the furnace fire.

It is possible Room 2 was roofed, if only because the internal plaster finish would have rapidly deteriorated if exposed to the weather, but also by the amount of ceramic roofing material found in the demolition. It is also likely the back door would have been used as a 'valve' to regulate the intake of air into the furnace.

Room VII (7)

Room 7 is situated on the west side of the building and is about 4.20m long on its outside wall, and 1.20m on the internal octagonal wall. The room functioned, like Room 2, as a furnace room, but in the building and not built on as an extension.

The furnace room leads to Room 10 on the north side and Room 5 on the south. Room 10 is a hot room, probably a *laconicum* or *sudatorium*- a sweat room, either dry or humid. The apsidal room to the south (Room 5) could have had a apsidal hot plunge bath on its south-west wall heated by the same furnace -although there is no evidence apart from the configuration- or Room 5 could have been a warm room with a hot plunge bath on the north wall.

This room has been badly damaged by the previous excavation in 1986 by Mr Philp but the lower levels had survived excavation and still contained stratified layers of charcoal, soot, pottery and coins (Fig. 43). The depth of excavation to the sub-floor from the top of the plough soil was 1.33m with an OD height at the base of the internal furnace floor of 7.31m. Of this fill some 0.74m had been excavated by Philp in 1986.

The upper fill (066) was initially a mix of demolition material, modern drinks cans, discarded

Figs. 41, 42. Room 7 (left) is an internal furnace room and had just over a metre of wall still standing. The brick arch to the right leading to Room 10 had collapsed and showed signs of damage caused by mechanical excavation in 1986. The furnace (above) also heated Room 5 (blue arrow).

and broken excavator tools and three sherds of pottery, one dating from the Late Bronze Age and two Roman sherds from c.AD150-370.

The lower unexcavated fill (029) contained 200 mostly fresh sherds weighing 1291g and gave a date range from c.AD270-370 (Lyne 2006). One coin retrieved from this demolition fill was a Barbarous radiate of post-AD270.

The room is wedge-shaped, about 4m on its longest (outside) wall and 1.12m on the internal octagonal ring wall whilst the wall facing north and Room 10 is 3.08m. The walls of this room have been faced with an off-white plaster finish some 30mm thick.

On the south side of the room two furnace piers have been built into the structure. Set at an angle to the room the two wall are built entirely of Roman tile set in *opus signinum* but faced on the room side with off-white plaster. The width of the piers is about 55-60cm leaving a central furnace flue of about 55cm. The base of the flue is burnt clay with a lip to the south of upturned tegula tiles burnt black. The construction of both piers show courses were splayed (Fig. 42), no doubt to point the heat more efficiently into the hypocaust system of Room 5.

The north wall also had a flue built into it leading into Room 10 which has vestiges of a plunge

Fig. 43. Room 7 stratified infill. (066) is backfill from the 1986 Philp excavation whilst (029) was unexcavated and gave some important dating evidence when excavated by the KAFS in 2006. The stratification continued with an ash layer below (029) which is from the last firing of the furnace (072). It contained fresh pottery dating from AD170-270 and a single coin of Constantine (330-335). In the north-west corner under the charcoal a layer of green/yellow cess was sampled for post-excavation work. Under the charcoal and cess a burnt clay floor was observed.

bath. The flue, about 55cm wide, had been badly damaged by the excavation of 1986. A cola tin found in the debris was stamp-dated to 1986. It was obvious a mechanical excavator had removed the arch of the flue causing considerable damage to the supporting structure.

Once the demolition fill of Room 7 had been removed a thick layer of charcoal (072) was exposed containing fresh pottery dating from AD170-270 and a single coin of Constantine (330-335). In the north-west corner under the charcoal a layer of green/yellow cess was sampled for post-excavation work. Under the charcoal and cess a burnt clay floor was observed (Fig. 42).

Room X (10)

Room 10 is to the north of Room 7 and measures 3.50m on the inside of the outside octagonal wall, 3.10m on its inside octagonal wall. The wall to the north, one of the internal buttresses, is 2.65m and to the south, another internal buttress 2.72m. All four walls are tanked in *opus signinum* some 32mm thick, but only above the slope of the sub-floor. Below this the walls are finished in off-white mortar. The *opus signinum* is rounded on all four corners.

Abutting the north corner a flue is built into the outside wall with another flue built into the inner octagonal wall in the south corner. Both flues are lined with *opus signinum* mortar.

The subfloor is sloping on both sides down to a central lower channel running north/south from the flue in the south wall to the north wall. Set on to this double slope are at least 12 *pilae* towers of Roman tile (Fig. 44) These tiles are on average 34mm thick set on a bed of *opus signinum* some 35mm thick. The lower channel slopes from the base of the flue at 7.32 OD to 7.43m OD giving a rise of sub-floor of 11cm. This is to draw the hot air from the furnace along the lower channel to heat this hot room. Even though damage had been caused to this room by the 1986 excavation a part of the walking surface floor had survived in the north-west corner. Constructed of polished *opus signinum* set on Roman tile it is at 8.52m OD giving a height of the heated void below the floor of 1.20m. As the room is tanked below the sloping floor with off-white (non-

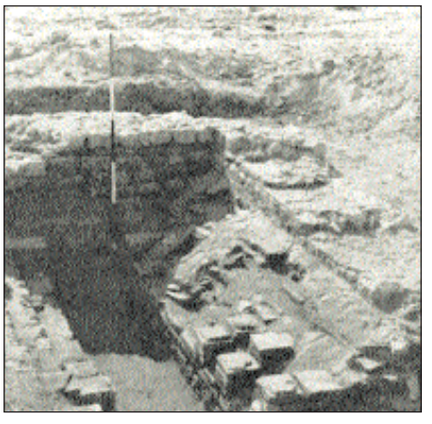


Fig. 44. Room 10 facing north (left). The red arrow shows the direction of heat from the furnace situated in Room 7. The sloping subfloor of Room 10 which would channel the heat to the centre of the floor seems to be a Kentish trait as seen at Lullingstone and Little Chart (**Fig. 45**) Roman villas.

waterproof) mortar and above the *opus signinum* (waterproof) floor with *opus signinum* it is likely this room was a special sweating room, called the *sudatorium* for steamy, wet heat rather than a *laconicum*, a hot dry room.

The demolition fill of this room had been excavated in 1986 to a depth of 60cm. Found in the backfill was a scale ruler with the name 'B. Philp' inscribed on it. Below this disturbed layer the demolition infill was loose for another 120mm and included 12th-13th medieval pottery. Below this, Roman layers of deposition- charcoal, soot, tile, brick and pot (055) were encountered. Some 37 sherds of Roman pottery weighing 301g were retrieved and they were mostly fresh pot dating from AD300-420.

The range of pottery types was diverse and include Late Roman hand-made grog-tempered ware, Thameside greyware, Fine Alice Holt/Farnham ware, and Streak burnished ware.

The only Roman coin found in this context (055) is a silver coin of Antoninus Pius dating from AD138-161.

Room V(5) and Room VI(6)

Room 5 and 5 are to the south of the internal furnace room (Room 7) and together are the second largest room in the bath-house. Both rooms together measure internally 8.60m along its length and 2.90m across its width with the apse length from the internal octagon wall of 4.90m.

It was thought at an early stage of the investigation that a narrow partition wall divided Rooms 5&6 but the evidence is now considered flimsy.

The important feature of this suite of rooms is the apse built into the outer octagonal wall on its south-west side. It protrudes about 1.85m from the outer octagonal wall and is 3.90m wide (external).

Fig. 46. Room 10 facing north-west. Part of the walking surface floor had survived in the north-west corner. Constructed of polished *opus signinum* set on Roman tile, it at 8.52m OD gives a depth of the heated void below the floor of 1.20m.

Traditionally, this is usually the hot room *(caldarium)*, and the semicircular apse *(schola)* would house a marble basin *(labrum)* usually on a pedestal and connected to two water pipes, one hot and one cold which probably ran from the boiler which sat astride the furnace in Room 7. That the apse faced south-west is off particular interest as Roman bath development shown at Hadrians villa and other sites suggest Roman bath builders experimented with a sunbathing room *(heliocaminus)* built into a south-west facing apse. The reason being that the baths usually opened at midday when the sun was shining from the south-west and any south-west facing room would have had extra solar heating.

It was normal practice in this type of room to have adjacent to the furnace in the next room (Room 7) a rectangular bathing pool which received hot water directly from the boiler and was also heated from underneath by a device called a *tetestudo*, a semi-cylindrical metal tube open at one end- the furnace end- to exchange heat with the pool water. Unfortunately no evidence has survived in this room to confirm this arrangement. This room was usually one of the more highly decorated rooms in any Roman bath suite and here three small fragments of decorated stucco were recovered in the area of the apse.

There was no evidence for this room having been excavated by Philp in 1986 but the external Kentish Ragstone wall was robbed, probably in the 12th century as three fresh pottery sherds from this date were retrieved in the wall demolition debris.

The concrete base of the marble basin was still in situ and fragments of white Carrara marble fragments from the basin found in the surrounding demolition material indicate the basin would have been impressive and an import from Italy. Surviving examples of marble basins such as in the Forum baths at Pompeii and the baths at Herculaneum show how opulent and impressive this feature can be.

Both rooms enjoyed underfloor heating with 32 brick *pilea* still surviving, again as in Rooms 1 &10 with a subfloor slope seen elsewhere in Kent at Lullingstone and Little Chart Roman baths. The vertical wall faces were tanked with *opus signinum* and part of a column

Fig. 47. Excavating the mortared foundations of the basin (*labrum*) in Room 5. The base is circular and still retains the central column to take the weight of the marble basin and column. Interestingly the feature was built over *pilae* towers presumably so the level of the basin foundation could be made level with the suspended *opus signinum* floor when built. The outer wall of the apse has been robbed of its Kentish Ragstone (blue arrow) but the curve of the apse can be followed in the Brickearth cut.

base- built of Kentish ragstone blocks- was revealed by excavation. Part of the horizontal *opus signinum* floor was attached to the base of the column giving a OD height of 8.24m. The base of the subfloor at its deepest is 7.44m giving an underfloor cavity of 80cm. There is no indication of vertical heating to the walls or flues.

The join between horizontal floor and vertical wall was sealed with a *opus signinum* mortar quadrant. *Tesserae* still attached to the horizontal surface are large tessalated cubes (25x27mm) in a dark grey stone (report forthcoming).

The demolition fill (949) contained pottery dating c.AD350-420 and five Roman coins including (SF 56) of Constantine dated to 330-335, (SF 59) of Constantine 335-341, and three other coins of Constantine.

Damage to the rooms was confined to a robber pit (960) dug in the east side of the apse. No dating evidence for this event was forthcoming.

Room XI (11)

This room was badly damaged by Philp in 1986 and most of the construction evidence removed. Philps trenches had destroyed the outer octagonal wall at this point and all the internal Roman construction was missing. There is very little one can say about this room without access to the original 1986 excavation data.

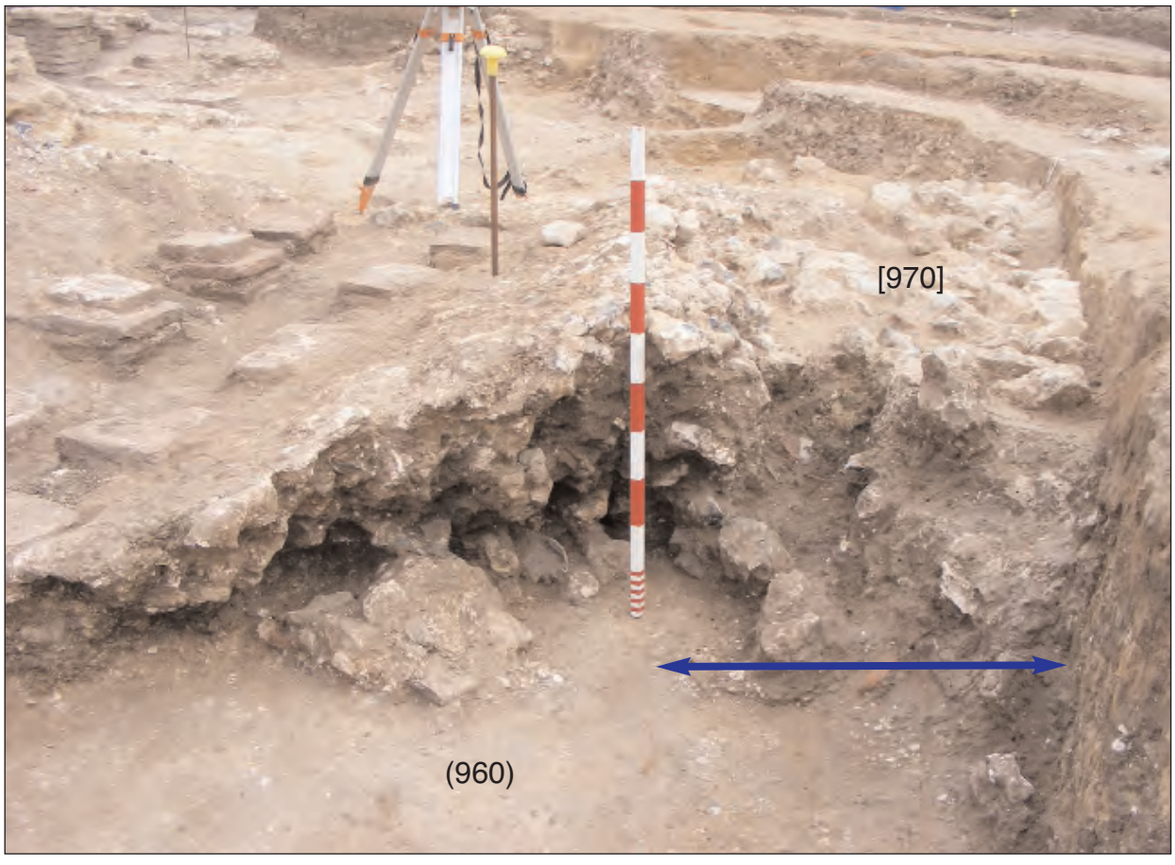


Fig. 48. A photograph showing the construction of the slope in Room 6 on the south side. Pit (960) has not been excavated. The outer octagonal wall (blue arrow) shows evidence of robbing but enables the construction of the wall [970] to be seen. The near-vertical cut to the natural soil (Brickearth) shows how the outer wall was built to the cut. The hypocauct slope is constructed out of nodules of flint set in a creamy-white mortar and tanked with *op sig* before building the *pilae*.

Room VIII (8)
By contrast Room 8, although damaged in 1986 had most of its stratification complete. Situated in the north-east quadrant and measuring 3.80m on the inside of the outside wall and 1.96m on the internal wall with the north wall being 2.90m and the south wall 3.10m.

Above the original build *pilaes* at about 7.27m OD from their base there was a build up of post-bath house kiln activity of about 1.25m thick. The kilns had been built from re-used Roman building material and this activity can be dated by the pottery found in various contexts to c.AD450-650. No coins were found in Room 8.

A square slot (38x40cm) had been cut through the Roman subfloor adjacent to the south wall and five sherds of (ES1) Early Saxon pot date this feature (923) to c.AD450-650.

The upper levels of the kilns and their contents had been removed presumably in 1986 by Philp. Unfortunately the kilns left underneath were recycled by the original builders and the only complete kiln would have been the final one.

A small section was cut through the stratification (Fig. 49) which revealed at least six cycles of kiln build with heavy burning to the re-used Roman brick and tile.

Room IX (9)
Located on the north side of the building and measuring about 2.90m from its north entrance to the central pool room (Room 4) and about 4.40m wide on the north side this is the only room inside the octagonal building without hypocaust heating.

Fig. 49. Excavating a small section through the build-up of kiln activity in Room 8. The remains of the final kiln can be seen to the right of the excavator. The re-used Roman fabric is heavily burnt and a build-up of ash can be seen blocking the flue of the kiln (red arrow). Part of the horizontal surface of the kiln survives and is cut into one of the bath-house walls. The vertical wall of the kiln is corballed and curving inwards (blue arrow) but the evidence for the construction of the kiln is lost. The excavator is cleaning around the Roman sub floor whilst standing on a *pilae* tower.

However, the main underfloor feature is the brick, stone and flint water conduit which runs from the south end of Room 3 to the edge of the central plunge pool. The width of the conduit is constant until it reaches the octagonal wall but once beyond the extension to the later circular pool it is wider and of a different build. At this point the full internal width of the conduit has been blocked and a lead pipe inserted (Fig. 50).

The conduit is built with a vertical taper and was probably corbelled. The walls consist of triple tile courses at the base of *opus signinum*. Above the triple course of tile is a course of small (30cm) ragstone blocks, again set in *opus signinum* which appear to be laid herring-bone fashion. Next a double tile course, then a course of knapped flint followed by a further double course of tile. Flint again and then a final double course of tile. The beginning of corbelling is visible at the north end. This room is architecturally interesting as it would have funnelled bathers from the changing room (Room 3) into the central octagonal room with its central bathing pool flooded with light from the clearstory windows built into the probable tower. From this octagonal room (Room 4) bathers could then access the suites of hot and warm rooms leading off from this central area. It is likely that Room 9 would have had no external lighting and could have been on the gloomy side, but the attention of the bathers would be drawn to the architectural delights ahead highlighted with the cascading

Figs. 50, 51. Looking into Room 9 (left) and facing south towards the pool room (Room 4). Room 9 is unheated and tapered as a wedge funnelling bathers towards the pool room beyond. Under the floor was the water conduit exposed here under the *op sig* floor which only survives as fragments. The conduit was later blocked off and a lead pipe inserted at the pool end (above). The right-hand door jamb between Rooms 3 & 9 can be seen alongside the 1m scale and to the right the remains of the *op sig* quadrant (blue arrow) in Room 3. The two layers *op sig* floor of Room 3 can be seen to the left (red arrow).

water illuminated by shafts of light- the effect would have been stunning.

Room IV(4)

This room is the central room of the complex and was the most important area in the bath-house. The pool has been rebuilt twice and repaired at least once. The original build was a large circular stone plunge pool (3.92m overall) connected to the water conduit passing through Room 9. Part of the pool structure was exposed by excavation in the south east quadrant and comprised dressed stone blocks tanked internally with *opus signinum*.

The later fountain base of polished *opus signinum* is much shallower and painted blue with a statue, probably of a water divinity located on the south edge and probably facing the only entrance through Room 9 and into the changing room or *narthex* (Room 3).
The shallow pool was substantially built with two distinct layers of *opus signinum* each about 80mm thick. The pool has now been reduced to 2.28m in internal diameter. The vertical sides of this pool were built in tile set in a off-white mortar with an internal tanking

Fig. 52. Room 4 (above) situated in the centre of the building was built originally as a large octagonal plunge pool. The blue lines indicate the outside edge of this massive structure which was probably the base of an octagonal tower that was pierced by arcading and rose to be the dominant feature of the building. The water conduit (red arrow) has been extended in the re-build of the pool.
The flint and mortar infill can be clearly seen with the later phase circular ornamental pool with a statue positioned to be seen from the changing room (Room 3).

of *opus signinum* some 90mm thick.

Between the horizontal and vertical faces a substantial *opus signinum* quadrant 80mm thick sealed the joint. A lead pipe seen in Room 9 must lead under this horizontal surface but it is not apparent how the pool was filled with water. It could be either from the statue or an inlet higher up on the pool side, the structure of which has not survived.

Equally perplexing is the method for emptying the pool. A drain made out of two *imbrices* was found on the north east side some 260mm lower than the base of the pool. It was obvious the water drained away around the hyopcaust system of Room 8 by the amount of deposited mud found here. But as Room 8 was not completely excavated the route of the drain after Room 8 cannot be ascertained.

The later pool built over the earlier and original plunge bath was too shallow for bathing and was an ornamental feature. At the same time as this build the areas inside the inner octagonal building structure and the plunge pool were infilled with a substantial mass of cobbles (972) set in an off-white mortar. The floor surface of Room 4 has not survived. The fill (975) of demolition material contained 235 sherds of Roman pottery dating between 370-420. One coin found in the mass of cobbles (972) is of Claudius II dated to AD270 and may suggest this material is from an earlier structure located elsewhere.

... One unworn coin retrieved from the mortar of the earlier original build of the circular pool is of Constantine VRBS ROMA showing wolf & twins and dated AD330-335.

Room 11I (3).

This large rectangular room is situated to the north and outside of the octagonal bath-house footprint and can be interpreted as a changing room *(apodyterium)* as in the layout of Chesters or Bignor or indeed the reconstruction at Wallsend *(Segedunum)*. This room would have contained wooden shelves, cabinets and attendants or slaves to deal with the storing of clothes and personal belongings.

The internal measurements are 7.30m in length and 5.25m in width. The room has been

Fig. 53. The later pool in Room 4 (left) has a smooth and polished surface of *opus signinum.* The plinth for a possible statue (blue arrow) can be seen, as can part of the vertical sides of the pool sealed from water leakage by a thick quadrant (80mm thick) of *opus signinum.*

built to the main building on a dwarf wall and was probably timber built as the masonry foundations were not substantial for a room this size. The internal floor surface (928) is of *opus signinum* built in two distinct layers and butting up on the external edges.

No external openings have survived but there is a substantial masonry and tile doorway leading into the main part of the octagonal bath-house at the south end of Room 3. This doorway has survived on the west jamb and is built into the main outer octagonal wall itself of Kentish Ragstone, some flint nodules all set in a off-white, slightly yellow/cream mortar. The west door jamb is reinforced with horizontal laid tiles (Fig. 55) with three courses surviving, each course about 30mm thick. The lowest tile above the *opus signinum* floor juts out about 50mm on three sides and is 170mm in length on both of the longer sides.

It is likely this arrangement is to allow the fitting of a substantial stone or marble architrave, a hypothesis reinforced by the *opus signinum* quadrant stopping short on both sides of the door (Fig. 55). This arrangement has been recognised by the writer both at the Oplontis

Fig. 54. Room 3 looking south towards the main part of the bath-house. We are seeing the north wall (blue arrow) which has been robbed out. The floor of the changing room or *narthex* is of a number of layers of substantial *opus signinum* still surviving (red arrow).

Roman villa and houses in Pompeii.

The floor surface of both adjoining rooms is of *opus signinum* with the level of the floor in Room 3 slightly higher than the floor surface in Room 9 at 8.42m OD. Being so close to the plough zone very little pottery had survived in context, a scenario exacerbated by a trench cut by machine from presumably the 1986 excavation crossing Room 3 diagonally from south east to north west.

On the west side of Room 3 a curving substantial ditch, probably dug as an aqueduct has been cut (1003) but not connected to the building, two sections were excavated but no pottery or artefacts retrieved. To the north a large pit had impacted on the north edge of Room 3 and a section excavated retrieved ES4 Early Saxon pottery with a date range of AD450-650.

Fig. 55. Looking out from Room 3 south west into Room 9. The doorway can be seen clearly on the right with the tile reinforcement stepped in (blue arrow) to receive a substantial architrave. To the left of the I metre scale can be seen the north end of the water conduit (red arrow) which runs under the floor of Room 9. The conduit was fully excavated at this point and stops here which means its either been blocked off to form a reservoir after its initial build or there was a surface drain, now disappeared with a water supply no longer apparent or it was never connected in the first place.

8. Archaeological Finds

Ceramic assemblage
A full programme of spot-dating has been carried out by Malcolm Lynne. An interim assessment can be found in *Appendix 1*.

Roman Building Ceramics (RBC)
A comprensive assessment of of the RBC assemblage from Bax Farm will be carried out as part of the post-excavation programme.

13.4. Coins
Spot-dating on Roman coins has been carried out on all coins recovered from Bax Farm (*Appendix 2*). An earlier report on coins from the adjacent villa at Deerton Street is also of interest. Dr Abdy's summary for the Deerton Street coins is:
"The coins from Deerton Street villa show an entirely late Roman character. The two Antonine coins could have been in use up until the disappearance from general circulation of early Roman *aes* sometime around the AD 270s. Such a late deposition is especially likely since they are in the company of coins that uniformly date from the second half of the third century onwards. Two-thirds of the coins are fourth century, with a strong presence of the final issues to be supplied to Britain.

13.5 Small Finds
Small finds are in the care of MoLAS and a full assessment of all findings will form part of the final report.

13.6. Environmental evidence
Quantification and analysis of the environmental evidence retained will form part of the post-excavation work, but apart from the Anglo-Saxon pits little was retrieved.

13.7 Animal bones
The few bones that were retrieved will form part of the post-excavation work.

13.8 Summary of the Site Archive
In addition to the artefact assemblages mentioned above, the Site Archive includes: Correspondence, 325 digital photographs, 15 colour and b/w slides. 9 permatrace site drawings of plans and sections. Context register and sheets, site notebooks. A full archive catalogue will be prepared for publication on receipt of final specialist reports.

9. Recommendations for further Archaeological Assessment

Statement of potential
The archaeological excavations at Bax Farm have confirmed the presence of an important Roman stone-built octagonal building constructed originally in the mid 4th century with occupation and alteration continuing to the early 5th century.

With the archaeological investigation of the adjacent Roman villa, and the other Roman buildings known in the vicinity it seems a substantial Roman villa estate was established very soon after the conquest in AD43 and continuously occupied until at least the early 6th century.

Fieldwork in the environs of the villa estate show that the landscape was laid out with Roman field measurements, and with Germanic and Anglo-Saxon layers added later.

The surrounding features and buildings have had only limited excavation, and if preserved from ploughing further investigation will be available for future archaeologists.

Conclusions
The archaeological investigations at Bax Farm have been carried out in accordance with a written Research Design and Method Statement (Appendix 3).
Archaeological remains present within the study site have been assessed and reported, enabling preservation by record.

A wealth of important data on the establishment and design of an unusual Roman bath-house building set in its landscape has been retrieved, and an opportunity realised to teach a future generation of archaeologists the importance of Roman building technology and landscape interpretation.

Acknowledgments
The Kent Archaeological Field School would like to thank Oliver Doubleday and family for allowing access to the Bax Farm site. Thanks are also extended to BBC History, and Peter Kendall of English Heritage. Chris Fern, Jonny Madden for illustrations, and students past and present who carried out the archaeological fieldwork.

Paul Wilkinson

Dr Paul Wilkinson
December 2011

10. Earlier Work

The site of Bax Farm was unknown to the author and found through field walking as part of the Swale Survey in 2000. On investigation it seems the farmer many years ago snagged masonry with his plough and informed Mr Brian Philp who conducted a investigation without publishing, apart from the news item below:

'STOP PRESS- Roman Building Found near Sittingbourne. In September 1986 members of several C.K.A. groups assisted with an important rescue excavation on a hitherto unknown Roman site in the Sittingbourne area. Deep ploughing had revealed a scatter of Roman material on farmland and it seemed likely that a site was being badly damaged. Urgent trial excavations on the site, fitted between cropping and ploughing were carried out by members of the KARU..... The excavations revealed part of a substantial Roman building, with some walls surviving to a height of about 4 feet and several rooms with traces of hypocausts. However, plough damage was found to be confined to the upper deposits only. It is hoped an interim report on the work will appear in a later edition.....' (KAR. Winter 1986: 121).

The plan (below) is by Brian Philp of his investigation of Bax Farm.

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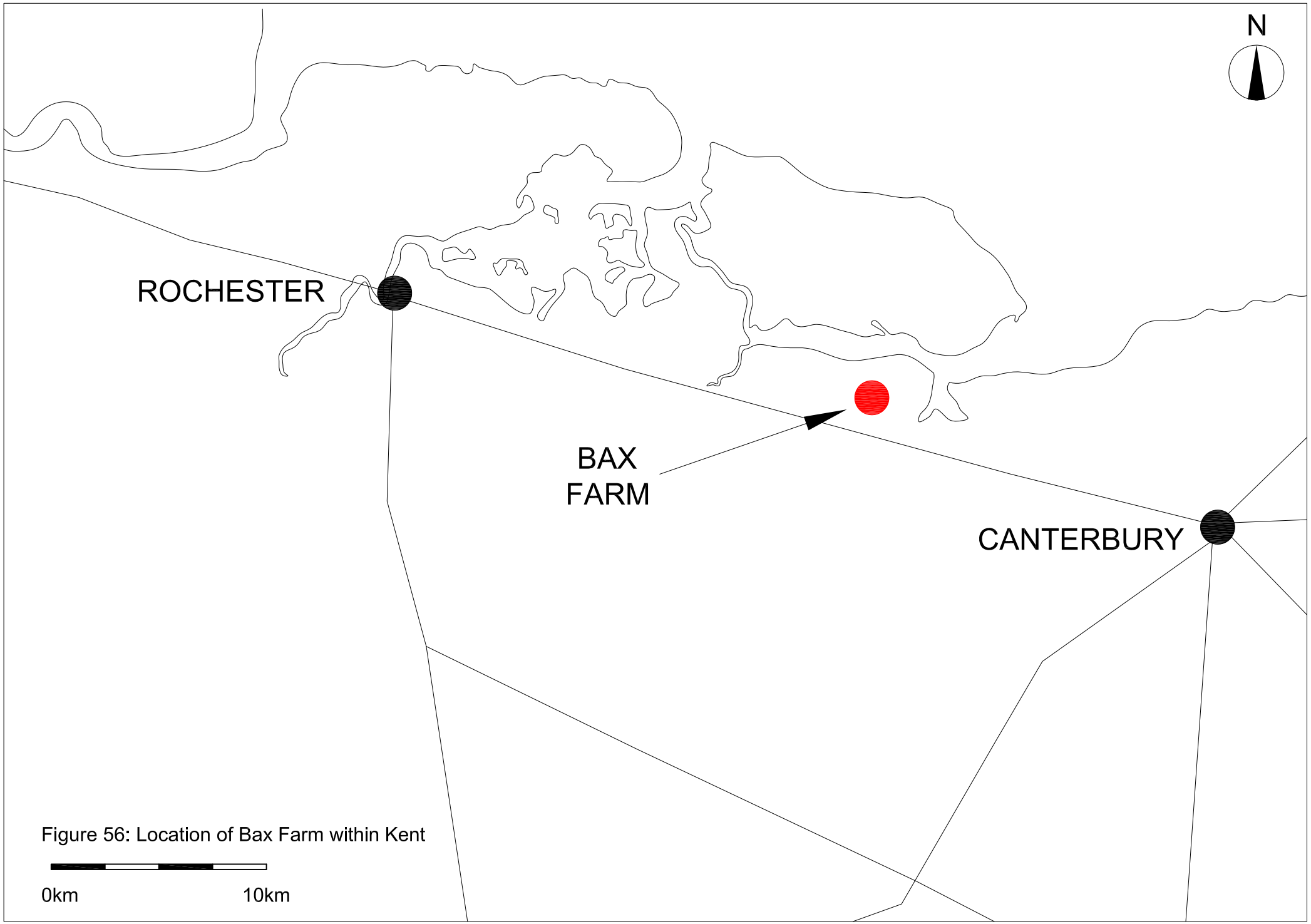


Figure 56: Location of Bax Farm within Kent

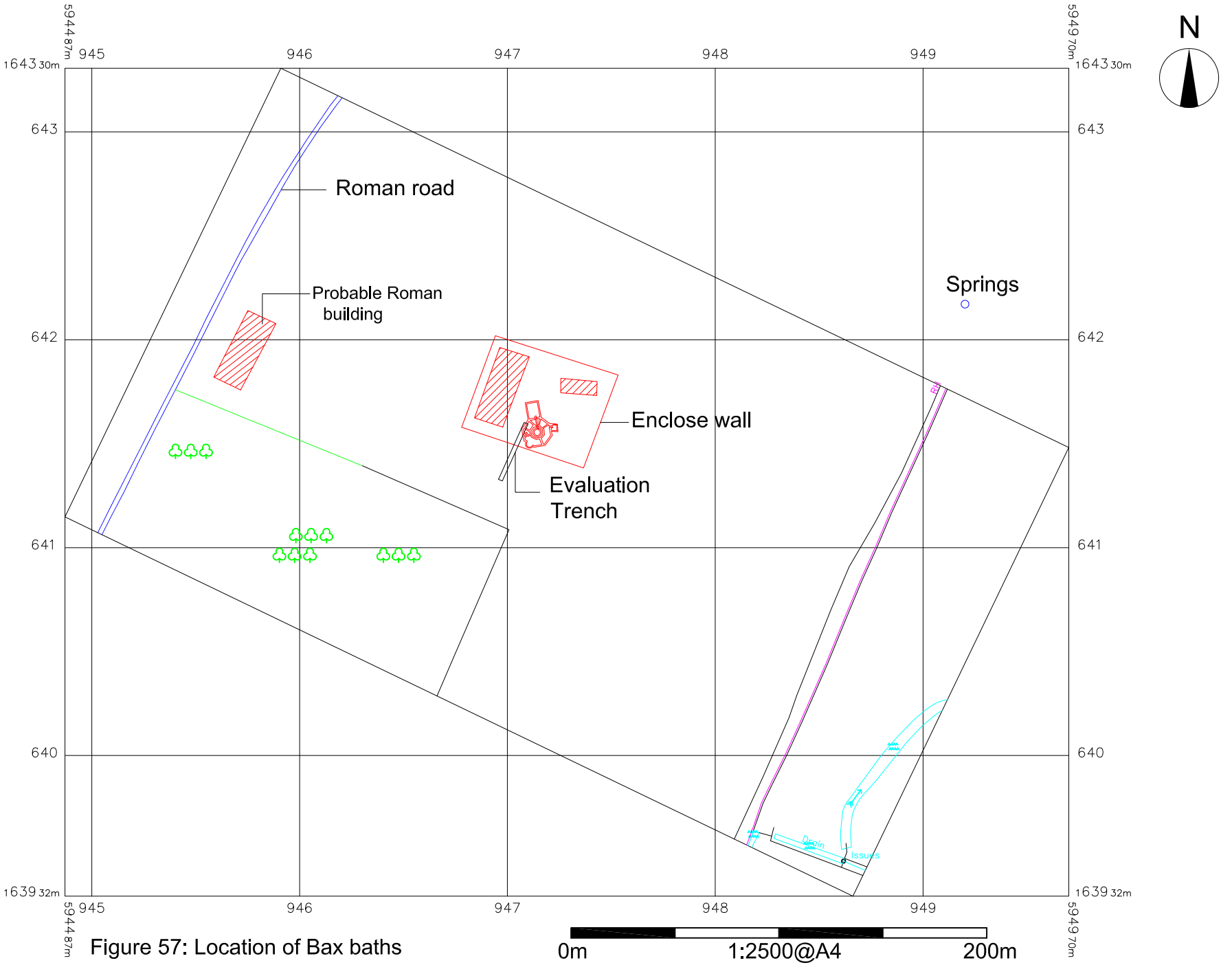


Figure 57: Location of Bax baths

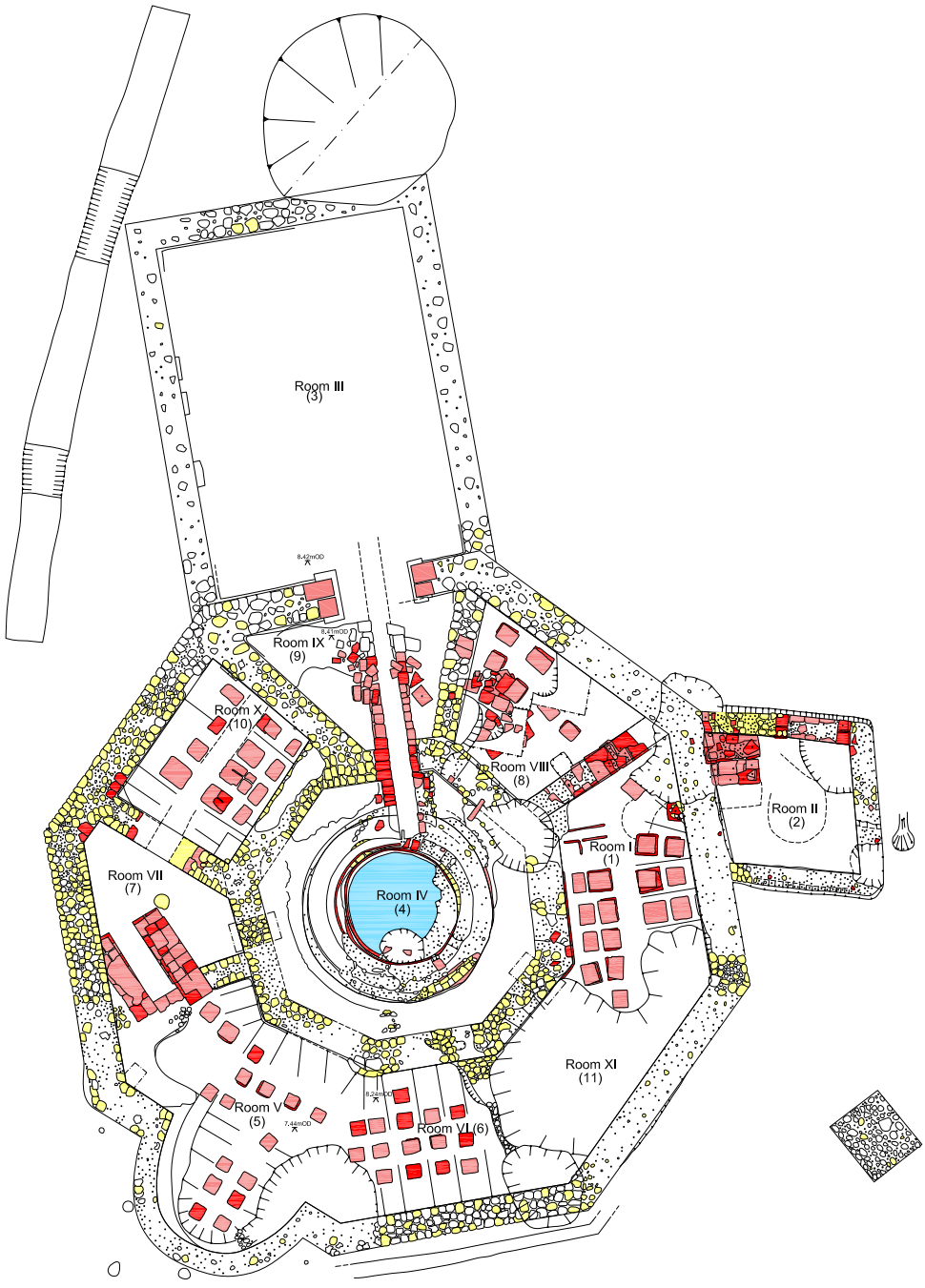
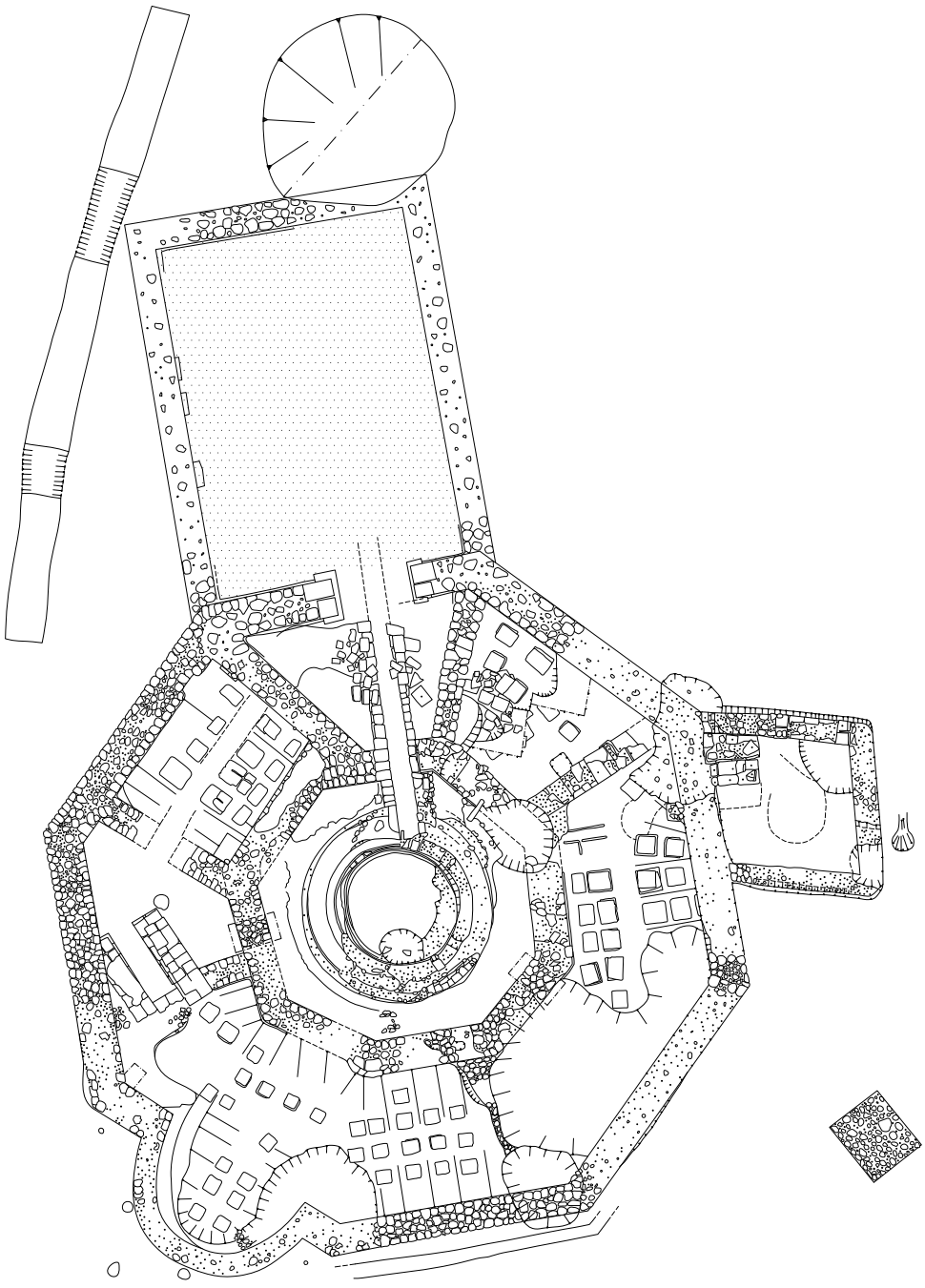


Figure 58: Bax baths plan



1:150@A4

Figure 59: Bax baths plan

0m 15m

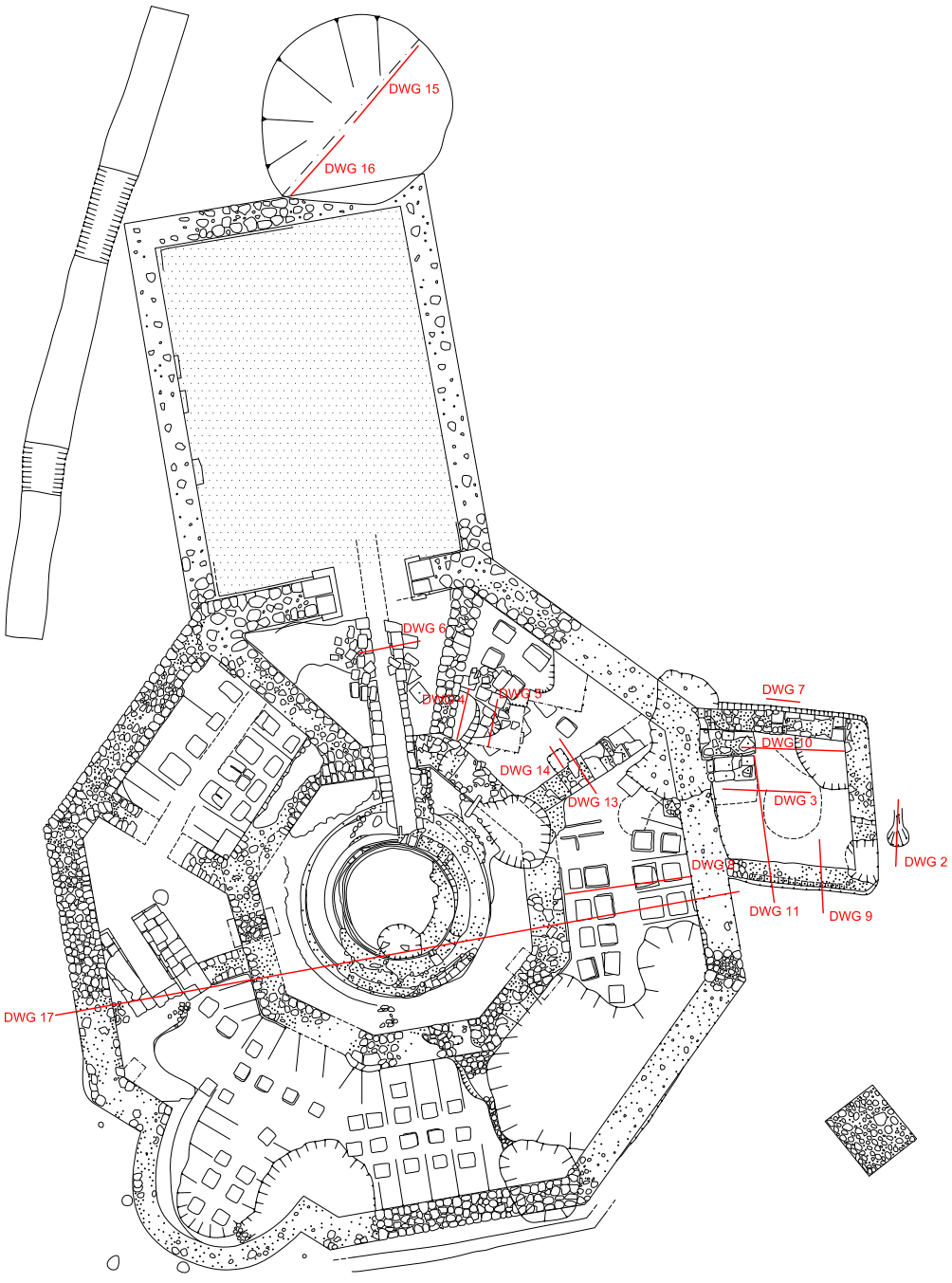


Figure 60: Bax baths plan with sections

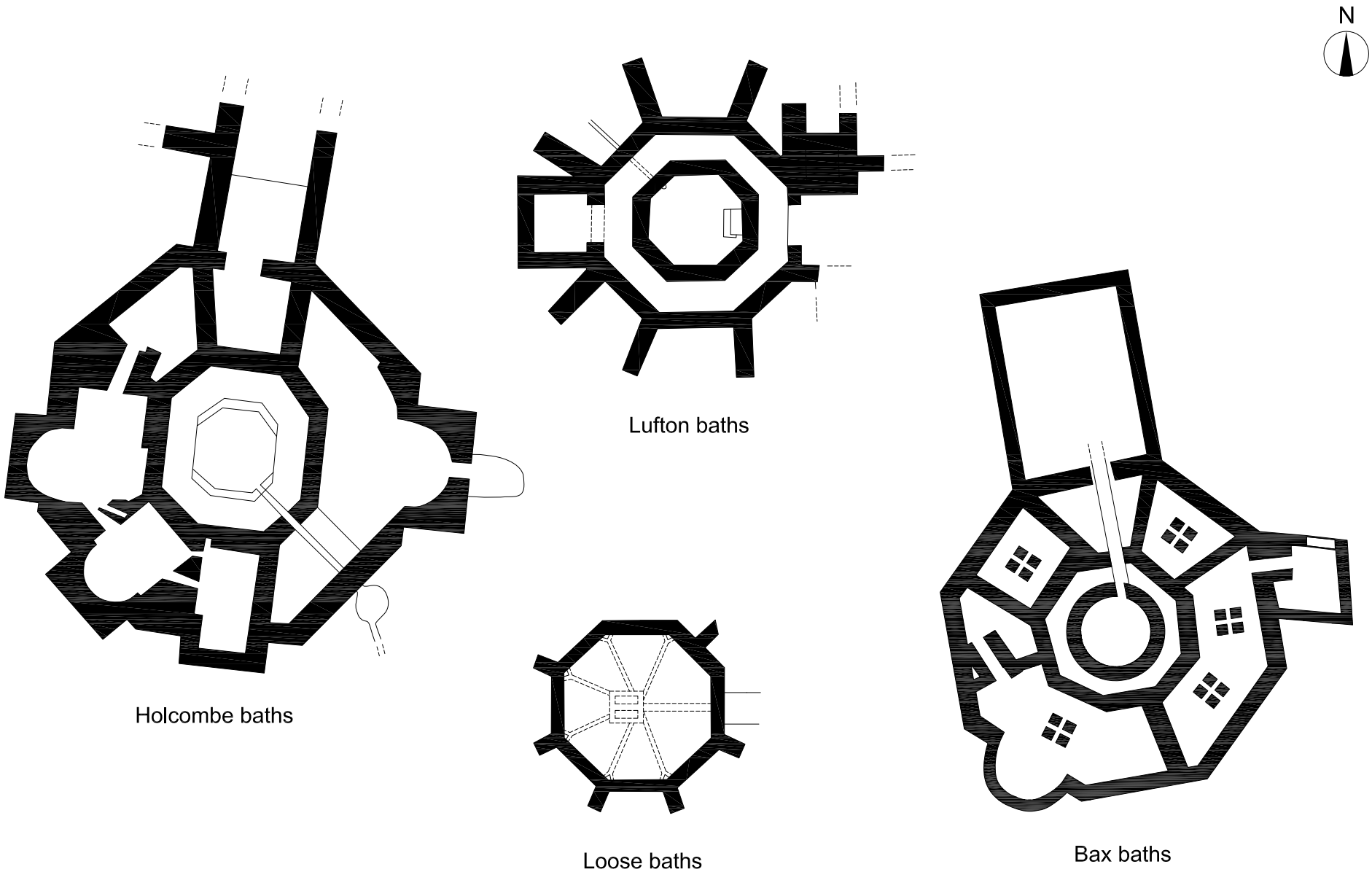
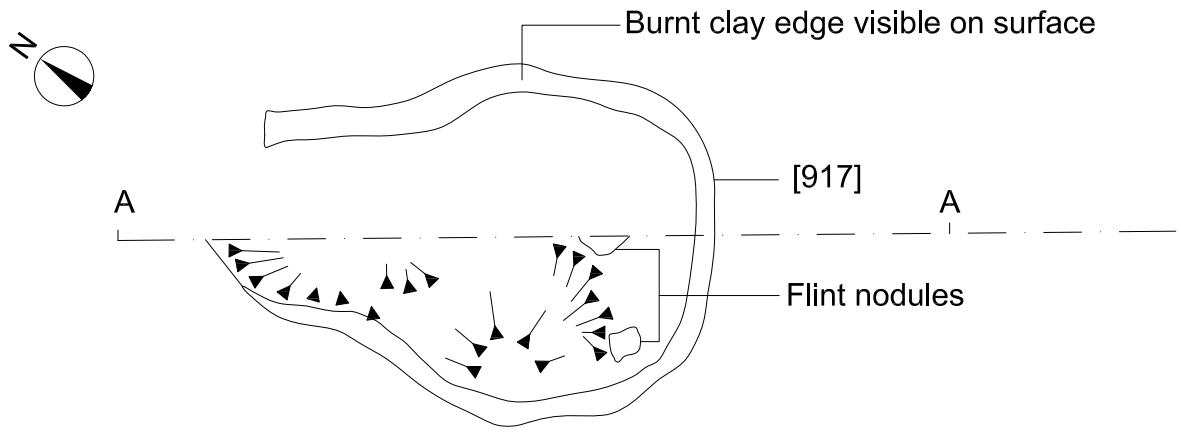
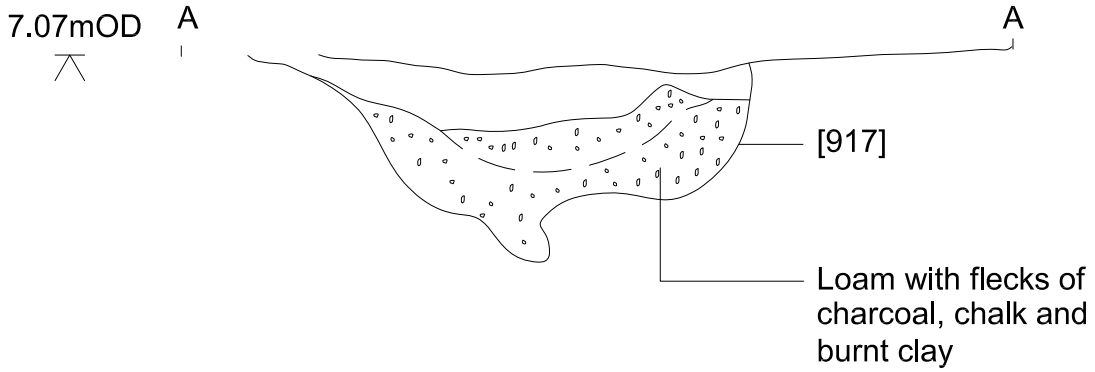


Figure 61: Roman bath houses

Drawing 1



Drawing 2

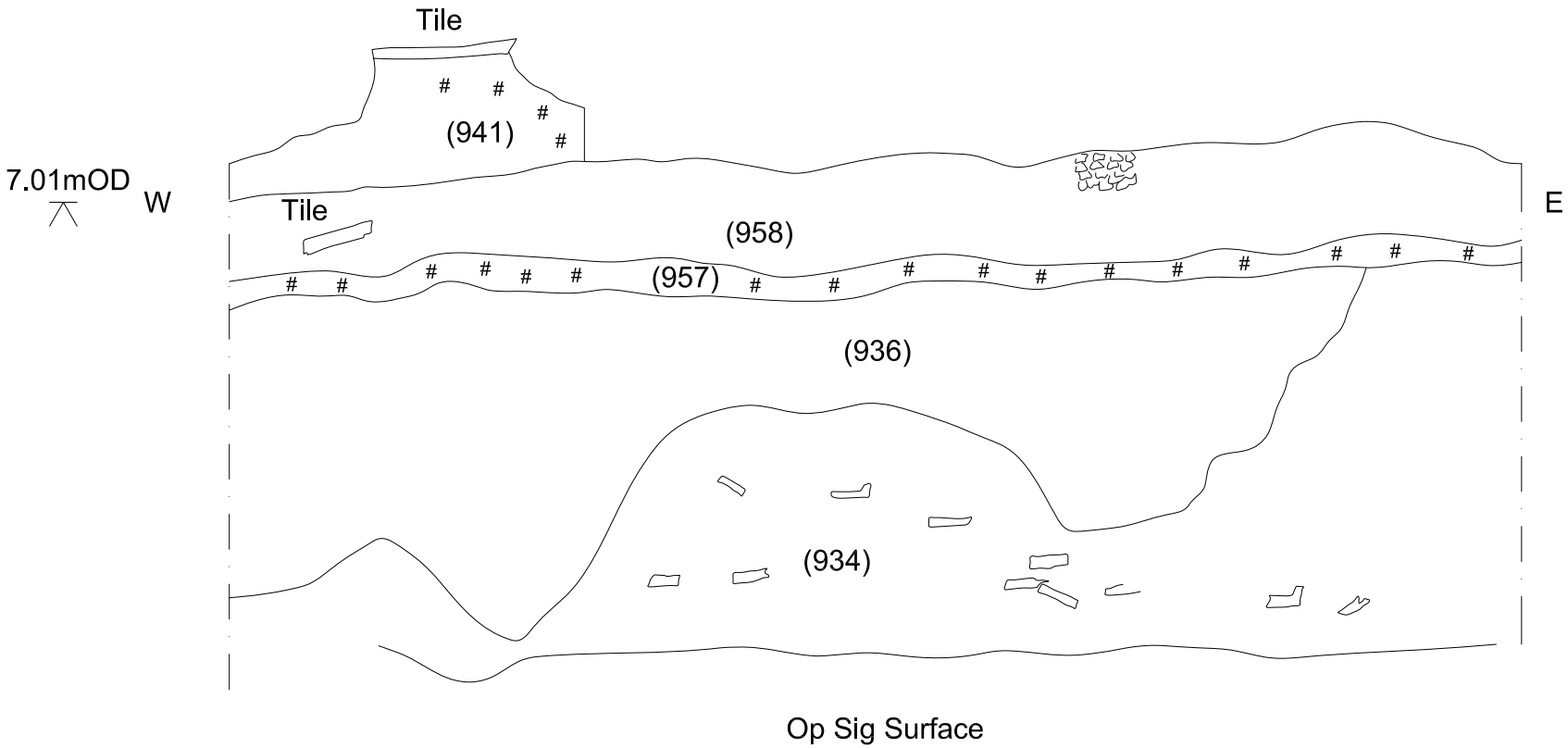


1:10@A4

Figure 62: Plan and Section

0m 1m

Drawing 3 - Burnt layers North of Room 1 over Hypocaust

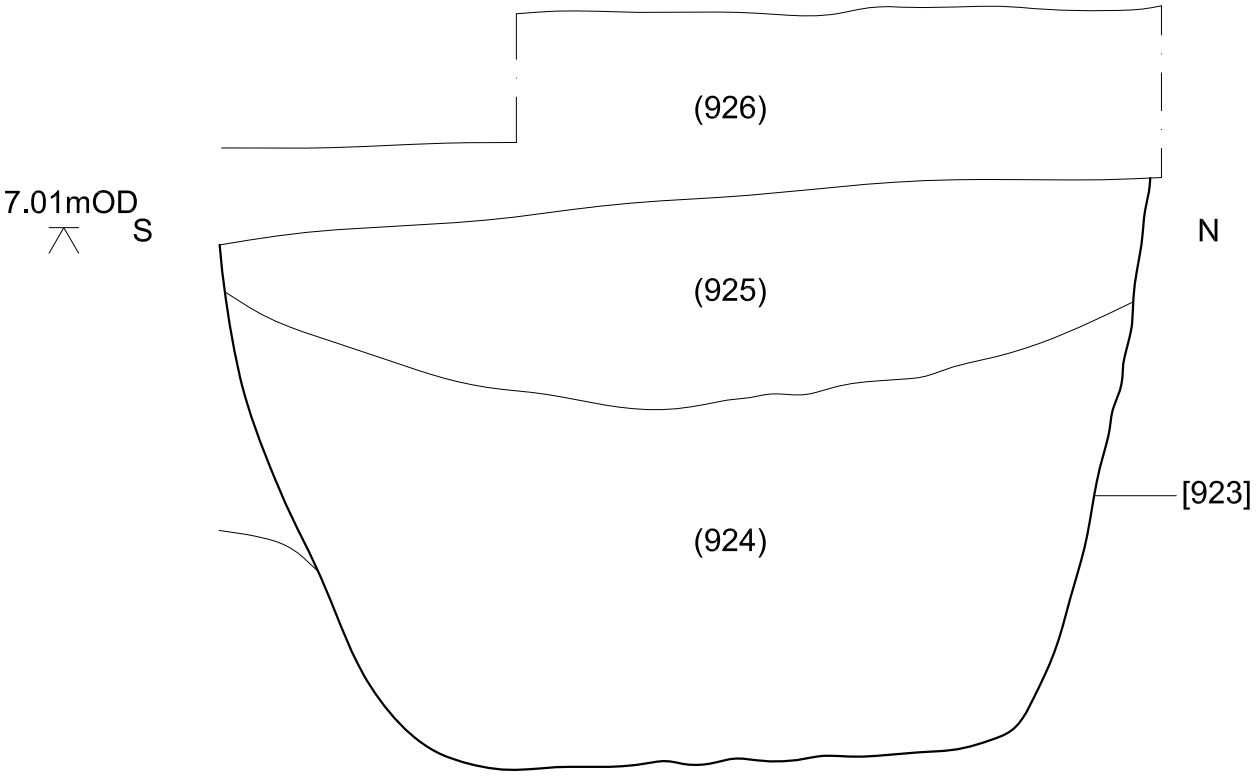


1:10@A4

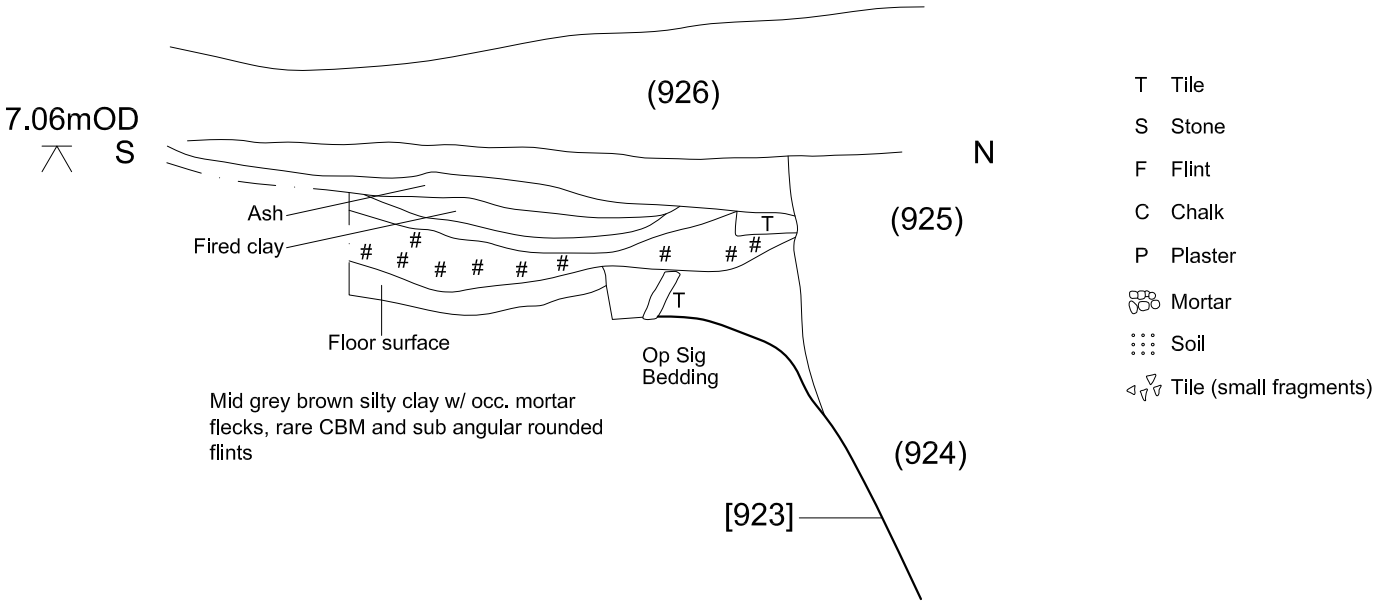
0m 1m

Figure 63: Section

Drawing 4 - Section of [923]



Drawing 5 - Hearth [937]

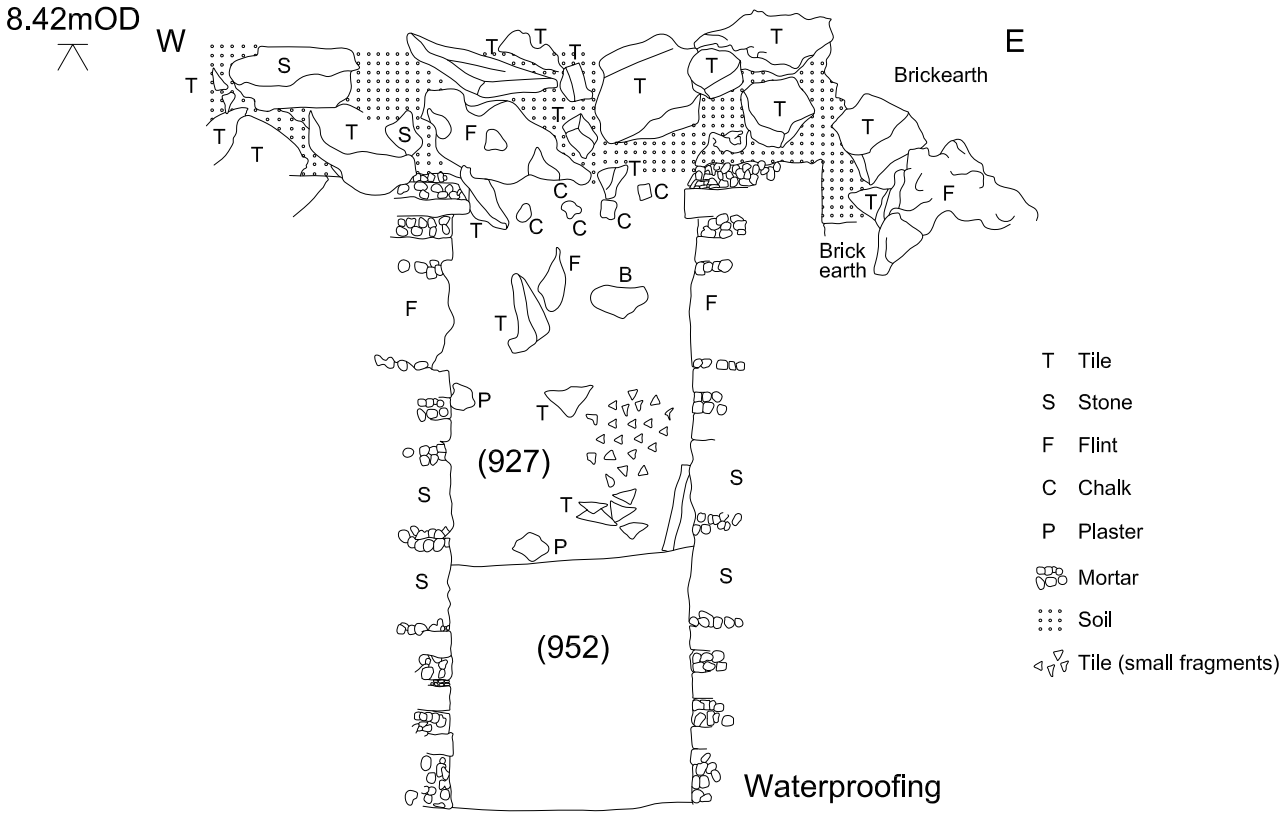


1:10@A4

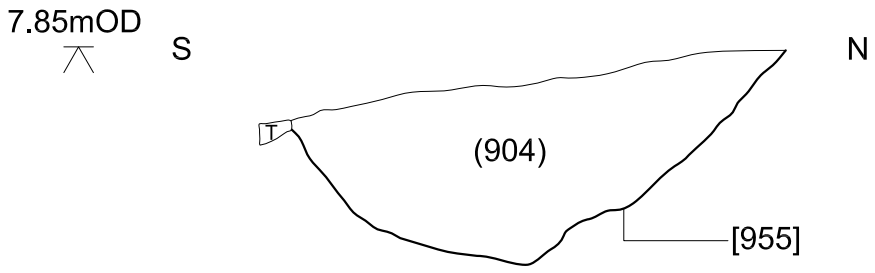
Figure 64: Sections

0m 1m

Drawing 6 - Culvert [953]



Drawing 7 - Kiln [955] North of Room 2



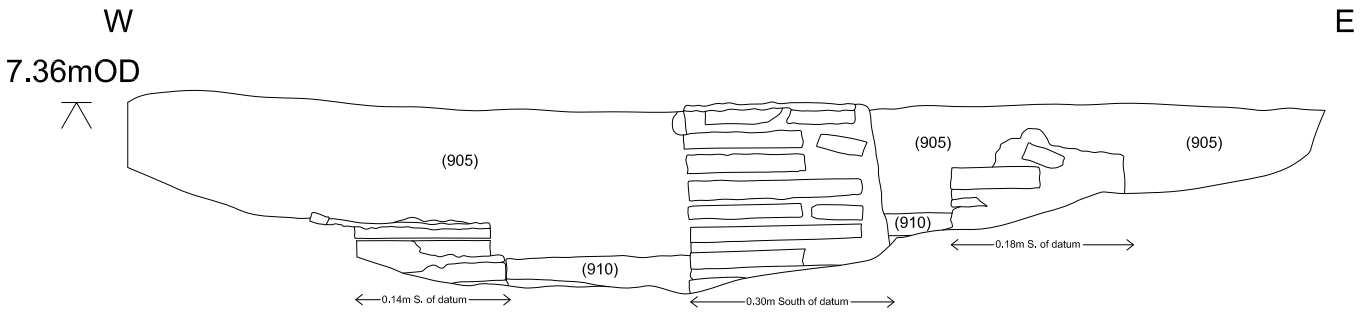
1:10@A4

Figure 65: Sections

0m 1m

N

Drawing 8 - South facing section through hypocaust; Room 1

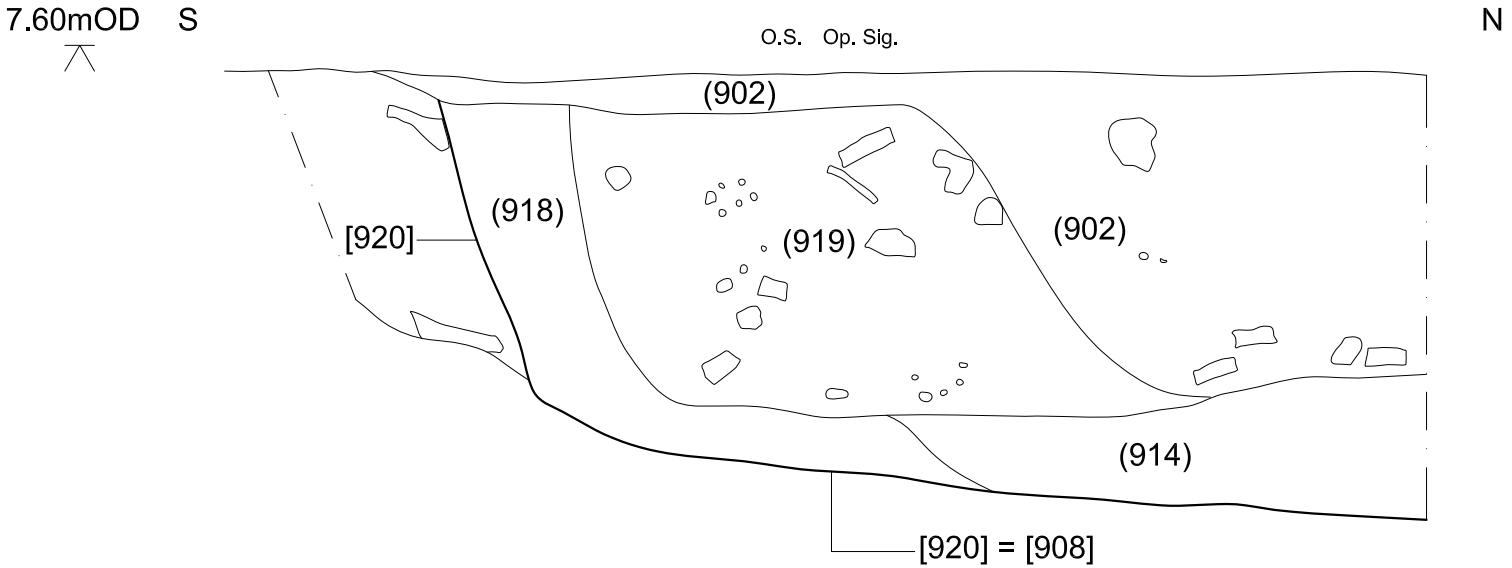


1:20@A4

Figure 66: Section

0m 2m

Drawing 9 - Room 2 Wall cut [920] = [908]

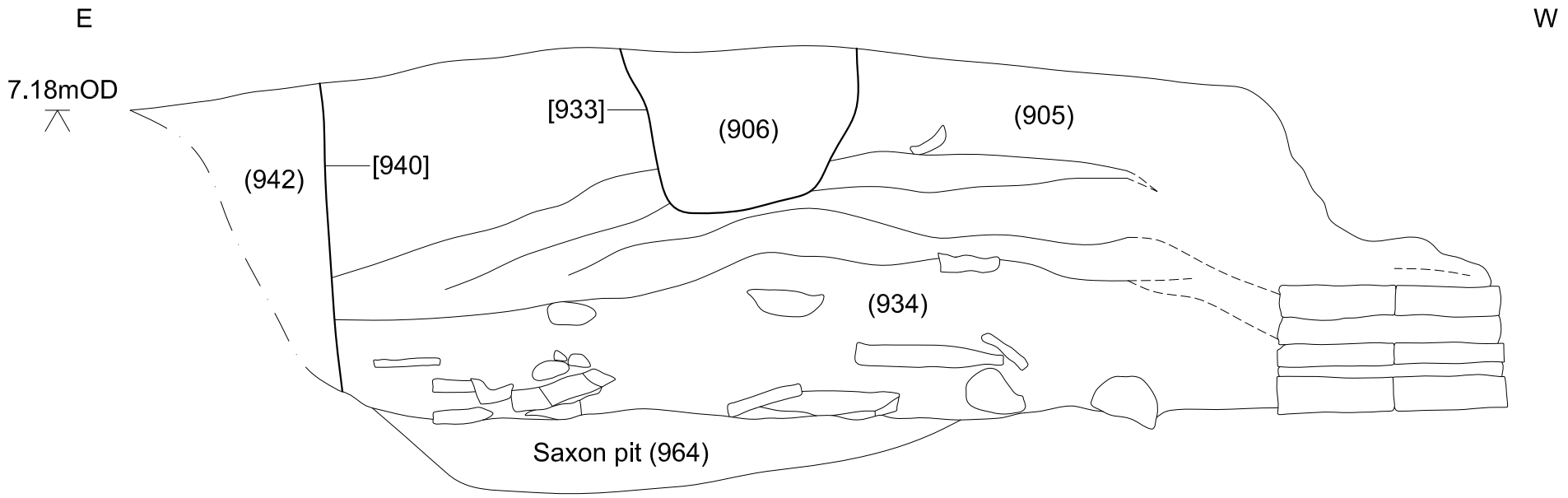


1:10@A4

0m 1m

Figure 67: Section

Drawing 10 - Section through North end of Room 1



1:10@A4

0m 1m

Figure 68: Section

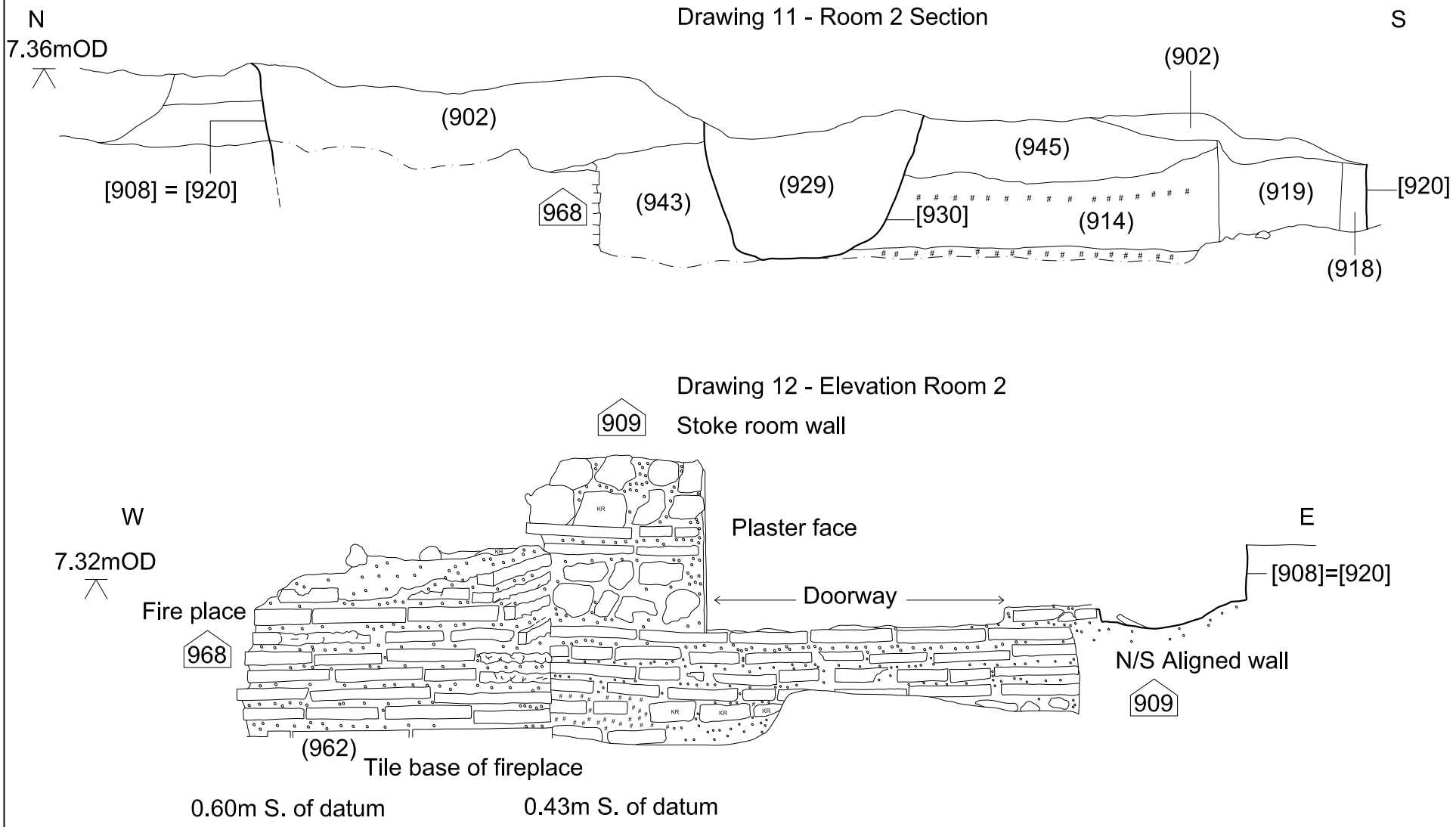


Figure 69: Section and elevation

Drawing 13 - Section of western edge of [923]

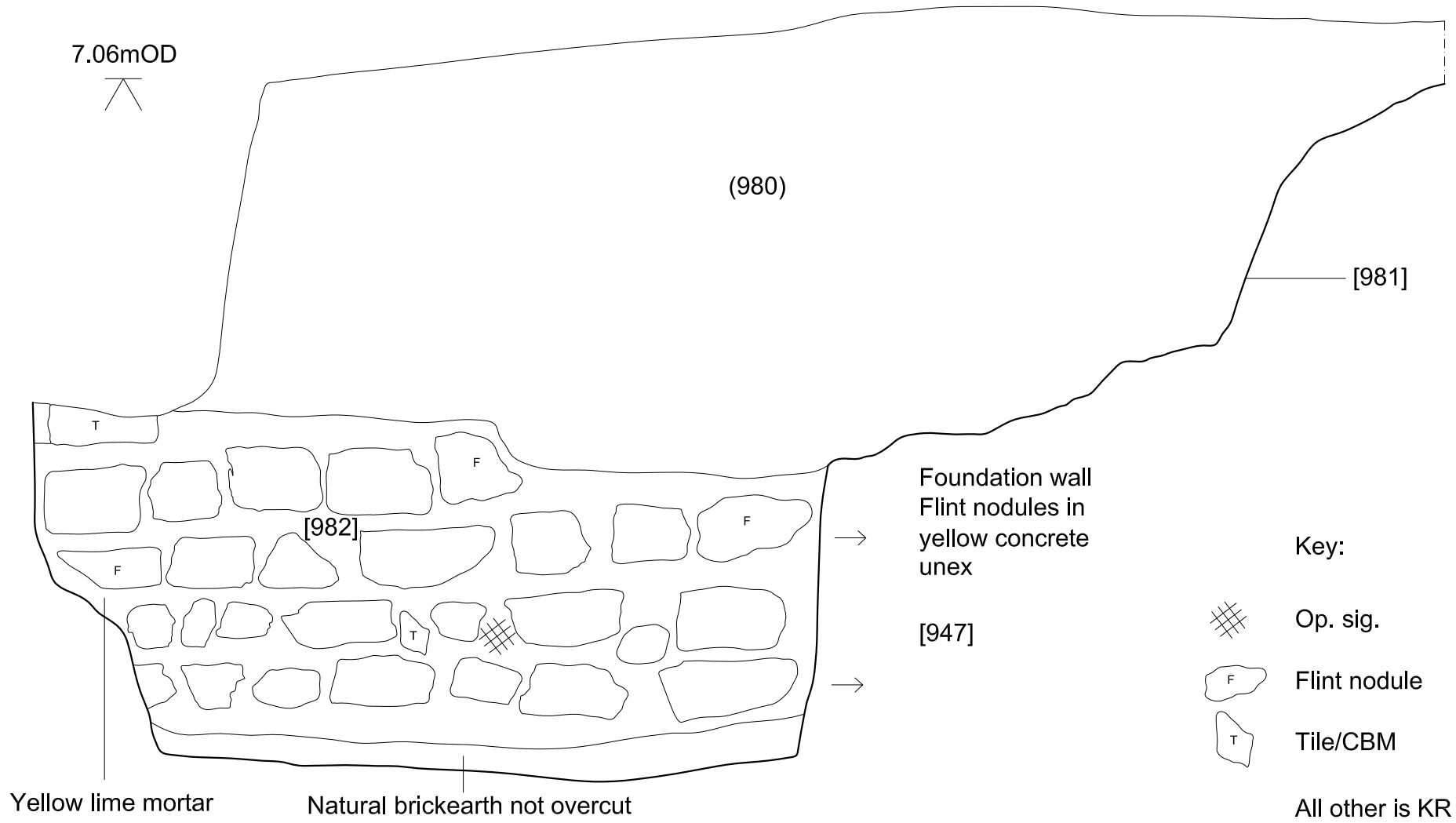


Figure 70: Section

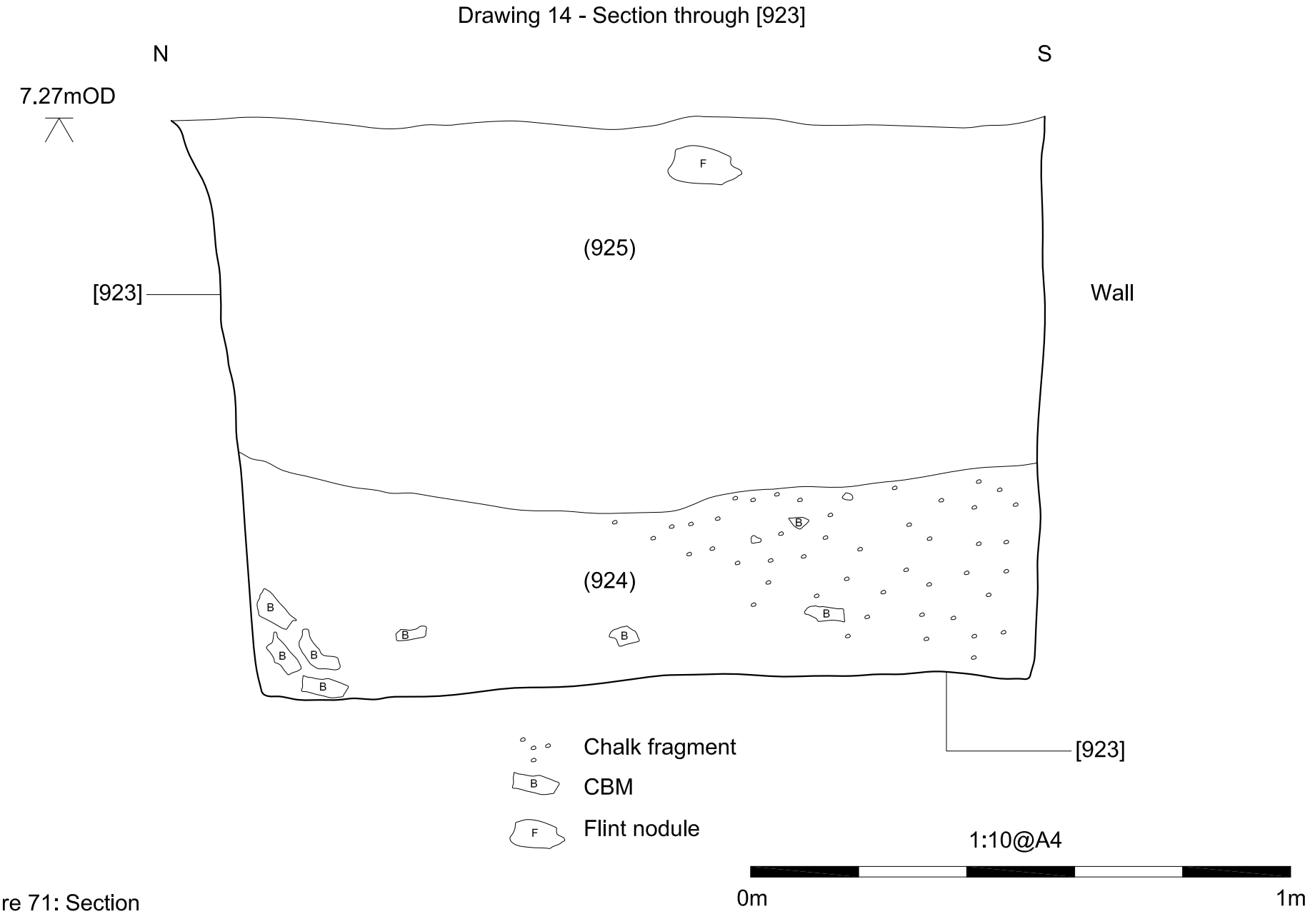
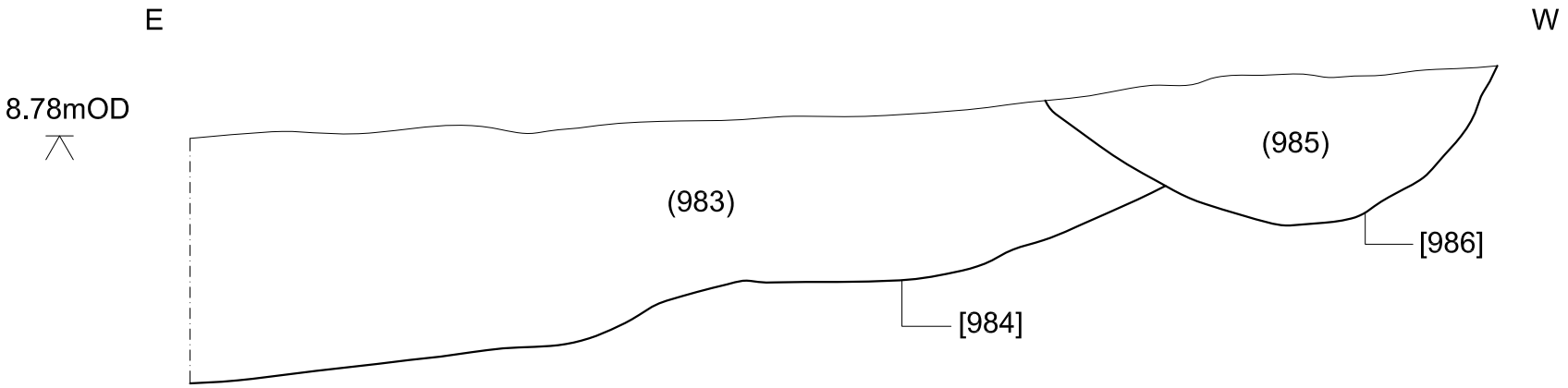


Figure 71: Section

Drawing 15 - Section of Saxon Grub Hut



Drawing 16

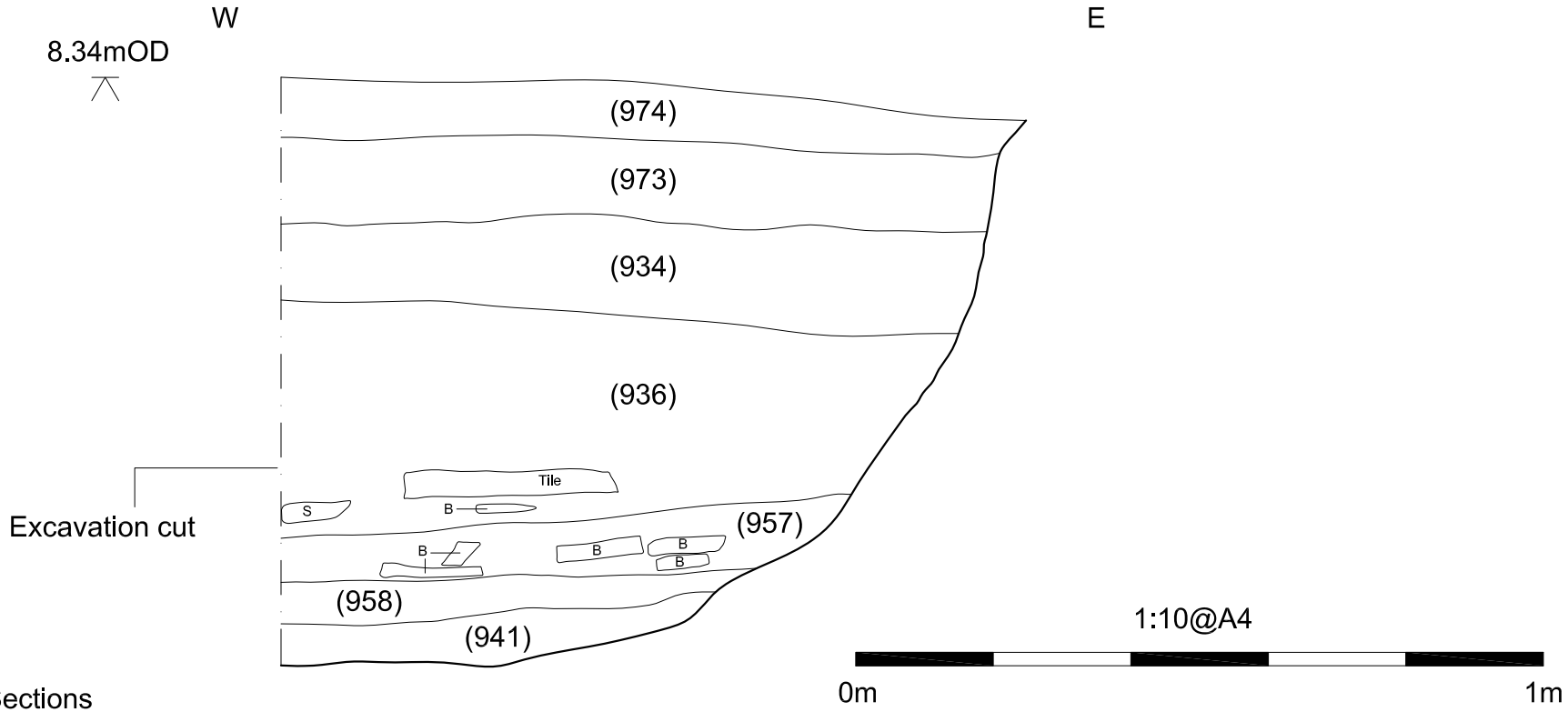
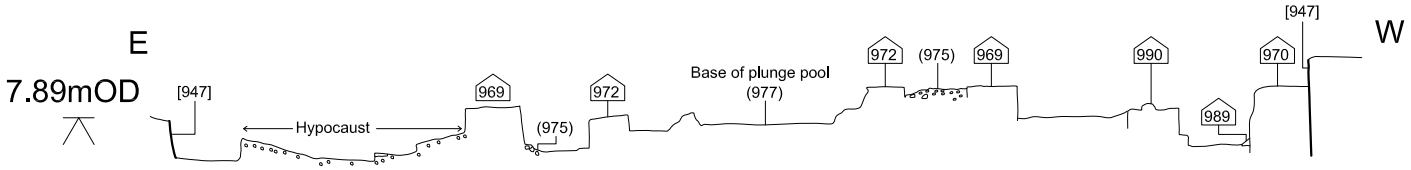
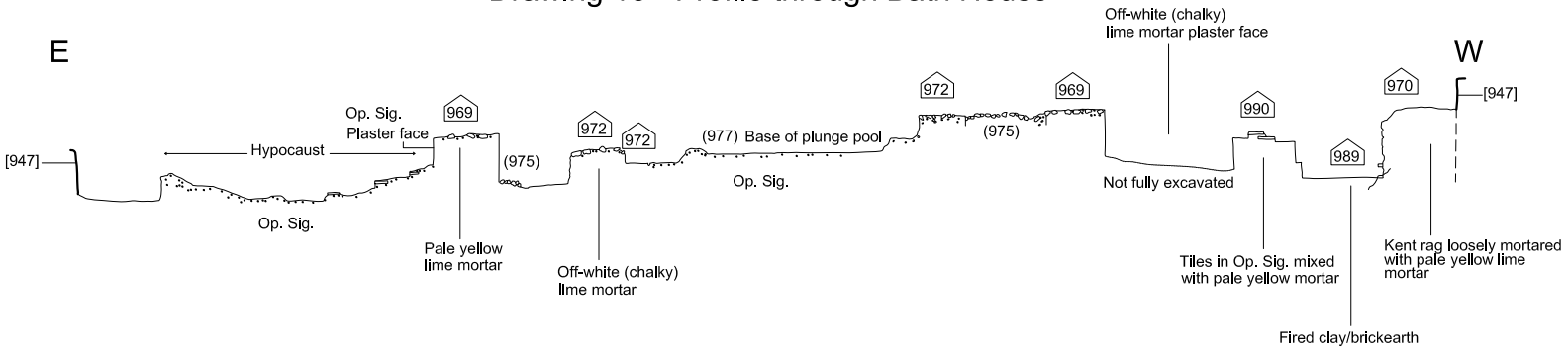


Figure 72: Sections

Drawing 17 - Profile through Bath House



Drawing 18 - Profile through Bath House



1:100@A4

0m 10m

Figure 73: Sections

APPENDIX 1.

SPOT-DATING OF THE POTTERY FROM BAX FARM

By

Malcolm Lyne

1. Fabrics

1.1. Iron Age

IA.1. Handmade fabric with profuse up-to 1.00mm calcined-flint filler
IA.2. Handmade fabric with up-to 2.00mm calcined-flint filler
IA.3A. Fine 'Belgic' Grog-tempered ware
IA.3B. Coarse 'Belgic' Grog-tempered ware
IA.5. Black fabric with very-fine-sand and sparse calcined flint filler

1.2. Coarse Roman

C1. Native Coarseware
C2A. Late Roman handmade grog-tempered ware with camouflaged grog filler
C2B. Late Roman handmade grog-tempered ware with siltstone grog filler
C4A. North Kent Shell-tempered ware
C4B. Handmade Harrold type shell-tempered ware
C5. BB1
C6. Imitation BB1
C7. BB2
C8A. Very-fine-sanded Thameside greyware with profuse up-to 0.30mm quartz filler
C8B. Coarse-sanded Thameside greyware with profuse up-to 0.50mm quartz filler
C9A. Very-fine-sanded Thameside greyware with superficial surface reddening
C9B. Coarse-sanded Thameside greyware with superficial surface reddening
C13A. Fine Alice Holt/Farnham greyware
C13C. Imitation Alice Holt/Farnham greyware
C18. Mayen ware
C19. Essex grog-tempered storage-jar fabric
C24. Miscellaneous coarse wares
C25. Canterbury greyware

1.3. Roman Fine and Specialised wares

F1A.Central Gaulish Samian
F2A.Grey Upchurch Fineware
F2B.Oxidised Hoo fineware
F3A.Oxfordshire Parchment Ware
F3B Oxfordshire Red Colour-coat
F3C. Oxfordshire Whiteware
F3D.Oxfordshire White-Slipped ware
F4A. Lower Nene Valley Colour-coat
F5. Hadham Oxidised ware

F10. Miscellaneous finewares
F12. Miscellaneous amphorae fabrics
F13. Miscellaneous mortaria fabrics
F14B. New Forest red clour-coat
F16. Streak-burnished ware
F17. Silt-tempered greyware fired polished pink-brown
F18. Fine buff Canterbury oxidised ware
F19. Late Rhenish colour-coat

1.4. Early Saxon.

ES1. Silt-tempered handmade black fabric with interior polish
ES2. Similar but with up-to 2.00mm quartz stuck to exterior
ES3. Soapy polished black with chaff impressions
ES4. Handmade black with profuse up-to 2.00mm white quartz filler
ES5. Handmade brown-black with profuse crushed up-to 3.00mm chalk filler

2. Catalogue

Context	Fabric	Form	Date-range	No of sherds	Wt in gm	Comments
03	IA1		Mid-Late Iron age	2	18	
DEMOLITION	1A2		Late Iron Age	2	18	
LAYER	1A3A		L.I.A.-150/200	2	19	
	C2A	Jars	c.270/350-420	5	40	
	C2B	Lyne 7A2 Jar	c.370-420			
		Misc jars	c.270-420	5	173	
	C4A	Storage jar	c.50-170	1	37	
	C5	Jar	c.120-300	1	4	
	C7	5C3 bowl	c.170-270			
		beaded+fl bowl	c.240-370	13	82	
	C8A	3H1.8 jar	c.170-270			
		3H8.1 jar	c.170-270			
		necked jar	c.270-370			
		cheese press lid		77	550	
	C9A	jars	c.180-370	6	33	
	C9B	jars	c.270-370	7	27	
	C13A	jars	c.270-400	3	33	
	C24			7	15	
	F1A	Dr 31	c.150-200	1	42	
	F2A	Closed	c.43-300	11	35	
	F2B	Jar		1	3	
	F3A	P24 bowl	c.240-400	1	2	
	F3B	Bowl	c.240-400	1	33	
	F3D	Mortarium	c.240/370-400	1	6	
	F5		c.250-400	1	1	
	F12	NAFR Amph	c.200-400	1	21	
		Gauloise 4		2	27	
	F16	Closed	c.250-370	2	4	
	F18		c.70-250	5	27	
	ES1	Jar	c.450-650	2	30	
	ES2	Jar	c.450-650	1	7	
	Tile			14	221	
	PM slate		c.19th c	1	5`	
			3rd c to 19th c	176	1513g	
04	C9A	Ev rim jar	c.200-370	3	55	Fresh
MILL STONE	C13A	Jar	c.270-400	2	15	
BASE	F2A		c.43-300	1	2	Fresh
	Med	?Jug	c.13th-14th c	3	28	
			c.200-1350	9	100g	
014	C9A/9B	Jar	c.180-370	1	3g	Fresh
026	IA1		Middle-Late Iron Age	1	7	
DITCH	C1	Jars	c.170-300+	7	77	fresh
	C2A	Jar	c.270/350-420	2	13	fresh
	C4A	Storage jar	c.50-170	2	82	

	C7	5C bowlx2	c.170-270	21	185	fresh
	C8A	3H2 jarsx2	c.150-300	34	277	Fresh
	C9A	jars	c.180-370	7	55	fresh
	F2A	rouletted beaker	c.190-300	2	7	fresh
	C24	jars		9	69	
	Tile			5	269	
			c.170-270/300	90	1041g	
029	IA1		Mid-to Late Iron Age	1	8	abraded
RESIDUAL	IA2		mid-to-Late Iron Age	3	21	V abraded
DEPOSITS	C1	Jars	c.170-300+	5	110	fresh
WASHED	C2A	Jars	c.270/350-420			fresh
DOWNHILL		7A13 bowl	c.370-420	9	77	fresh
	C2B	7A2 jar	c.370-420	8	140	Fresh
	C7	4A2 jar	c.170-350			
		5E1.4 dish	c.150-350	32	166	abraded
	C8A	necked jars	c.170-370			fresh
		store jar	c.270-370	91	417	fresh
	C8B	beaded+fl dish	c.270-370	1	1	fresh
	C9A	jars	c.180-370	8	60	Fresh
	C9B	jar	c.270-370	5	22	Fresh
	C13A		c.270-370	1	3	abraded
	C24			5	11	
	F2A	beakers		15	63	
	F2B	closed		1	4	abraded
	F3B	C51 bowl	c.240-400	1	2	
	F3C	M22 mortarium	c.300-400	1	32	
	F4A	Beaker	c.270-400	2	4	
	F10			1	6	
	F12	NAFR	c.200-400	1	39	
	F16	Bowl	c.250-350	1	5	Fresh
	F17	Open form	c.250-350	1	14	
	ES?		c.450-650	2	6	
	Tile			4	75	
	Fired clay			1	5	
			c. 270-370	200	1291g	
030	IA3B	Combed jar	L.I.A.-150	1	3	abraded
REDEPOSITED	C1	Jar	c.170-300+	1	8	fresh
MATERIAL	C2A	Jar	c.270/350-420	1	29	fresh
AROUND	C2B	Jar	c.270-420	2	27	fresh
MILL BASE	C4A	Jar	c.50-100	1	1	abraded
	C7	Dog dish	c.130-370	2	11	abraded
	C8A	Jar	c.200-370	7	32	fresh and abr
	F2A			3	3	abraded
	F2B	Closed		1	6	fresh
			c.270-370	19	120g	
033	IA2		Mid-to-Late Iron Age	1	3	Abraded
INFILL OF	C1	Jar	c.170-300+	1	6	Fresh
HOLLOW	C2B	Jar	c.270-420	1	62	Large fresh
WAY	C8A		c.150-370	3	7	
			c.270-300+	6	78g	
034	IA2		Mid-to-Late Iron Age	1	3	
UNDER O33	C1	Jars	c.170-300+	7	109	fresh
AND MID	C2A	Jars	C.270/350-420	13	153	Fresh
LEVEL OF	C2B	7A2 jar etc	c.370-420	36	512	Fresh
FILL	C4B	jar	c.370-400	1	13	Abraded
	C7		c.170-370	3	14	
	C8A	jars	c.270-370	19	96	
	C9A	jar	c.270-370	1	1	
	C9B	jar	c.270-370	1	11	fresh
	C13A	Cl 3C jar	c.270-400			
		Bowl	c.270-400			fresh
		Cl 6A.12 dishx2	c.330-420	11	158	fresh
	C24			3	87	
	F2A	Indented beaker	c.150-350	3	20	Abraded
	F3B	Beaker	c.240-400			Abraded
		Scale beaker	c.300-400			
		C50.1 dish	c.325-400			
		mortarium	c.240-400	12	69	
	F17	Dr 38 copy	c.250-350			Fresh
		Beaker	c.250-350	2	51	Fresh
	Tile			4	66	
			c.350-420	117	1363g	
035	IA1		M.I.A.-L.I.A	3	11	Abraded
UNDER 034	IA2		M.I.A.-L.I.A	9	48	Abraded
AND LOWEST	IA3A		L.I.A.-60	1	8	Abraded

FILL OF	C2B	Jar	c.270-420	1	4	
HOLLOW	C8A	Jar	c.150-370	1	2	Fresh
WAY	C24			2	5	Abraded
	F2A	Beaker	c.43-300	1	2	Abraded
	F18	Beaker	c.70-250	2	3	Abraded
	Tile			3	99	
			Mainly L.I.A.-250 with 2 fresher Late Roman sherds	23	182g	
036	C2A	Jar	c.270/350-420	5	49	Fresh
DEMOLITION	C2B	7A.15 dish	c.350-420			
DEPOSIT		lid	c.270-420	3	24	
	C7	3C bowl	c.170-270			
		4A2-6 bowl	c.170-350	10	96	
	C8A		c.150-370	11	44	Abraded
	C9B		c.270-370	1	3	Abraded
	C13A	open form	c.270-400	3	15	
	C13C	Necked jar	c.270-370	2	79	Fresh joining
	C24			7	35	
	F2A	Beaker		1	2	
	F3A	Closed	c.240-400	1	6	
	F3B	C51 bowl	c.240-400	1	3	Abraded
	F3C		c.240-400	1	28	
	ES3		c.450-650	1	6	Fresh
	ES4		c.450-650	1	4	Fresh
	Tile			1	2	
			c.270-650	49	396g	
037	IA3B	Combed	L.I.A.-150	1	21	Fresh
HILL	C8A	Jar	c.150-370	5	16	
DOWNWASH	C9A	Jar	c.180-370	1	30	Fresh
	Tile			1	12	
			L.I.A.-180+	8	79g	
038	C7	Jar	c.270-370	5	19	fresh
STRATA	C8A	Jar	c.170-370	6	14	fresh
AROUND	C24	Closed		1	2	
MILL BASE	F1A	Dr31R	c.160-200	3	70	fresh
	Tile			1	16	
			c.160-270+	16	121g	
042	IA2		M.I.A.-L.I.A.	1	6	abraded
DEMOLITION	C2A		c.270/350-420	1	6	abraded
DEPOSIT	C4B	Beaded+fl bowl	c.370-400	1	6	abraded
	C8A	Jar	c.150-370	1	6	
	C9A	Jar	c.180-370	6	71	fresh
	C24			6	20	abraded
	F2A	2A beaker	c.130-270	1	4	abraded
	ES4	jar	c.450-650	2	38	fresh
			c.450-650	19	157g	
043	IA2		Late Bronze Age?	1	18	V abraded
DEMOLITION	C1	Jar	c.170-300+	1	13	Fresh
DEPOSIT	C2A	Jar	c.270/350-420	1	7	Abraded
	C2B	Jar	c.270-420	2	8	Fresh
	C7	Closed	c.120-370	1	21	
	C8A	3H1 jar	c.170-270			Fresh
		misc jars		13	172	Abraded
	C9A	Jar	c.180-370	2	35	Fresh
	C9B	Jar	c.270-370	1	8	Abraded
	C24			1	16	
	F2B	Flagon	c.43-250	1	6	
	F3B	Beaker	c.240-400	2	6	Abraded
	F4A	Beaker	c.300-400	1	10	Abraded
	ES4		c.450-650	1	8	Abraded
	ES5		c.450-650	1	12	
	Tile			1	8	
			c.270-650	30	348g	
044	IA3B	Closed	L.I.A.-150	1	13	abraded
DEMOLITION	C1	Jars	c.170-300+	9	133	fresh
DEPOSIT	C2B	Open form	c.270-420	1	44	
	C4A	Storage jar	c.50-170	7	160	fresh
	C7	5C bowl	c.170-270			
		ev rim jarsx2	c.170-270	11	91	
	C8A	flask	c.190-350	42	386	Fresh
	C9A	Jars	c.270-370	25	229	Fresh
	C9B	Jar	c.270-370	3	12	fresh
	?C13A	open form	c.270-400	1	2	
	C24			7	37	abraded

	F2A	beakers	c.43-300	5	21	
	Tile			7	122	
			c.170-270/300	119	1250g	
046	IA2		M.I.A.-L.I.A	6	15	Abraded
HILL	C1		c.170-300+	1	4	Abraded
DOWNWASH	C2B		c.270-420	1	4	Abraded
	C13A		c.270-400	1	1	abraded
	C24			3	4	Abraded
	F5	Closed	c.250-400	1	3	Abraded
	Fired clay			2	8	
			Residual	15	39g	
047	IA3B		L.I.A.-60	1	8	
ADJACENT	C4A	Storage jar	c.50-170	2	48	fresh
DITCH ON	C7	3J3 jar	c.150-240			fresh
EAST SIDE		5E1.6 dish	c.130-300			abraded
		5E1.8 dish	c.170-230/70	11	48	abraded
	C8A	jars	c.170-370	5	40	Fresh
	C9A	jar	c.180-370	1	3	fresh
	C13A	open form	c.270-400	1	7	abraded
	C24			2	29	fresh
	F1A	Dr 31	c.150-200			fresh
		Beaker	c.150-200	4	12	fresh
	F2A	Beaker		8	25	fresh
			L.I.A/170.-270+	35	220g	
048	IA1		M.I.A.-L.I.A.	1	6	
DEMOLITION	IA2		M.I.A.-L.I.A	7	50	
LAYER OVER	IA3B		L.I.A.-150	4	94	
OCTAGONAL	IA5	Bead-rim jar	L.I.A.-70	2	11	
BUILDING	C1	Jars	c.170-300+	18	347	
	C2A	Jars	c.270/350-420	25	564	
	C2B	Jars	c.270-420			
		7A.9 bowl	c.270-300/50			
		7A.12 bowl	c.370-420			
		7A.16 dish	c.370-420			
		7A.17 dish	c.370-420	112	1775	
	C4A	storage jar	c.50-170	3	73	
	C5	cooking-pot	c.280-350	1	15	
	C6	incip b+fl bowl	c.220-300	1	28	
	C7	str-sided dishes	c.270-370			
		5F dish	c.130-300			
		beaded+fl bowls	c.240-370			
		imit 7B.9 bowl	c.350-370			
		5C bowl	c.170-270			
		misc jars	c.200-370	75	978	
	C8A	misc jars	c.200-370			
		beaded+fl bowlx2	c.240-370			
		5C bowl	c.170-270			
		5F1 dish	c.130-270/300	253	2065	
	C8B	jars	c.270-370	5	42	
	C9A	jars	c.180-370	29	335	
	C9B	jars	c.270-370	1	5	
	C13A	jars	c.270-400	18	152	
	C13C	jars etc	c.270-370	2	17	
	C18	cooking-pot	c.350-400	4	86	
	C19	storage jar	c.200-400	1	80	
	C24			23	213	
	C25	bowl	c.80-175/200	1	10	
	F1A	Dr 31	c.150-200			
		Dr 33	c.120-200			
		Dr 45	c.170-200	4	50	
	F2A	2A6 beaker	c.190-270			
		beakers				
		flask		48	294	
	F2B	closed		1	3	
	F3A	P24 bowl	c.240-400	1	23	
	F3B	C52 Bowl	c.350-400			
		C68 bowl	c.300-400			
		C81 bowl	c.300-400	5	103	
	F3C	Mortaria	c.240-400	4	139	
	F4A	Open form	c.270-400			
		Beaker	c.270-400	5	12	
	F5	Closed	c.250-400	3	21	
	F10			1	40	
	F19	Beaker	c.270-370	1	1	
	ES1	Cooking-pot	c.450-650	1	18	

	ES4	Cooking-pot	c.450-650	1	4	
	Tile			33	731	
	Tesserae			1		
	Fired clay			1	78	
	Asbestos		20th c	1	26	
	Medieval	Jug	c.1200-1550	1	9	
	Salt glaze	Ink bottle	c.19th c	1	3	
			L.I.A.-20th c	699	8501g	
049	C1	Jar	c.170-300+	3	144	
LOWER FILL	C2A	Jar	c.270/350-420	8	52	
OF ROOM 7	C2B	Jars	c.270-420	15	285	
	C4	Jar		1	8	
	C7	Ev rim jar	c.170-250			
		Str sided dish	c.170-370			
		Incip b+fl bowl	c.240-300			
		Dev b+fl bowlx2	c.240-370	32	335	
	C8A	Misc jars	c.170-370			
		Beaded+fl bowl	c.240-370	107	545	
	C9A	Jar	c.180-370	5	24	
	C9B	Jar	c.270-370	5	25	
	C13A	Jar	c.270-400	6	20	
	C19	Storage jar	c.200-400	1	35	
	C24			3	15	
	F1A	Dr 31R	c.160-200	1	29	
	F2A	Closed		7	19	
	F3C	M22 mortarium	c.300-400	2	81	
	F4A	Beaker	c.300-400	1	7	
	F5	Closed	c.250-400	2	7	
	F13	Mortarium	c.170-250	1	47	
	F14B	Beaker	c.260-400	1	4	
	F18	Bowl	c.70-250	1	4	
	Post med		19th c	1	2	
	Tile			2	164	
	Fired clay			1	2	
			c.240-370 ?PM intrusive	206	1854g	Fill
050	IA1		M.I.A.-L.I.A	1	4	
LOWER FILL	C1	Jars	c.170-300+			
OF ROOM 10		Mortarium	c.170-300+	25	613	
	C2A	Jar	c.270/350-420	3	44	fresh
	C2B	Jars	c.270-420	50	443	fresh
	C5	Open form	c.200-300+	1	10	abraded
	C7	Beaded+fl bowlx3	c.240-370			fresh
		Misc jars	c.170-370			fresh
		Str-sided dishes	c.170-370			fresh
		5E2.5 dish	c.170-270			fresh
		folded beaker	c.170-370			fresh
		incip b+fl bowlx2	c.220-300	119	1053	fresh
	C8A	misc jars	c.170-370			fresh
		beaded+fl bowl	c.240-370			fresh
		dishes		407	3406	fresh
	C9A	jars	c.180-370	58	632	fresh
	C9B	jars	c.270-370	4	20	fresh
	C13C	beaded+fl bowl	c.270-370			fresh
		str sided dish	c.270-370	7	67	fresh
	C24			6	44	
	F1A		c.120-200	1	4	
	F2A	2A beaker etc	c.130-270			fresh
		cheese press lid		44	371	fresh
	F4A	beaker	c.270-400	1	2	
	F5	closed	c.250-400	7	32	fresh
	F10	1A1 bottle	c.200-300	4	33	Fresh
	F19	beaker	c.270-370	4	31	Fresh
	Tile			4	27	
			c.270-300/70	746	6836g	
0.50	C2A	Jars	c.270-300	2	50	Fresh
NORTH WEST	C7			3	10	
LOWER FILL	C8A	Hook-rim jar	c.270-370			
OF ROOM 10		Roul pentice bkr	c.250-370	9	65	
	C24	Jar		2	12	
	F2A	Beaker base	c.200-300	2	18	
	Tile			3	12	
	China		19th c	1	2	
	Stoneware		19th c	1	6	
			c.270-300/19th c	23	175g	

051	IA1		M.I.A.-L.I.A	1	8	Abraded
LOWER FILL	C2A	Jar	c.270/350-420	2	10	Fresh and abraded
OF DITCH	C8A	Necked jar	c.270-370	7	36	
	C9A		c.180-370	3	7	
	C13A	Jar	c.270-400	2	8	
	C24			5	12	
	F1A	Dr 38	c.140-200	2	4	
	F2A	Combed Dr30	c.70-130	2	6	
	Tile	copy		3	75	
	Tobacco pipe		19th c	2	3	
			c.70-19th c	29	169g	
054	C1	Jar	c.170-300+	3	32	Fresh
IN MATRIX	C2A	Jar	c.270-300	1	11	
OF BURNT	C7	Incip b+fl bowl	c.240-330	13	88	Fresh
MATERIAL	C8A	Jars	c.270-370	28	258	Fresh
ON BASE OF	C24			1	4	Abraded lump
ROOM 10	Tile			1	4	
	Tessera			4		
			c.270-300+	51	397g	Burnt deposit
055	IA3B		L.I.A.-200	2	12	
INFILL OF	C2A	Jar	c.270/350-420	1	16	fresh
ROOM 9	C7	Beaded+fl bowl	c.300/350-400			
		Jar	c.200-370	6	55	
	C8A	Jars	c.200-370	11	89	fresh
	C9A	Jars	c.180-370	5	22	
	C9B	Jar	c.270-370	1	9	fresh
	C13A	Open and closed	c.270-400	3	9	abraded
	C24			2	59	
	F2A	Closed	c.43-300	4	23	fresh
	F16	Bowl	c.250-370	2	7	fresh
			c.270-420	37	301g	
056	C2B	Jars	c.270-420	6	59	Fresh
LOWER	C7	Jars	c.270-370	3	17	Fresh and abraded
INFILL OF	C8A	Jar	c.270-370	6	20	Abraded
ROOM 9	C9A	Jar	c.180-370	3	60	Abraded
	C13A	Jars	c.270-400	2	38	Fresh and abraded
	F3C	M22 mortarium	c.300-400	1	52	Abraded and burnt
	Clay marble			1		
			c.300/370-420	22	246g	
057	IA1		M.I.A.-L.I.A	3	23	Abraded
DITCH INFILL	IA3A	Jar	L.I.A.-60	1	15	Abraded
ON WEST	C2A	Jar	c.270/350-420	1	8	
SIDE	C2B	Jar	c.270-420	3	19	Abraded
	C8A	Jars	c.150-370	8	40	Abraded
	C13A	Jar	c.270-400	1	6	Abraded
	C24			7	26	Abraded
	F1A	Dr 38	c.140-200	1	6	Abraded
	F2A	Closed		5	27	
	F3C	Mortarium	c.240-400	1	18	Abraded
	F18	Closed	c.70-250	1	6	Abraded
	Tile			7	28	Abraded
			Residual	39	222g	Fill of ditch
060	C2A		c.270/350-420	7	64	
INFILL OF	C7	Closed	c.270-370	1	7	
ROOM 10	C8A	Jars	c.270-370	17	153	Fresh
NORTH SIDE	C9A	Jar	c.180-370	1	2	
	C13A	Jar	c.270-400	1	1	Fresh
	F2A			3	21	
	Tile			1	50	
	Stoneware		19th c	1	7	Abraded
			c.270-370. stoneware intrusive?	32	305g	Deposit in aqueduct
061	C2B		c.270-420	1	2	Fresh
BUILDERS	C7	Beaded+fl bowl	c.240-370	1	7	Abraded
TRENCH	C9B		c.270-370	1	4	Abraded
OCTAGONAL BUILDING SOUTH WEST SIDE						
			c.350-420	3	13g	Ditch fill
062	C1	Jar	c.170-300+	2	24	Fresh

HOLLOW	C4A	Storage jar	c.50-170	7	540	Fresh
WAY AREA	C7	Ev rim c'pot	c.170-200/250			Fresh
		Misc jars	c.150-270	14	107	Fresh
	C8A	Jars	c.150-270	15	158	Fresh
	C9A	Jar	c.180-370	1	7	
	C24			1	2	
	F2A	2A beaker	c.160-270	2	8	
	F10	beaker		1	3	Fresh
	Tile			1	6	
			c.150-270	44	855g	
063	IA1		M.I.A.-L.I.A	2	10	abraded
DEMOLITION	C1	Jar	c.170-300+	1	10	fresh
DEPOSIT	C2A	Jars	c.270/350-420	11	128	fresh
ROOM 2	C2B	Jarsx5	c.270-420			fresh
		Str-sided dish	c.270-420	29	511	fresh
	C4B	Jar	c.370-400	1	6	fresh
	C7	3J9 jar etc	c.170-230			fresh
		misc jar	c.170-370			fresh
		beaded+fl bowl	c.240-370			fresh
		5F dish	c.130-300	21	261	
	C8A	jars	c.170-370	81	746	fresh
	C9A	jar	c.180-370	6	25	fresh
	C13A	jar	c.270-400	3	15	
	C24			5	67	abraded
	F1A	Dr 31	c.150-200	5	69	
	F2A	Inc roul beaker	c.190-300	6	33	abraded
	F3B	C82 bowl	c.325-400	1	4	abraded
	F3C	Mortarium	c.240-400	1	115	Abraded
	F4A	Open form	c.270-400			Fresh
		W/p beaker	c.250-400	5	54	Fresh
			c.270-420	178	2054g	
065	IA2		M.I.A.-L.I.A	2	9	Abraded
DEMOLITION	C1	Jar	c.170-300+	2	26	Abraded
INFILL ROOM	C2B	Jar	c.270-420	3	30	Abraded
2	C7	Beaded+fl bowlx2	c.240-370	3	23	
	C8A	Jars	c.270-370	12	91	
	C9A	Jar		5	26	
	C13A		c.270-400	2	6	Abraded
	C24			2	14	Abraded
	F2A			2	3	Abraded
	F4A	Flagon	c.270-400			
		Slit indent beaker	c.200-350	3	19	
	F5		c.250-400	1	1	
	Tile			1	20	Abraded
			c.300-370 or residual	38	268g	
066	IA2	Urn	Late Bronze Age	1	4	Abraded
	C8A		C.150-370	2	2	Abraded
			Residual	3	6g	
067	IA2		M.I.A.-L.I.A	1	8	Abraded
PIT WEST OF	IA3B		L.I.A.-200	1	7	Fresh
MILL BASE	C2A	Jar	c.270-420	2	50	Fresh
	C4A	Jar	c.50-100	1	8	
	C24			2	8	Abraded
	F2A		c.43-300	1	2	
	Iron slag			2		
	Furnace lining			1		
			L.I.A.-270+	8	83g	
069	IA3B	Storage jar	L.I.A.-150	1	18	abraded
UPPER FILL	C1	Jar	c.170-300+	2	43	fresh
OF CONDUIT	C2B	Jar	c.270-420	2	15	fresh
	C7	5C bowl	c.170-270			fresh
		jar	c.170-270	3	45	
	C8A	jars	c.150-370	12	145	fresh
	C9A	jar	c.180-370	1	6	fresh
	C24			1	4	abraded
	F2A	indented beaker	c.220-260	6	48	fresh
	F10	etc	c.150-200	1	6	fresh
	Tile	beaker base		2	19	
			c.170/200-270/300	31	349g	Fill
070	C7		c.120-370	1	5	Abraded
UPPER FILL	C8A	Beaker	c.150-270	1	9	
OF CONDUIT	C9B	Jar	c.270-370	1	4	Fresh
BUT OF SOIL	C24			1	4	
REPLACED	F2A	Beaker	c.250-300	1	11	

BY PHILP	F2B Tile	Closed	c.43-270	1 1	6 22	
			c.150-270/300	7	61g	
071 POTTERY RETRIEVED FROM INFILL OF EARLIER PLUNGE POOL	C1 C2B C8A F2A F10 Tile	Jars Jar Jar etc Poppyhead bkr Closed	c.170-300+ c.270-420 c.270-370 c.70-300	3 4 12 1 1 2	111 39 133 4 5 213	Abraded and fresh Fresh
			c.270-370	23	505g	
071 AS ABOVE	C7 C8A C13A C24 F4A	Str sided dish Combed beaker Jars 4A2 jar open form open form	c.270-370 c.270-370 c.270-370 c.170-350 c.270-400 c.270-400	 5 4 1 1 1	 61 51 63 3 7	Fresh Fresh Fresh Fresh
			c.270-370	12	185g	On pool floor
072 AS ABOVE	C1 C8A	Jar Jar	c.170-300+ c.170-270	1 1	21 8	 Fresh
			c.170-270	2	29g	
074 TOP STRATA IN HOLLOW WAY	IA3B/C1 C1 C4A C7 F2A Tile	Jar Jar Storage jar 5D bowl Beaker	c.150-200 c.170-300+ c.50-170 c.120-180	1 1 1 1 2 2	16 12 11 6 2 58	 Fresh Fresh
			c.150-200	8	85g	

APPENDIX 2

BAX FARM COINS
2006

Item Reference No:	
Context:	029
Obv description:	Bust to R. Beard. Radiate
Obv legend:	Nil
Rev description:	'Fides' with two military standards
Rev legend:	Nil
Ruler/Mint:	BARBAROUS RADIATE
Period/Date:	Post 270
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	09mm

Item Reference No:	
Context:	033
Obv description:	Illegible
Obv legend:	Illegible
Rev description:	Illegible
Rev legend:	Illegible
Ruler/Mint:	UNKNOWN
Period/Date:	Unknown
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	15mm

Item Reference No:	
Context:	034
Obv description:	Bust to R. No beard. Diadem. Draped
Obv legend:	CONSTANS PF AVG
Rev description:	Two 'Victories' facing inwards, each holding a wreath
Obv legend:	VICTORIAE DD AVGG ----
Ruler/Mint:	CONSTANS/
Period/Date:	343 - 348
Material:	Copper alloy
Wear/Preservation:	Fair
Diameter:	16mm

Item Reference No:	
Context:	034
Obv description:	Female head to R. Diadem. Draped
Obv legend:	--- HE -ENAEAVG
Rev description:	'Pax' facing with wreath to L
Rev legend:	PAX PV BLICA
Ruler/Mint:	HELENA/Trier (TRP)
Period/Date:	337 - 341
Material:	Copper alloy

Wear/Preservation: Fair
Diameter: 16mm

Item Reference No:
Context: 034
Obv description: Bust to R.
Obv legend: Illegible
Rev description: Individual(s) with standards?
Rev legend: Illegible
Ruler/Mint: CONSTANTINE Family
Period/Date: 307 - 364
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 13mm

Item Reference No:
Context: 035
Obv description: Illegible
Obv legend: Illegible
Rev description: ‘ Laetitia’ with wreath and rudder
Rev legend: Illegible
Ruler/Mint: TETRICUS I
Period/Date: 270 - 274
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 18mm

Item Reference No:
Context: 043
Obv description: Bust to R. Beard. Radiate. Draped
Obv legend: ------ VS ----
Rev description: Figure to L.
Rev legend: Nil
Ruler/Mint: Barbarous radiate
Period/Date:
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 16mm

Item Reference No:
Context: 043
Obv description: Illegible
Obv legend: Illegible
Rev description: Illegible
Rev legend: Illegible
Ruler/Mint: Not Known
Period/Date: Not Known
Material:
Wear/Preservation: Poor
Diameter: 17mm

Item Reference No:
Context: 048
Obv description: Bust to R. Short beard. Radiate
Obv legend: Illegible
Rev description: Illegible
Rev legend: Illegible
Ruler/Mint: Not Known
Period/Date: 238 - 296
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 18mm

Item Reference No:
Context: 048
Obv description: Bust to R. Short beard. Radiate. Draped
Obv legend: IMP C ---------- VG
Rev description: ‘ Fortuna’ with branch and cornucopia
Rev legend: -- ELICITAS ---------
Ruler/Mint: TRAJAN DECIUS
Period/Date: 249 - 251
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 19mm

Item Reference No:
Context: 055
Obv description: Bust to R. Beard. Laureate
Obv legend: ------ NINVS AVG --------
Rev description: ‘Aequitas’facing L with cornucopia and scales
Rev legend: ---------- AVG
Ruler/Mint: ANTONINUS PIUS
Period/Date: 138 - 161
Material: Silver
Wear/Preservation: Poor
Diameter: 16mm

Item Reference No:
Context: Spoil
Obv description: Bust to R. No beard. Radiate. Draped
Obv legend: ---- ESV TETR --------
Rev description: ‘Spes’ walking L with flower holding dress hem
Rev legend: ---- PVBLIC -
Ruler/Mint: TETRICUS II/
Period/Date: 270 - 274
Material: Copper alloy
Wear/Preservation: Por
Diameter: 18mm

Item Reference No:
Context: Spoil
Obv description: Bust to R. Full beard. Radiate
Obv legend: IMP C ----------
Rev description: 'Providentia' ? facing L.
Rev legend: Illegible
Ruler/Mint: POSTUMUS?
Period/Date: 260 - 268
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 16mm

Item Reference No:
Context: Spoil
Obv description: Bust to R. Beard. Radiate. Draped
Obv legend: Missing
Rev description: 'Pax' with vertical sceptre
Rev legend: P -- -VG
Ruler/Mint: CARAUSIUS?
Period/Date: 286 - 293
Material: Copper alloy
Wear/Preservation: Fair
Diameter: 18mm

Item Reference No:
Context: Spoil
Obv description: Bust to R. Radiate
Obv legend: Illegible
Rev description: Illegible
Rev legend: Illegible
Ruler/Mint: Unknown
Period/Date: 238 - 296
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 13mm

Item Reference No:
Context: SW Trench
Obv description: Bust to L. No beard. Helmeted
Obv legend: CONSTANTINOPOLIS
Rev description: 'Victory' on prow of ship with shield and sceptre
Rev legend: Nil
Ruler/Mint: CONSTANTINE
Period/Date: 330 - 335
Material: Copper alloy
Wear/Preservation: Fair
Diameter: 15mm

BAX FARM 09 COINS

Item Reference No:	SF001
Context:	T.1 CRN 902
Obv description:	Helmeted head to L
Obv Legend:	-------- *TINOPOLIS*
Rev description:	Victory on prow with sceptre & shield
Rev legend:	Nil
Ruler/Mint:	CONSTANTINE / Arles
Period/Date:	330 - 335
Material:	Copper alloy
Wear/Preservation:	Good
Diameter:	18mm

Item Reference No:	SF003
Context:	T.1 CRN 902
Obv description:	Helmeted head to L
Obv Legend:	*VRBS ROMA*
Rev description:	Wolf & twins
Rev legend:	Nil
Ruler/Mint:	CONSTANTINE /
Period/Date:	330 - 335
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	16mm

Item Reference No:	SF018
Context:	CRN 905
Obv description:	Illegible
Obv Legend:	Illegible
Rev description:	Spes walking L, holding flower & dress hem
Rev legend:	*SPES PVBLICA*
Ruler/Mint:	TETRICUS II /
Period/Date:	270 - 274
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	21mm

Item Reference No:	SF021
Context:	T.1 CRN 903
Obv description:	Bust to R. Beard, Radiate
Obv Legend:	Illegible
Rev description:	Illegible
Rev legend:	Illegible
Ruler/Mint:	TETRICUS I (Barbarous)
Period/Date:	270 - 274
Material:	Copper alloy

Wear/Preservation:	Poor
Diameter:	16mm

Item Reference No:	SF025
Context:	CRN 905
Obv description:	Bust to R.
Obv Legend:	Illegible
Rev description:	Illegible
Rev legend:	Illegible
Ruler/Mint:	N/K
Period/Date:	N/K
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	17mm

Item Reference No:	SF027
Context:	CRN 906
Obv description:	Bust to R. No beard. Diadem
Obv Legend:	-------*TINVS*-----
Rev description:	2 soldiers, one standard
Rev legend:	*GLORIA EXERCITVS*
Ruler/Mint:	CONSTANTINE II /
Period/Date:	335 - 341
Material:	Copper alloy
Wear/Preservation:	Fair
Diameter:	15mm

Item Reference No:	SF028
Context:	T. 2 Unstrat
Obv description:	Bust to R. Beard. Radiate
Obv Legend:	Illegible
Rev description:	Illegible
Rev legend:	Illegible
Ruler/Mint:	N/K
Period/Date:	238 - 296
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	15mm

Item Reference No:	SF029
Context:	CRN 948
Obv description:	Bust to R. No beard. Diadem
Obv Legend:	Illegible
Rev description:	2 soldiers, one standard
Rev legend:	----- *EXERC* ----
Ruler/Mint:	CONSTANTINE /
Period/Date:	335 - 341
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	15mm

Item Reference No:	SF030
Context:	T.2 CRN 905
Obv description:	Bust to R. No beard. Diadem
Obv Legend:	------- *S PF* -----
Rev description:	2 soldiers, 1 standard
Rev legend:	*GLORIA EXERCITVS*
Ruler/Mint:	CONSTANS / Trier (TRP)
Period/Date:	335 - 341
Material:	Copper alloy
Wear/Preservation:	Fair
Diameter:	16mm

Item Reference No:	SF031
Context:	CRN 905
Obv description:	Bust to R. No beard. Diadem, draped
Obv Legend:	Missing
Rev description:	2 Victories with shield over altar
Rev legend:	*VICT*----------
Ruler/Mint:	CONSTANTINE I / Trier (STR)
Period/Date:	318 - 324
Material:	Copper alloy
Wear/Preservation:	Fair
Diameter:	16mm

Item Reference No:	SF032
Context:	T.2 CRN 905
Obv description:	Illegible
Obv Legend:	Illegible
Rev description:	War trophies an 2 slaves
Rev legend:	*GERMANIA*----------
Ruler/Mint:	GALLIENUS /
Period/Date:	253 - 268
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	20mm

Item Reference No:	SF035
Context:	CRN 905
Obv description:	Bust to R. No beard. Diadem, draped
Obv Legend:	*FL IVL CONST*--------
Rev description:	2 soldiers, 1 standard
Rev legend:	*GLORIA EXERCITVS*
Ruler/Mint:	CONSTANTIUS II /
Period/Date:	335 - 337
Material:	Copper alloy
Wear/Preservation:	Fair
Diameter:	16mm

Item Reference No:	SF036

Context:	CRN 938
Obv description:	Illegible
Obv Legend:	Illegible
Rev description:	Illegible
Rev legend:	Illegible
Ruler/Mint:	N/K
Period/Date:	N/K
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	20mm

Item Reference No:	SF50
Context:	Room V. CRN 938
Obv description:	Bust to R. No beard. Diadem, draped
Obv Legend:	Illegible
Rev description:	2 soldiers, 1 standard
Rev legend:	Illegible
Ruler/Mint:	CONSTANTINE /
Period/Date:	335 - 341
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	15mm

Item Reference No:	SF56
Context:	Room V. CRN 949
Obv description:	Helmeted head to L.
Obv Legend:	Illegible
Rev description:	Wolf and twins
Rev legend:	Nil
Ruler/Mint:	CONSTANTINE /
Period/Date:	330 - 335
Material:	Copper alloy
Wear/Preservation:	Fair
Diameter:	14mm

Item Reference No:	SF059
Context:	Room V. CRN 949
Obv description:	Bust to R. No beard. Diadem, draped
Obv Legend:	*CONST*---------
Rev description:	2 soldiers, 1 standard
Rev legend:	*GLOR*----------
Ruler/Mint:	CONSTANTINE /
Period/Date:	335 - 341
Material:	Copper alloy
Wear/Preservation:	Poor
Diameter:	14mm

Item Reference No:	
Context:	Room V. Unstrat
Obv description:	Helmeted head to L.

Obv Legend: Illegible
Rev description: Victory on prow with shield & sceptre
Rev legend: Nil
Ruler/Mint: CONSTANTINE /
Period/Date: 330 - 335
Material: Copper alloy
Wear/Preservation: Fair
Diameter: 16mm

Item Reference No:
Context: T.2. CRN 905
Obv description: Helmeted head to L.
Obv legend: Illegible
Rev description: Victory on prow with shield & sceptre
Rev legend: Nil
Ruler/Mint: CONSTANTINE /
Period/Date: 330 - 335
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 10 mm

Item Reference No:
Context: Room V. CRN 949
Obv description: Helmeted head to L.
Obv legend: *VRBS ROMA*
Rev description: Wolf & twins
Rev legend: Nil
Ruler/Mint: CONSTANTINE / Lyons (LVG)
Period/Date: 330 - 335
Material: Copper alloy
Wear/Preservation: Fair
Diameter: 18mm

Item Reference No:
Context: Room V. CRN 949
Obv description: Bust to R. No beard. Diadem, draped
Obv legend: -------*ANTI*-------
Rev description: 2 soldiers, 2 standards
Rev legend: Illegible
Ruler/Mint: CONSTANTINE /
Period/Date: 330 - 335
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 16mm

Item Reference No:
Context: Room V. CRN 949
Obv description: Helmeted head to L.

Obv legend: Illegible
Rev description: Victory on prow with shield & sceptre
Rev legend: Nil
Ruler/Mint: CONSTANTINE /
Period/Date: 330 - 335
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 14mm

Item Reference No:
Context: Spoil
Obv description: Bust to L.
Obv legend: Illegible
Rev description: Britannia seated to L with shield. Hand to face
Rev legend: Illegible
Ruler/Mint: ANTONINUS PIUS
Period/Date: 138 - 161
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 25mm

Item Reference No:
Context: Room VI. Unstrat
Obv description: Bust to R. No beard. Radiate
Obv legend: *C PIV ESV*----------
Rev description: Spes walking L, holding flower & dress hem
Rev legend: *SPES PVBLICA*
Ruler/Mint: TETRICUS II /
Period/Date: 270 - 274
Material: Copper alloy
Wear/Preservation: Fair
Diameter: 18mm

Item Reference No:
Context: CRN 905
Obv description: Bust to R. No beard. Diadem, draped
Obv legend: *IMP CONSTANTINUS PF AVG*
Rev description: Sol standing facing with whip & globe
Rev legend: *SOLI INVICTO COMITI*
Ruler/Mint: Constantine I / London (PLN)
Period/Date: 307 - 318
Material: Copper alloy
Wear/Preservation: Fair
Diameter: 20mm

Item Reference No:
Context: Room V. CRN 949
Obv description: Bust to R. Beard. Radiate
Obv legend: Illegible
Rev description: Illegible

Rev legend: Illegible
Ruler/Mint: N/K
Period/Date: 260 - 296
Material: Copper alloy
Wear/Preservation: Poor
Diameter: 16mm

Item Reference No:
Context: Room IV CRN 972
Obv description: Bust to R. Short beard. Radiate
Obv legend: *DIVO CL*----------
Rev description: Eagle
Rev legend: ------*ECRATIO*
Ruler/Mint: CLAUDIUS II /
Period/Date: 270
Material: copper alloy
Wear/Preservation: Fair
Diameter: 18mm

Item Reference No:
Context: Spoil
Obv description: Bust to R. No beard. Diadem
Obv legend: *CONSTANTINVS PF*---
Rev description: Wreath with VOT X within
Rev legend: *CAESARVM* ----------
Ruler/Mint: CONSTANTINE I / Trier (STR)
Period/Date: 318 - 324
Material: Copper alloy
Wear/Preservation: Fair
Diameter: 17mm

Appendix 3. Method Statement

3.1 The site at Bax Farm is centered on NGR TQ 9480 6421 and covers an area of approximately five hectares, all of the land is in the ownership of Doubleday. The position of the proposed excavation area is located so as to elucidate the relationship between the octagonal bath house and its possible associated buildings.

3.2 Aerial photographs of the site from English Heritage show crop-marks covering an area of three hectares. A landscape survey of the immediate area by students will be implemented, and the results incorporated with the re-plotting of the aerial photographs at a scale of 1:2500 by the Thanet Archaeological Trust. This will also enable areas of excavation undertaken in 2006 to be incorporated with the crop-mark of the features on to the site plan.

3.3 After the aerial photo re-plotting, one linear trenches set into a ten metre square grid will be cut by machine using a toothless ditching bucket and the exposed surface cleaned by hand. This will allow the spatial disposition of features to be collated with the aerial photographs. A full retrieval programme of artefacts will be implemented with worked flint and pottery shards recorded to one centimetre of find spot.

3.4 Following on from the linear trenching an area with archaeological potential will be excavated by a mechanical tracked excavator with a flat bladed ditching bucket, and under the supervision of an experienced archaeologist. A 'mattress' of soil will be left above the brickearth as protection of features against inclement weather and unauthorised interference with possible archaeology. By placing the excavation area at a key point within the practical constraints of the site and in conjunction with keyhole excavation and aerial photographs it should be possible to contribute towards the project research aims.

3.5 The trench will be hand cleaned after an area sweep by metal detector and the spoil sieved through a one centimetre screen and scanned by a metal detector.

3.6 Scale plans will be produced to a scale of 1/100 for the site plan, 1/50 for grid areas, 1/20 for large features, and 1/10 for section drawings and smaller features. Single context planning and recording sheets to be used where appropriate. All drawing will be produced on plastic film using a 6H pencil and annotated with OD or TBM heights, grid reference points and context numbers.

3.7 Total station survey equipment will be used to tie the site into the Ordnance Survey whilst taped triangulation from site grid markers will be used to record features. All features will be GPS surveyed.

3.8 Archaeological features will be selectively excavated and sampled sufficient to determine the character, date and degree of truncation for the site.

3.9 Samples will be taken for botanical, faunal and other environmental data as appropriate and in consultation with Quaternary Scientific (**QUEST**)

archaeological forensic and environmental scientific services at the University if Reading.

3.10 Where more than one phase of activity is present, a representative sample of the range of phases will be excavated and relationships between feature intersections will be investigated.

3.11 All drawings to be indexed using the Field School pro-forma index sheets. All excavated archaeological deposits will be described using the Field School pro-forma context recording sheets. An index of contexts will be maintained using the Field School pro-forma sheets.

3.12 A complete record of digital photographs will be created of every feature using appropriate scale bars. The digital photograph number will be entered on to the appropriate context recording sheets and drawings index sheets.

3.13 All environmental samples will be doubled-bagged and marked with site and context codes and will be described using the Field School pro-forma Sample Recording sheets.

3.14 All finds will be marked with site and context codes and kept separately by context and material type. Washing and sorting of finds will take place off site at the Field School.

3.15 For further details of appropriate methodology both on and off site students will be referred to the KAFS Site Manual, and IFA publications.

Insurance

The Kent Archaeological Field School is covered by Public and Employer's Liability Insurance. The underwriting company is RBPM, policy number 2006/007.
Details of the policy can be seen at the Field School office.