The School of Pythagoras, St. John's College Cambridge

An Archaeological Excavation

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Summary

Excavations conducted at the School of Pythagoras, Cambridge, took place within and around a standing Grade I listed medieval building. Three significant results were obtained. Firstly, a substantial palaeochannel was identified, the presence of which was established via augering. Aligned broadly parallel to the School of Pythagoras' principal façade, historical sources indicate that this watercourse remained navigable up until the early 13th century. Secondly, a relatively intensive sequence of Roman activity was encountered. This could be subdivided into three sub-phases. Commencing during the 1st to 2nd centuries AD, the earliest Roman activity – as primarily represented by redeposited ceramics and a relatively substantial assemblage of disarticulated human bone – appears to have comprised a largely 'off-stage' presence. Subsequently, however, around the early to mid 2nd century a degree of domestic/industrial occupation was established; concomitant with this phase, a metalled trackway was laid down and a series of pits and ditches were created.

Yet by the mid 3rd century the associated settlement appears to have contracted in size and the site became instead the venue for a series of interments. Six articulated inhumations were encountered, one of which had been accompanied with hob-nailed shoes, a shale bracelet and an iron finger ring. When taken in conjunction with earlier discoveries made in the immediate vicinity, a total of thirteen articulated Late Roman burials are now known from the site. Finally, the third result pertained directly to the School of Pythagoras itself. Additional evidence relating to the construction, usage and history of this building was recovered. Excavations conducted within the north wing of the structure revealed that this portion of the building had been constructed contemporaneously with the principal range. Moreover, in combination with a review of the extant architectural evidence, the newly derived data demonstrates that the School of Pythagoras did not originally comprise an isolated rural manor – as has been widely assumed – but was in fact more akin to a substantial urban townhouse of the period.

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FIGURE LIST

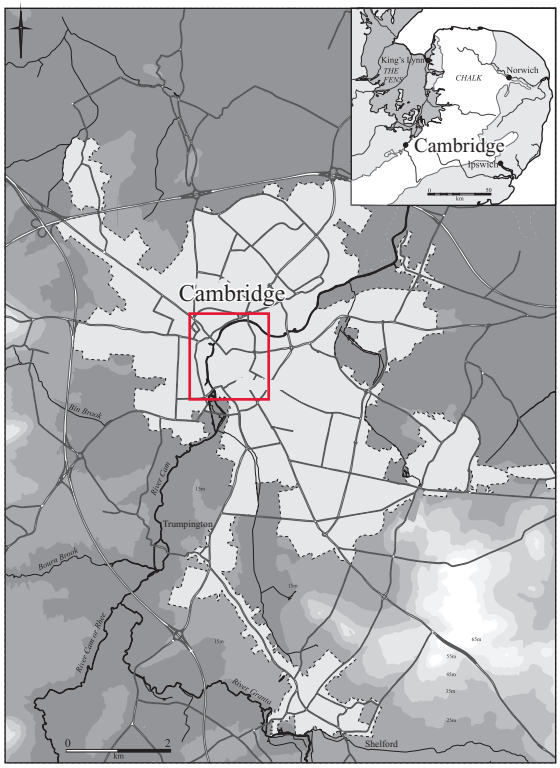
- INTRODUCTION -

The Cambridge Archaeological Unit (CAU) undertook excavations within and around the School of Pythagoras, Cambridge, between the 4th of July 2012 and the 8th of April 2013. Centred on TL 4449 5894, the site is located within the urban core of Cambridge – although it lies outside the medieval heartland of the town, which was situated on the southeast bank of the river Cam (Figure 1). Today, the School of Pythagoras comprises the northwestern range of St. John's College's Merton Court. Historically, however, it formed a separate and distinct property that was accessible via Northampton Street. Indeed, this 'L'-shaped building, which is Grade I listed (as of April 1950), represents the oldest extant secular structure in Cambridge. Initially constructed *c*. 1180-1200, it comprises the remaining masonry portion of a significant domestic complex of the period (RCHM(E) 1959 II, 377-9). Extending to the northeast of the school itself, a timber-framed annexe – known as Merton Hall – was appended during the late 15th/early 16th century. Following the addition of this range, the original masonry structure was demoted to the status of an outbuilding. Both the School of Pythagoras and Merton Hall were acquired by St John's College in 1959, with the former building subsequently being refurbished for use as a theatre in 1967-8 (Crook 1978, 142; Graham-Campbell 1968, 251).

Constituting a significant proportion of the present investigation, open area excavations were undertaken in three conjoining areas – Areas 1, 2 and 3 – which together extended over 135.2sqm (Figure 2). These areas were not excavated concurrently, however, but on a consecutive and partially episodic basis, as determined by the requirements of the multi-stage refurbishment process. In addition, nine further service-related trenches were also monitored (Figure 2); these covered a further 95.5sqm, resulting in a total investigated area of 230.7sqm. The project followed a specification issued by the CAU (Dickens 2012) and approved by Dan McConnell, Development Control Archaeologist at Cambridgeshire County Council's Historic Environment Team. The excavation was commissioned by St. John's College, Cambridge, in advance of the conversion of the School of Pythagoras into an archive centre.

Landscape and Geology

The School of Pythagoras is located on the edge of the northwestern floodplain of the river Cam, on the periphery of the historic core of medieval Cambridge (see Figure 1). The Cam rises from springs situated along a northwest-southeast aligned Cretaceous chalk ridge that is located to the southeast of the town. Valley gravels and alluvium cover the valley bottoms, while the surrounding terraces are formed from drift deposits. Chalk rivers have conditioned the topography of the surrounding area, and drain in a general northeasterly direction into the Fen Basin. Geologically, the School of Pythagoras is situated upon 1st Terrace river gravels (British Geological Survey 1976). Prior to the commencement of the excavation, the surface height of Merton Court fell from 7.78m OD to 7.19m OD from northwest to southeast. In the courtyard area located to the northwest of the building, in contrast – where modern terracing works do not appear to have taken place – the ground level lay at 8.67m OD. Finally, within the School of Pythagoras itself the ground floor level of the former undercroft lay at 7.85m OD, whilst that of the north wing lay at 8.56m OD.



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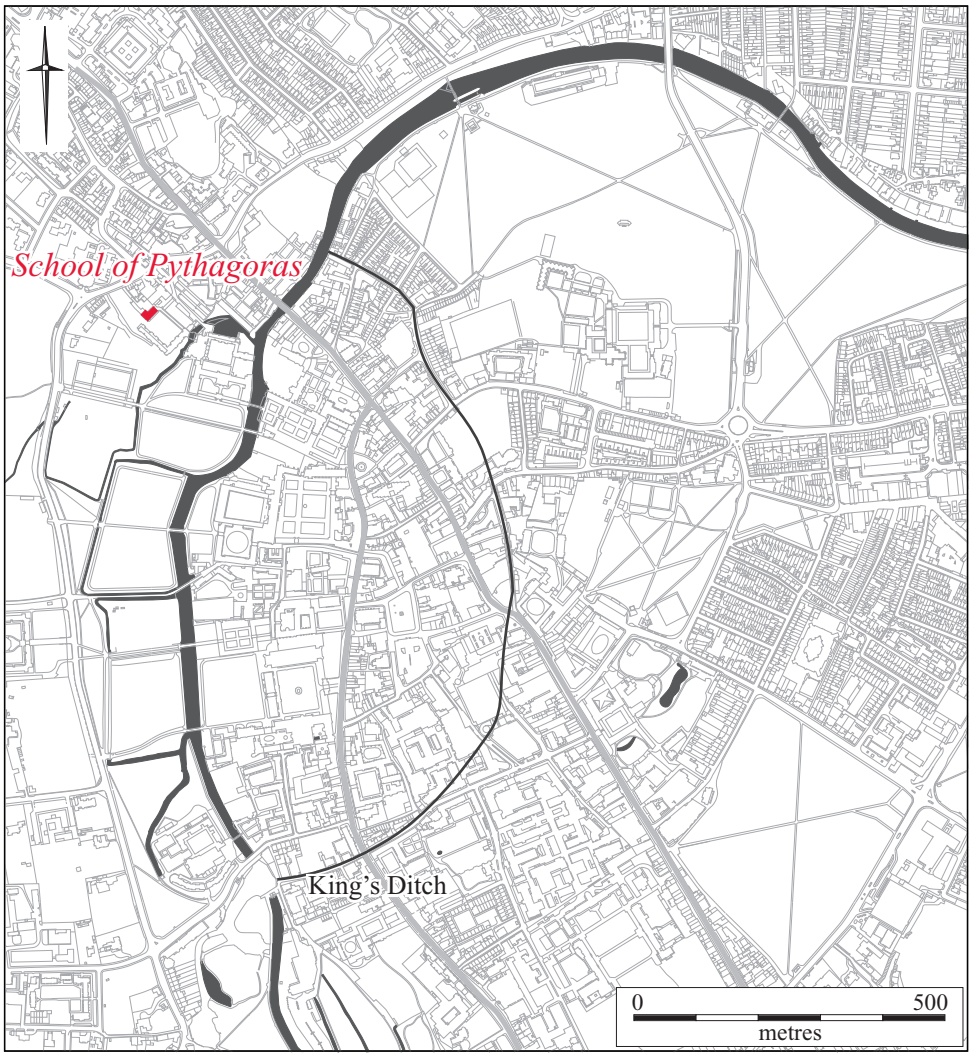

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Figure 1. Location of site.

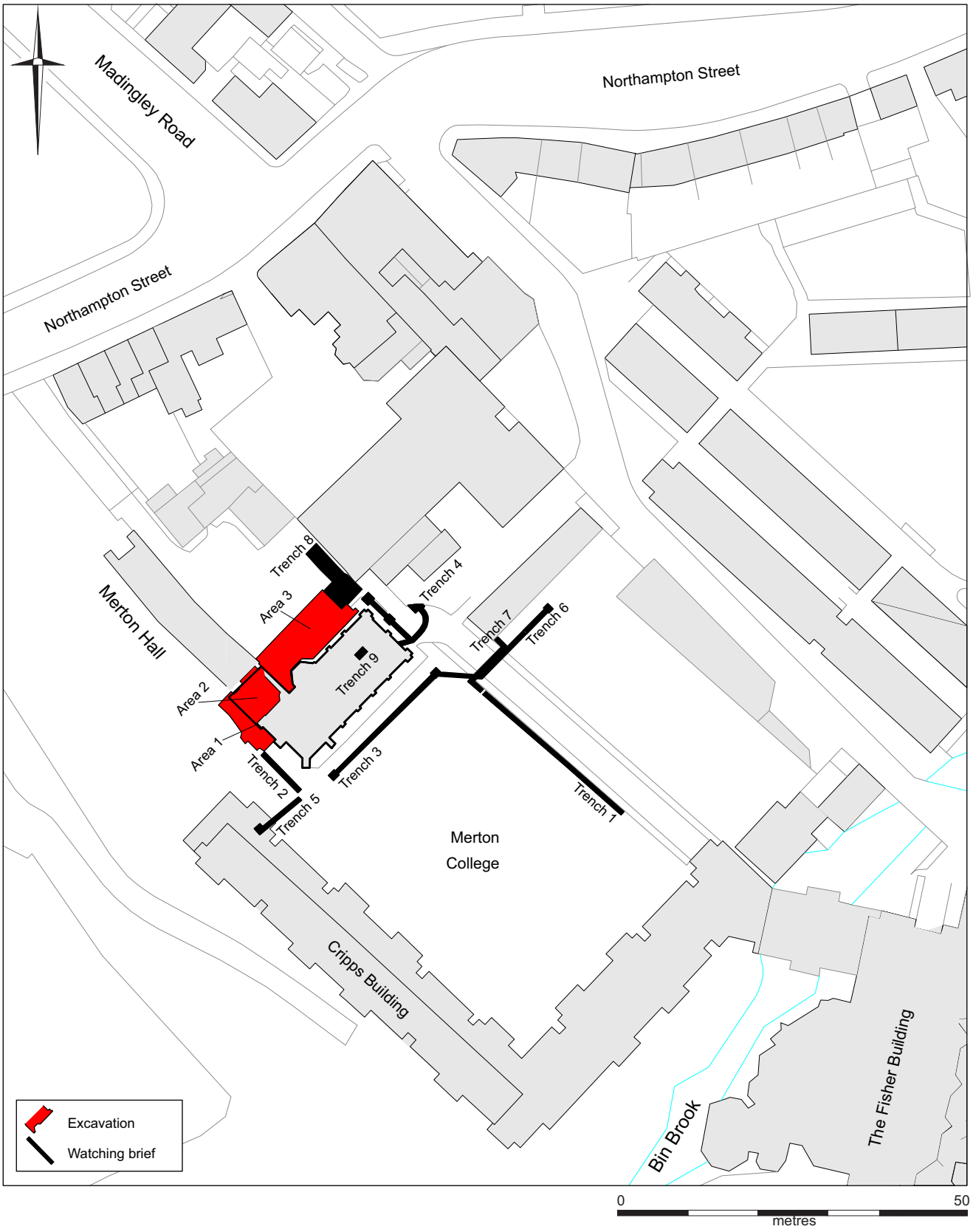
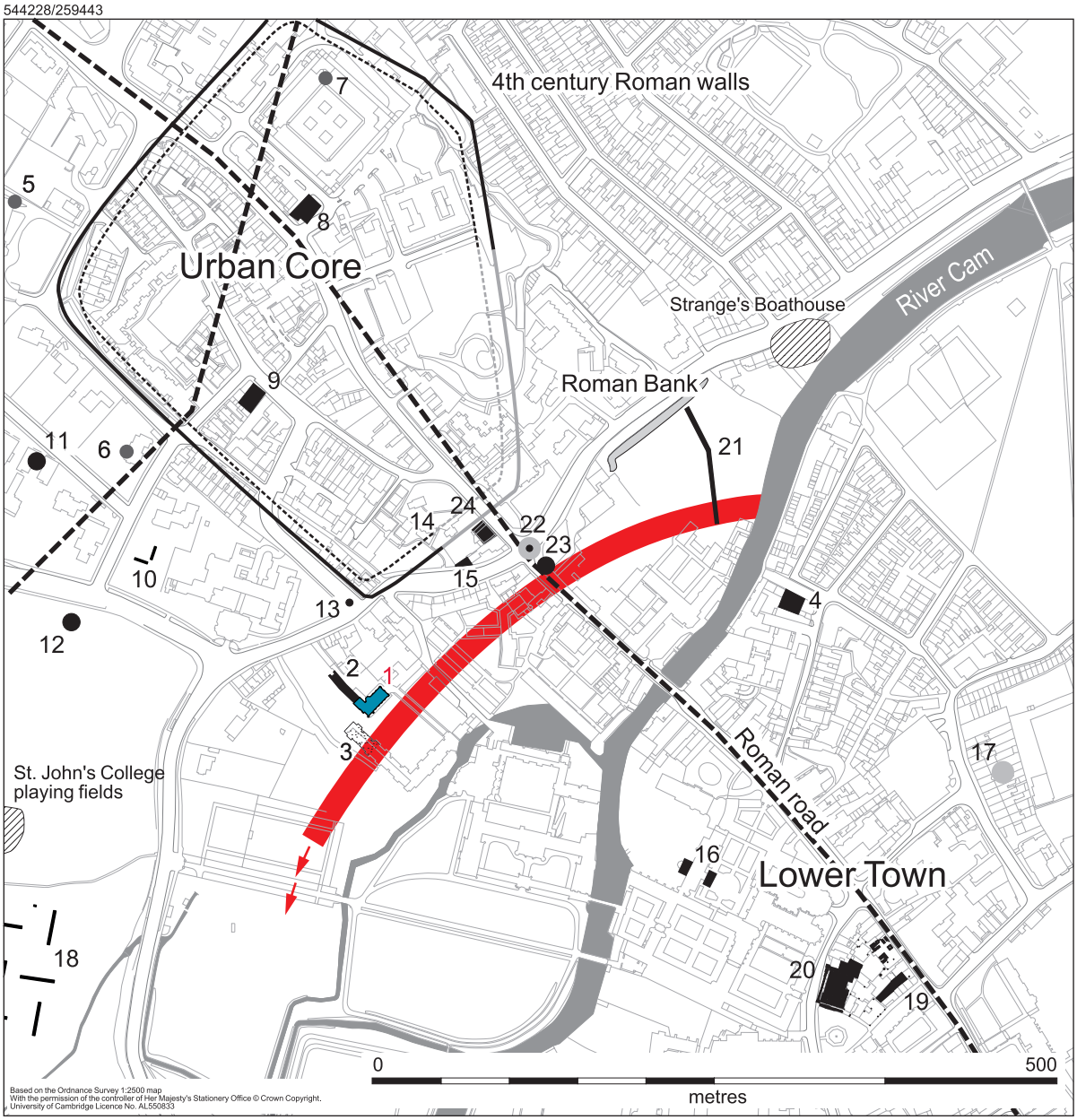


Figure 2. Location of investigated areas and watching brief trenches.



School of Pythagoras
Site mentioned in text
Proposed course of the 'Cambridge Watercourse'
Early Saxon cemetery
Approximate location of skeletons encountered in 1964
Late Roman burials
Roman burials (antiquarian discoveries)

1 School of Pythagoras
2 Merton Hall
3 Cripps Building
4 24 Thompson's Lane
5 St. Edmund's House (Roman burial)
6 Lady Margaret Road (Roman burial)
7 Castle House (Roaman burial)
8 68 Castle Street
9 Cow and Calf
10 Westminster College
11 Lady Margaret Road (general surface finds)
12 Madingley Road (general surface finds)
13 Anglia Water Sewage pipeline M6.
14 Hogg 1948 (Approx.)
15 Cambridge & County Folk Museum.
16 St. John's College Chapel Court and Master's Garden
17 No. 11 Park Street
18 St. John's Playing Fields
19 Corfield Court
20 Old Divinity School
21 Magdalene College
22 Chesterton Lane Corner
23 Magdalene Street (general surface finds)
24 4-5 Castle Street

Figure 3. Location of School of Pythagoras relative to the small Roman town and the Cambridge Watercourse. Nearby investigations mentioned in the text are also shown.

Methodology

Due to the constrained nature of the investigated areas, allied with their proximity to a standing building of national importance, all deposits at the site were excavated by hand. Modern deposits and overburden, including layers of concrete and hardcore, were broken out and removed by the principal contractor under close archaeological supervision. All layers and features that were thus revealed were then subject to detailed excavation and recording using the CAU-modified version of the MoLAS system (Spence 1994); base plans were drawn at a scale of 1:20, whilst sections were drawn at a scale of 1:10. As a direct consequence of the multi-staged refurbishment process, a segmented programme of archaeological investigation was instituted. Work commenced first in Areas 1 and 3 in order to facilitate the erection of external scaffolding that encased the building's north wing. Subsequently, following the demolition of a 19th century ground-floor wall, excavations were undertaken within the internal portion of this annexe (Area 2). Here, four test pits were initially excavated in order to provide foundation pads for internal structural supports. Once these supports had been erected, the remainder of the north wing's footprint was fully excavated.

The principal consequence of this segmented pattern of excavation was that certain features – most notably burials, but also a number of pits and ditches – were excavated in multiple stages; their various components were subsequently recombined during the post-excavation process. Concurrent with the later stages of the excavation, a series of watching briefs were also conducted during associated service trenching. Textually, throughout the following report context numbers are indicated by square brackets (*e.g.* **[001]**) and feature numbers are denoted by the prefix F. (*e.g.* **F.03**); all stratified contexts have been assigned feature numbers. A table of concordance, providing more detailed information on each individual feature, is presented at the end of this report (Appendix 2). The photographic archive consists of a series of digital images. All work was carried out with strict adherence to Health and Safety legislation, and within the recommendations of FAME (Allen & Holt 2010). The sitecode for this project was **JSP 12** and the event numbers was **ECB 3799**.

Historical and Archaeological Background

The historical and archaeological background of the development area has been covered in depth in a recent desk-based assessment (Newman & Dickens 2011), whilst the wider background of Cambridge itself has been reviewed in several published sources (Cam 1959; Lobel 1975; Bryan 1999; Taylor 1999); neither is therefore reiterated in detail here. Nevertheless, it is necessary to briefly outline the background of the area in order to place the site securely within its wider context; further details on specific sites directly related to its development are also discussed within the relevant sections of the following report.

The earliest evidence for occupation in the area comprises a small Iron Age settlement that was situated on the summit of nearby Castle Hill (see Alexander & Pullinger 2000; Evans & Ten Harkel 2010). This was substantially reorganised following the Roman conquest in 43AD, when a series of enclosures were constructed. These were succeeded in turn by a single rectangular enclosure, constructed *c.* 70AD, which may have comprised a small fort (although this attribution remains debatable). Surrounding this was a contemporary settlement of limited size (Alexander & Pullinger 2000, 27-

34). Early in the 2nd century, however, the town appears to have expanded somewhat; the putative 'fort' went out of use and single room wattle and daub houses with yards, along with a small number of more substantial structures of potentially civil function, were built along newly laid-out streets. A large shrine associated with a number of 'ritual shafts' was also constructed (*ibid.*, 35-58). At this time, the present site may have lain within the footprint of this expanded urban zone. By the mid 4th century, however, the town appears to have contracted in size, to *c.* 8.6 hectares, and to have been confined within a series of newly built defences that included a 12m wide ditch and a 2m to 3m wide stone wall with an internal rampart bank (*ibid.*, 59-74; Figure 3). Nevertheless, it has been noted that beyond the town "in all directions…there were dense and sometimes wealthy areas of settlement (including villas), cemeteries and pottery kilns. In fact, more signs of status, comfort, industry and general Romanisation are known around the town than within it, despite a much lower level of investigation" (*ibid.*, 8). Recent discoveries have confirmed this view, with significant extramural settlements having been identified at the New Hall (Evans 1996), Vicar's Farm (Lucas & Whittaker 2001) and North West Cambridge sites (Evans & Cessford *in prep*.).

Following the decline of the Roman town, from around the late 5th century onwards the level of occupation in the vicinity appears to have temporarily decreased. The evidence for Early Saxon (*c.* 450-700) activity in and around Cambridge primarily comprises material recovered during the 19th century from pagan cemeteries situated on the outskirts of the city (see Dodwell *et al.* 2004; Cessford with Dickens 2005). Perhaps most significantly, around 500m to the west of the School of Pythagoras – beneath a tennis court located in St. John's College's playing fields – a large 5th to 7th century mixed cremation and inhumation cemetery was investigated in 1888 (see Fox 1923, 242-43; Cessford 2009; Figure 3). Very little occupational evidence from this period has yet been identified, however, with the exception of a small 6th to 7th century settlement that was situated on the western bank of the Cam around a kilometre to the south of the former Roman town (Dodwell *et al.* 2004). Middle to Late Saxon (*c.* 700-1000) activity, in contrast, appears to have been primarily refocused upon the Castle Hill area, where a 7th to 9th century execution cemetery has been investigated at Chesterton Lane Corner (Cessford with Dickens 2005; Cessford *et al*. 2007; Figure 3, no. 23). Indeed, by the mid 9th century it is clear that some form of settlement had been re-established in this area, as this was occupied by the Viking Great Army in 875. The region was also incorporated into the Danelaw from *c.* 886 until its conquest by Edward the Elder in *c.* 917 (Cam 1934, 39; Lobel 1975, 3). Up until the mid 10th century, Cambridge appears to have remained only an "economically viable backwater" (Hines 1999, 136); following this date, however, it emerged as a significant urban centre.

By the late 10th century a mint had been established (Lobel 1975, 3; Haslam 1984, 21) and the town was being linked documentarily to a group of important trading centres including Norwich, Thetford and Ipswich (Cam 1934, 43). This emphasises the central role played by river trade in Cambridge's rapid economic growth. Moreover, consistent with the economic expansion of the town, during the early to mid 10th century the earliest evidence of Saxon settlement to the south of the former Roman town has been identified at the Corfield Court and Old Divinity sites (Figure 3, no.'s 19 & 20). Here occupation appears to have been relatively limited at first, but rapidly expanded (Newman 2008b, 74-77; Cessford 2012, 11-12). Further south in this

transpontine zone, along the line of Trumpington Street/Kings Parade, the presence of a number of pre-Conquest churches indicates that this roadway was well-established by the first half of the 11th century (Addyman & Biddle 1965, 99; Haslam 1984, 21; Brooke 1985). Although it has been suggested that the emergent Late Saxon town was essentially polyfocal in form (Taylor 1999, 44), with several dislocated areas of contemporary settlement, this appears highly unlikely. Instead, occupation most probably spread in a linear pattern along the settlement's primary arterial routeways before gradually expanding into the riverside, waterfront zones. So successful was this growth, by the beginning of the 13th century Cambridge had established itself the leading *entrepôt* in the county, through which goods and services were disseminated to many of the surrounding regional towns (Cam 1934, 43). It was at around this time, and potentially as part of this wider pattern of mercantile expansion, that the School of Pythagoras itself was constructed.

As the history of this building has been reviewed in two recent studies (Beacon Planning 2010; Semmelmann 2010), and its related documentary sources have been covered in depth in two earlier publications (Kilner 1790; Gray 1932), only an outline summary is presented here (see also Appendix 1). The School of Pythagoras's earliest recorded owner – and the individual who is perhaps most likely to have initially commissioned the property – was Hervey Dunning, the first known mayor of Cambridge in 1207 (Gray 1932, 3; Graham-Campbell 1968, 244). Dunning died in 1240 and was succeeded by his son Eustace, who mortgaged the property heavily. As a result, the buildings were seized in lieu of debt from his son, Richard Dunning, in 1270 and were conveyed to Walter de Merton, founder of the eponymous Oxford College (Martin & Highfield 1997, 17). Merton appears to have purchased the property in order to provide a second potential home for his college, should the society need to flee their original base (Leader 1988, 60). In 1279, Merton also acquired the mortgaged land appertaining to the estate. Subsequently, the manor was either occupied by a bailiff or let as a farmhouse to various tenants (Graham-Campbell 1968, 245). Amongst the lessees were members of some of the wealthiest families in the medieval town, although it was common for such properties to be sub-let at this time and thus the nature of the actual tenants remains unclear. In 1375, however, the masonry building was described as 'ruinous' and it required extensive rebuilding (Gray 1932, 29; see also Appendix 1). The pattern of tenant farming then appears to have continued until 1446.

At this time, Merton College was forced to convey the property to the Chancellor of the Exchequer and the Chancellor of the University as an endowment for Henry VI's new foundation, King's College. Merton later resumed possession of the estate in 1463 (Graham-Campbell 1968, 246). The property appears to have remained in agricultural use throughout this period, with the School of Pythagoras later being demoted to the status of a barn following the addition of a new timber-framed accommodation wing – now known as Merton Hall – during the late 15th/16th century. This pattern was to continue until 1808, with the building falling into an ever increasing state of disrepair; the undercroft vault, for example, appears to have finally collapsed in *c*. 1800 (Gray 1932, 30). Between 1808 and 1811, however, Merton Hall was used as a boarding school by Newton Bosworth, although the School of Pythagoras itself most probably remained a granary at this time. A similar pattern was also repeated in 1872 to 1874, when Merton Hall became the residence of the society that was subsequently to become Newnham College (Reeve 1964, 24). For most of

the early 20th century the building lay vacant, and during the Second World War an air raid shelter was installed on the ground floor. Then, between 1946 and 1959, the buildings were leased by Lord Rothschild and were used in association with his kindergarten (Crook 1978, 142-44). They were finally acquired by St John's College in 1959, and the School of Pythagoras – which "would have been unlikely to have lasted the century" without restoration – was refurbished for use as a theatre in 1967-8 (Graham-Campbell 1968, 252).

Summary of Previous Investigations

Two archaeological excavations have previously been conducted in very close proximity to the present site; the first occurred in 1967, the second in 2008. In addition, a note exists of further discoveries that were made in the immediate vicinity during the early 1960s (see Figure 3 for their respective locations). The first excavation took place in advance of the refurbishment of the School of Pythagoras and its subsequent conversion for use as a theatre. It was conducted by Alan Carter and James Graham-Campbell, under the aegis of Glyn Daniel. As part of the refurbishment process the interior of the undercroft was reduced down to, and potentially a little below, its original floor height (Graham-Campbell 1968, 250). This involved the removal of around eighteen inches (*c*. 0.46m) of stratified floor surfaces, as well as other features – such as internal dividing walls, and a small oven – that were related to its post-medieval reuse (*ibid*., 249-51). Furthermore "in one place the wall had been built over an inhumation burial", which was thought to be Romano-British in date as "a scatter of Roman rubbish" was encountered in the gravel "which consisted mainly of pottery but also included a simple brooch and a small whetstone" (*ibid*., 247-48). These findings were noted in an article discussing the history of the building that was published in the college magazine, *The Eagle*. Here, it was stated that "all the features of the stone house that were revealed during the work have been comprehensively photographed and will be described in detail elsewhere" (*ibid*., 252). Unfortunately, although an excellent photographic archive exists (see for example Figures 4 & 5), no such publication has ever been produced. Due to the generous co-operation of James Graham-Campbell, however, the finds assemblage that was recovered during this investigation has been examined as part of the present post-excavation process; the results of this work are discussed further below.

Prior to the 1967 excavation, additional archaeological remains had been encountered at the site during the construction of the Cripps building in the early 1960s (Figure 3, no. 3). A brief note of these discoveries was again included in the college magazine. It stated that:

> "During excavations for the foundations of our new building near the School of Pythagoras, four skeletons were removed from the earth and taken to the Museum of Archaeology and Ethnology in Downing Street. At the same time broken pottery, dating from the 1st century AD to mediaeval times, was collected from unstratified layers, unconnected with the burials. It seems that in the neighbourhood there were important human habitations of which these fragments were domestic debris. Geologically, this site is interesting, as there is a pronounced slope down to the Bin Brook from the School of Pythagoras; above the lower part of the slope the ground has been raised to make a level garden or terrace in front of the School of Pythagoras. Into this terrace the graves were dug for the skeletons at an unknown period. But had the skeletons been Roman, unbroken pottery should have been found with them. A skull, blacker than those of the four skeletons, was found near the Brook" (Boys Smith 1964, 74).

Figure 4. Views of the 1967 excavation, courtesy of James Graham-Campbell. Top view, facing north from the first floor and showing an orginal column base and 16th century dividing walls. Bottom view, facing northwest and showing additional column bases and subdivisions.

Figure 5. Additional views of the 1967 investigation, courtesy of James Graham-Campbell. Top view facing south, bottom view facing north. Note the limited depth of the excavation, which does not appear to have penetrated to the level of the underlying Roman features.

This account, although somewhat ambiguous, contains a number of intriguing details. Firstly, the skeletons appear to have lain in relatively close proximity to the School of Pythagoras and are thus very likely to have formed part of the same – potentially quite extensive – cemetery as the interment encountered in 1967. Secondly, the remnant of a relict watercourse, which was interpreted as comprising part of the Bin Brook, was recorded 'in front of' the standing building. Additional evidence supporting the existence of a substantial channel in this location was also encountered during the present excavation. Finally, the possibility that reclamation works had been conducted prior to the cemetery's establishment is also of significance.

Finally, in 2008 a further excavation was undertaken in close proximity to the School of Pythagoras. This work took place in advance of the refurbishment of Merton Hall, the late 15th/16th century Grade II* listed timber-framed annexe that extends to the north of the School itself (Meckseper *et al*. 2011; Figure 3, no. 2). As part of this process, the ground level within the annexe was reduced by 0.45m and its walls were underpinned; a modern extension was also demolished. The earliest features to be encountered consisted of two *in situ* inhumations. The first of these was complete, and comprised an unaccompanied east-west oriented female aged between 36 and 50 (*ibid*., 14). This skeleton was radiocarbon dated to between 320 and 540AD (91.7% probability; SUERC-28354). A second, subadult inhumation was also present, situated somewhat further to the south, but had been very heavily truncated; this burial was accompanied by a Late Roman Nene Valley Grey Ware dish (*ibid*., 11). In addition, disarticulated human remains equating to a further eight individuals were also recovered from make-up layers situated all across the site. One such group, which consisted of "a large quantity of human remains from a single individual" (*ibid*., 13), was radiocarbon dated to between 230 and 420AD (95.4% probability; SUERC-28355). This evidence provides confirmation of the presence of a cemetery in the area, and suggests that it was most probably Late Roman in date. Additional discoveries at the site included unstratified Roman pottery, as well as the remains of internal dividing walls, old floor surfaces and internal masonry structures associated with the construction and subsequent occupation of Merton Hall itself. These latter elements were poorly recorded, however, and few details of the building's structural history can be reconstructed.

Although limited in scale, the results of these three investigations nevertheless demonstrate that significant archaeological remains are present within the area immediately surrounding the School of Pythagoras. In terms of burials, for example, a minimum of sixteen individuals have so far been identified, seven of whom were articulated and one of whom was accompanied.

- RESULTS -

The following section presents the results of the recent excavations on a phase-by-phase basis. Where pertinent, results obtained during the associated watching brief investigation have been ammalgamated into this account, although a summary description of each individual trench is also presented at end of the section. Overall, as Chart 1 clearly demonstrates, the greatest number of features were generated during Phases I and III. This statistic does not necessarily reflect the relative significance of the intervening period, however, as it does not take account of the extant Phase II building.

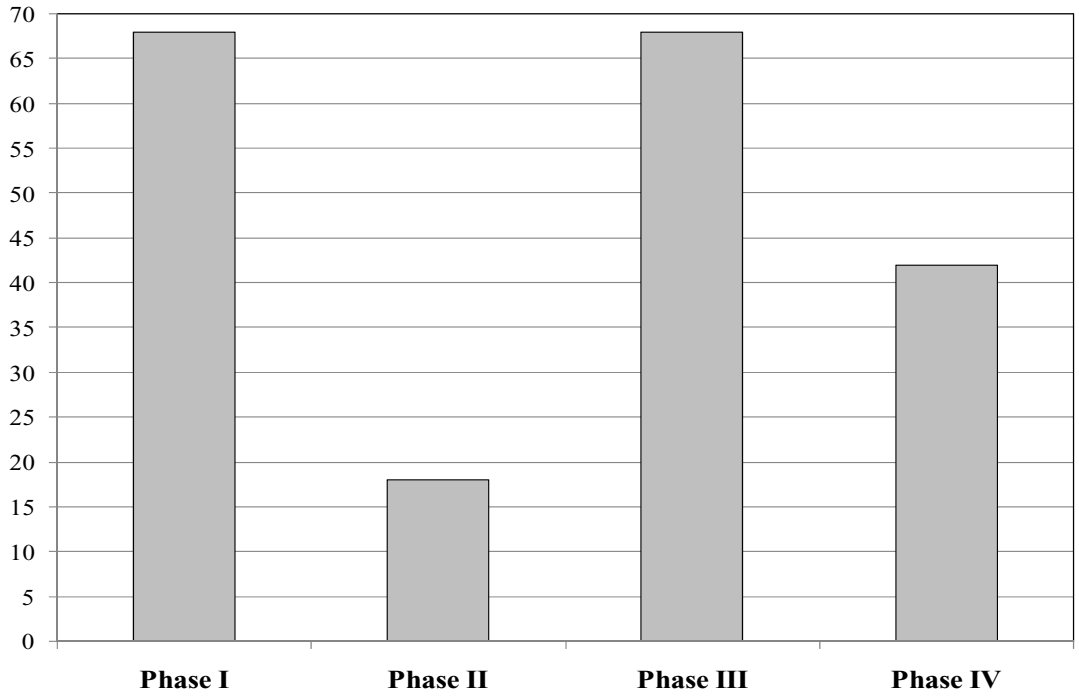


Chart 1: Number of features per phase.

Pre-Settlement Activity

No archaeological features of definite pre-Roman attribution were identified within the present area of excavation. Nevertheless, residual evidence attesting to a background prehistoric presence was identified in the form of a small worked flint assemblage that spanned the Mesolithic through to at least the Early Bronze Age (see Billington, below). A much more significant result was obtained during the watching brief conducted in Trench 1, however. Here, following the re-excavation of a 1m deep service trench in order to install additional pipework, extensive silt-rich deposits were noted along the base of the excavation. Consequently, a borehole investigation was instituted that revealed the presence of a substantial palaeochannel which extended across the majority of present-day Merton Court (Figure 6).

A basic profile and deposit model of the palaeochannel was constructed via the results of a linear transect of nine hand-augered boreholes (I-IX; Figure 6). Although the channel sequence also extended further to the southeast, the transect could not be continued in this direction due to the presence of a substantial hardcore deposit. Based upon the nature of its composition, this latter material appears to have been dumped into the uppermost portion of the channel during the mid to late 20th century; it was therefore most probably associated with consolidation works undertaken during the construction of the adjacent Cripps Building in 1962-64. Nevertheless, despite this limitation, a number of significant results were obtained. In the first instance, the profile of the palaeochannel was found to be highly varied, with a series of marked peaks and troughs identifiable (Figure 6). This irregularity indicates that a relatively long-lived sequence of gradual, sinuous migration is represented, probably as part of a much larger braided or anastomosing multi-channel system. Secondly, some indication of the nature of the fill sequence was also recovered. Towards the channel's base, overlying the natural Gault clay, a dark bluish grey laminated silty clay deposit with occasional pea-grit and mollusc inclusions was present. Above this, the sequence predominately comprised mid brown clay silt with occasional gravel and mollusc inclusions. Finally, a deposit of dark brown humic silt was also identified; this may represent the deliberate infilling of the feature's relict hollow. Although two sub-samples were analysed from Borehole VI (Figure 6), both proved to be barren of pollen. This absence can probably be ascribed to microbial breakdown of the material resulting from a fluctuating water table at the site (see Boreham, below).

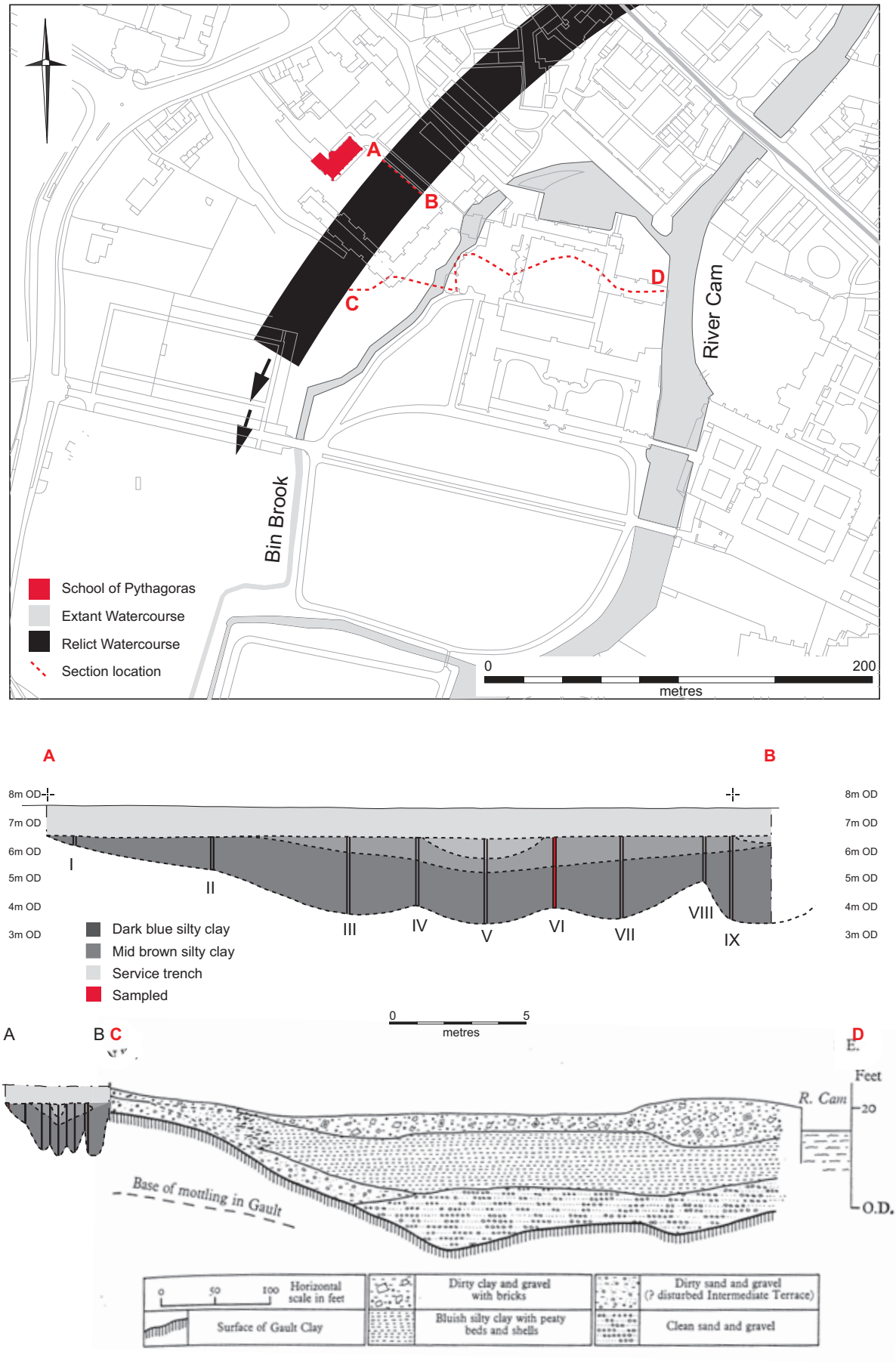


Figure 6. The “Cambridge Watercourse” in relation to the present course of the Bin Brook and the River Cam, showing auger profiles of the palaeochannel (A-B) and the Cam flood plain (C-D; after Sparks & West 1965).

The presence of a substantial water-filled channel in this vicinity, although not previously identified archaeologically, was nonetheless conjectured by a number of antiquarian observers. In 1746, for example, William Stukeley reported that "in the garden of *Pythagoras's* school, south and west of that building, the trace of the ditch of the Roman Granta may easily be discover'd, and the turn or angle of it to which the angle of that building corresponds" (Stukeley 1746, 36). Subsequently, in 1895, Arthur Gray published a paper in which he proposed that Stukeley's ditch was not Roman in origin, but had instead formed part of the defences of the Norman castle. Quoting a series of documentary sources pertaining to the castle's medieval bounds, Gray claimed that the ditch comprised part of a much larger entity that corresponded with "the ancient watercourse called 'Cambridge'" (Gray 1898, 66). Gray proposed that this watercourse had originally consisted of a straight section – which lay "approximately 40 yards [*c*. 36m] to the south of the School of Pythagoras, and ran parallel to it" – that was connected to the river Cam at one end, and the Bin Brook at the other, by two further straight sections that were oriented at right-angles to the first (*ibid*., Plan I; see also Gray 1905, 22-23). This, he suggested, most probably represented the canalisation of a former branch of the Cam. Gray's theory represented the connection of a series of disparate pieces of documentary information, drawn from a variety of sources of differing dates, to create a single, all encompassing entity. Furthermore, aside from Stukeley's 18th century observation, no physical evidence for the existence of this watercourse was adduced.

Subsequently, however, in 1910 Frederick Walker conducted a series of excavations in the grounds of Magdalene College. Here, besides investigating an earthen mound situated alongside Chesterton Lane, his "object was to attempt to find the line of an ancient course of the Cam which tradition said ran through the College enclosure" (Walker 1911, 181). In this, he was successful. Towards the riverward end of a long trench, excavated right across the College grounds, Walker identified the presence of a channel measuring 75½ feet (*c*. 23m) wide. The uppermost portion of this feature, which measured in excess of nine feet (*c*. 2.7m) deep, had been deliberately infilled (*ibid*., 185-6); the base of the channel was not reached, and its full extent remains unclear. This watercourse did not follow the sharply right-angled alignment originally proposed by Gray. Instead, it lay at a much more gentle – and thus navigable – angle to the Cam (see Figure 4). Walker therefore associated the channel with a documentary reference in the *Liber Memorandum* of Barnwell priory. This stated that, in the time of Edward I (*r*. 1272-1307), a very aged palmer-pilgrim "said that he had seen ships [*tuwes*] come almost up to the door of St Giles' Church" (Clark 1907, 99). Based upon Walker's discovery, allied with Gray's earlier conjecture, a wide range of theories have since been posited regarding the origin and function of the 'Cambridge Watercourse'. The most popular has been that it represents an artificial or canalised channel of Late Saxon date (*e.g.* Gray 1905, 21-3; Addyman & Biddle 1965, 93; Taylor 1999, 44-50). Alternatively, a second suggestion has been that the feature comprised part of a Viking 'longphort' or 'ship camp'. Cambridge is known to have been occupied by the Viking Great Army in 875-6, and various ditches within the town have previously – although almost certainly erroneously – been associated with the town's Viking occupation (*e.g.* Haslam 1984, 19; Hines 1999, 136; Taylor 1999, 44-50).

In reality, however, it is much more likely that the palaeochannel was at least predominately natural in origin. Environmental data recovered during an excavation undertaken at 24 Thompson's Lane in 2007, for example, indicates that during the late Neolithic/Early Bronze Age the Cam was a broad, slow-flowing and probably highly braided river (Newman 2008a, 14). A number of such channels are thus likely to have been present, forming a braided and potentially anastomising network interspersed with numerous riverine islands (see Brown 1997, 17-33). Broadly conforming to this pattern, a possible relict palaeochannel was observed a little way to the northeast in 1892 (Hughes 1898), whilst additional palaeochannels have also been recorded during a watching brief conducted upon nearby Jesus Green (Pollard 1995). Moreover, a borehole survey conducted during the construction of the Cripps Building in 1963 has also been used to construct a profile of the floodplain in this vicinity (Sparks & West 1965; Figure 6); this demonstrates very clearly the depth and extent of the area's alluvial sequence. Taken together, therefore, this evidence suggests that the 'Cambridge Watercourse' may well have developed as part of a much larger riverine system in prehistoric times. Consequently, it is likely to have formed an important component of the Roman, Saxon and medieval topography of the town. Yet the date at which it was finally infilled remains unclear. It still comprised an open feature during the late 13th century, as it was deposed in the Hundred Roll of 1279 that:

> "the servant of the Scholar's of Merton has appropriated to his lords a ditch common to the whole town, so that no person can fish there, as he was wont, to the loss of the whole town" (Illingworth 1812, 65).

Thus, whilst it may no longer have been navigable by this time, the palaeochannel nevertheless remained extant towards the end of the 13th century. Yet by 1574, when the earliest surviving cartographic depiction of the area was compiled, no trace of the 'Cambridge Watercourse' remained discernable save a redundant bridge on Castle Street that had once crossed its course.

Phase I: Roman (AD 43-410)

The earliest *in situ* evidence of activity at the site was Roman in date. Indeed, given the relatively small size of the investigated area, combined with the widespread pattern of truncation that subsequently occurred during both the medieval and post-medieval periods, a comparatively high density of Roman features was encountered (Figure 7). Whilst these predominately consisted of pits, a number of ditches, postholes and layers were also present, along with a metalled trackway and a minimum of six burials (Table 1). Further corresponding to this pattern, a relatively large material assemblage of this date was also recovered. Overall, the Roman sequence at the School of Pythagoras can be sub-divided into three broad – although not necessarily mutually exclusive – phases.

Feature Type	Number of Features	Percentage of Total
Burial	6	8.8%
Possible burial	2	2.9%
Ditch	6	8.8%
Gully	1	1.5%
Layer	5	7.3%
Metalled trackway	1	1.5%
Posthole	6	8.8%
Pit	41	60.4%

Table 1: Phase I features by type.

In the first instance, activity appears to have commenced on a limited scale during the mid or more probably late 1st to early 2nd century AD. At this time, a number of probable gravel quarries were created. Examples of this feature-type included **F.114**, **F.116** = **F.231**, **F.120** and **F.345**. Although the majority of these quarries were undated, they could be placed securely at the beginning of the sequence on stratigraphic grounds. The principal exception to this pattern comprised **F.345**, which contained a discretely datable assemblage of mid 1st to mid 2nd century ceramics alongside a late 1st century Colchester-derivative brooch. All four quarries shared a similar morphology and fill-type; they varied between 0.45m and 2.66m in diameter and 0.20m+ and 0.51m+ in depth. In addition, five further undated pits – comprising **F.241**, **F.242**, **F.247**, **F.248** and **F.268** – each contained highly comparable pale, eroded subsoil fills along with a marked paucity of material remains. Again situated at the base of the stratigraphic sequence, it is probable that these features likewise comprised part of an initial horizon of extraction-related activity. Finally, also dating to this phase on ceramic grounds was northwest-southeast aligned gully **F.414**, which contained a further discrete assemblage of mid 1st to mid 2nd century material. Thus, based upon the above evidence, it appears that the initial usage of the area was somewhat *ad hoc*, primarily being restricted to the occasional extraction of gravel with relatively little associated material deposition. This situation might perhaps have been related to the prevailing environmental conditions engendered by the site's proximity to an open watercourse. Certainly, the earliest stratified deposit to be encountered – **F.100**, which contained a small quantity of undiagnostic Roman pottery – appeared to be alluvial in character. As a result, the area may not initially have been deemed a suitable venue for more intensive activities. Nevertheless, despite the limited scale of the remains that were encountered, additional circumstantial evidence indicates that more intensive activities were being undertaken contemporaneously in close proximity to the site. Firstly, incorporated into a number of later, 2nd-3rd century features was a moderately sizable assemblage of abraded 1st-2nd century ceramics. Secondly, accompanying these sherds in several instances were fragments of disarticulated human bone that equated to a minimum of four individuals (Figure 7, inset).

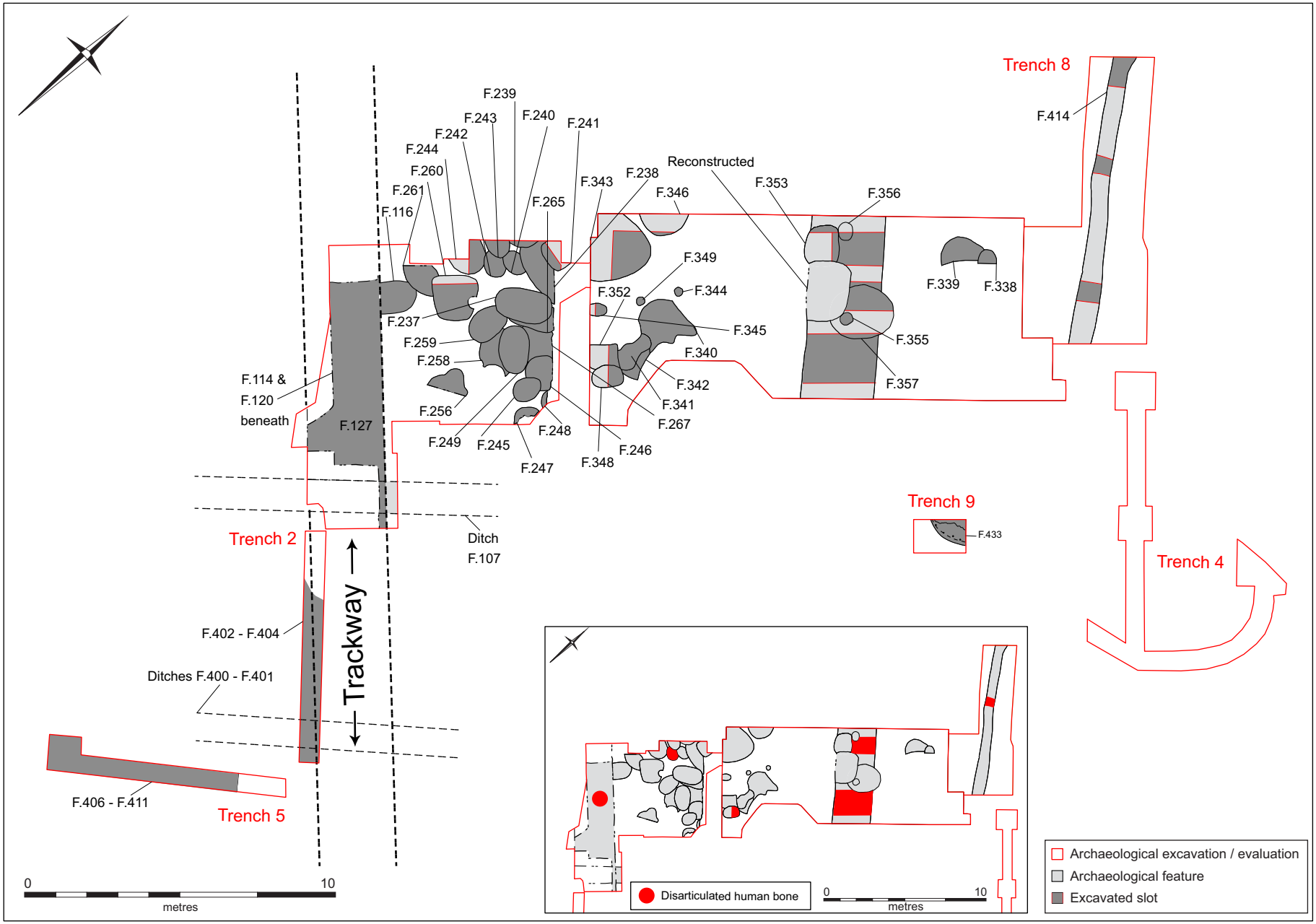


Figure 7. Plan of 2nd to 3rd century features, with inset showing distribution of disarticulated human bone.

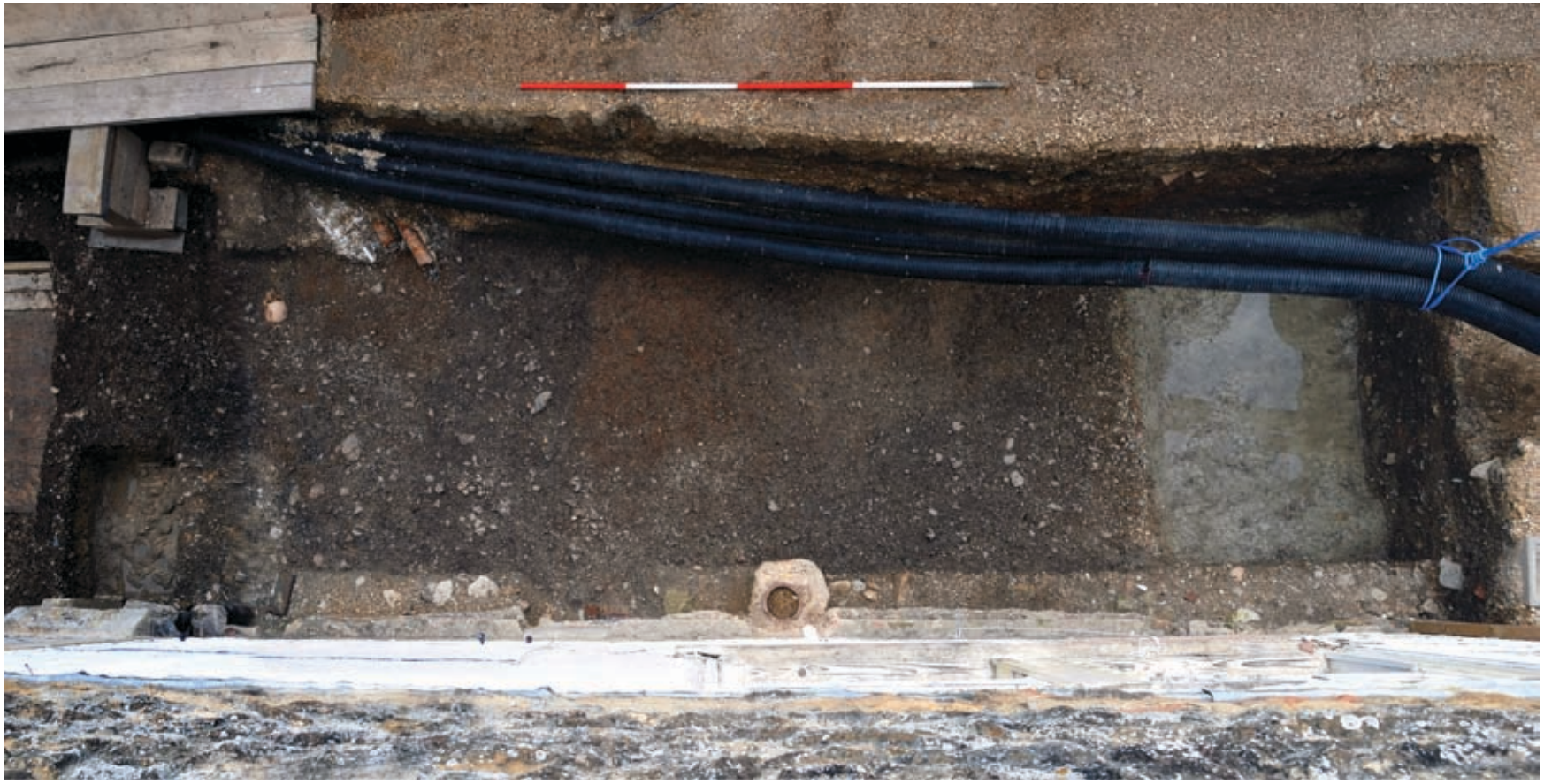


Figure 8. Metalled trackway F.127, facing southwest.

Figure 9. Ditch F.354, facing northwest (left) and southeast (right).

The presence of such a substantial quantity of human remains at this early date is intriguing. Although the majority of fragments were recovered as residual material from mid 2nd-mid 3rd century ditch **F.354** – which contained elements derived from three individuals; a sub-adult, a mature adult ?male and an adult ?female (see further Dodwell, below) – smaller quantities were also present within stratigraphically early features **F.242**, **F.348** and **F.414** as well as metalled trackway **F.127** and 'dark-earth' deposit **F.126**. The remains were also distributed relatively ubiquitously across the site, with no clearly discernable focus or point of origin. This implies that relatively intensive activities involving the inhumation of potentially quite substantial quantities of human remains occurred as an 'off-stage' presence during this period (although the lack of precise dating leaves open the possibility that such practices also continued into the succeeding mid 2nd-mid 3rd century phase); as yet, the precise nature and location of these activities remains unclear.

Subsequently, around the early-mid 2nd century, northwest-southeast aligned metalled trackway **F.127** was set down; it is possible that the materials required for its construction had been obtained in part during the preceding phase of quarrying. Oriented perpendicular to the palaeochannel, it seems that this laneway was intended to provide access to the principal waterfront zone. But although well-laid and heavily compacted (Figure 8), no road-side ditches were present and it therefore appears unlikely that the trackway was intended for heavy or prolonged usage. Instead, it was most probably associated with a small-scale or private riverfront property. Consistent with the establishment of such a plot, by the mid 2nd century the degree of activity being undertaken at the site had escalated markedly. To the northeast of **F.127**, for example, a relatively discrete cluster consisting of twenty-three intercutting pits developed (**F.237**-**F.240**, **F.243**-**F.246**, **F.249**, **F.256**, **F.258**-**F.261**, **F.265**, **F.267**, **F.340**-**F.343**, **F.346**, **F.348** and **F.352**). Predominately sub-oval in form and containing deposits of mid to dark brown silt-rich material, these pits do not appear to have been quarry-related in function. Rather, they most probably pertained to the establishment of domestic/industrial occupation at the site. Consonant with this, a relatively substantial assemblage of contemporary ceramics was recovered (see Fawcett, below) along with a moderately-sized quantity of secondary iron smithing slag (see Timberlake, below). Also established during this phase was substantial northwest-southeast aligned ditch **F.354** (Figure 9). Measuring 2.35m in width by 1.16m in depth, this feature comprised a major topographic division that broadly followed an underlying geological distinction between Gault clay (to the northeast) and exposed river terrace gravels (to the southwest). In the latter direction lay trackway **F.127** and the aforementioned intercutting complex of pits, whilst in the former were situated pits **F.338** and **F.339**. Three pollen sub-samples were analysed from **F.354**. Although the overall level of preservation was poor, all three samples presented similar pollen spectra; evidence indicative of an tree-less environment with just a little hazel scrub or hedgerow, extensive meadows with riparian communities and arable cultivation was identified. No aquatic vegetation was identified from within the ditch itself, implying that it may have been predominately dry, although such material may also have been degraded by post-depositional oxidation processes.

Additional evidence of activity relating to this second sub-phase was also encountered during the watching brief undertaken upon Trenches 2, 5 and 9 (Figure 7). Within Trenches 2 and 5, for example, relatively intensive sequences of intercutting pits were identified (comprising **F.402**-**F.404** and **F.406**-**F.411** respectively). Within Trench 9, meanwhile, a single substantial pit was encountered (**F.433**). Although undated, its location within the footprint of the succeeding medieval building indicates that this feature was almost certainly Roman in origin. Moreover, **F.433** is particularly significant because it contained the degraded remnants of a wicker lining. As it was not deep enough to have functioned as a well, and did not contain sufficient cess- or refuse-rich material to have been utilised in either of these capacities, it was most probably industrial or craft-related in origin.

During the late 2nd-early 3rd century, a number of changes in the pattern of occupation occurred. Firstly, metalled laneway **F.127** appears to have gone out of use; its route was subsequently blocked by two parallel north-east-southwest aligned ditches (**F.107** and **F.400**, the latter of which was later recut as **F.401**). Moreover, above the trackway's remains rich and humic 'dark-earth' deposit **F.126** accrued. This material – which, although well-stratified, did not appear to be alluvial in origin – most probably represents an amalgamation of topsoil and upcast material derived from the excavation of nearby features. As such, therefore, its presence does not necessarily indicate a diminution in the scale of contemporary occupation. Indeed, it is likely that this deposit originally extended across the majority of the site, thereby representing a potential *increase* in the degree of

activity being undertaken at this time, although it was subsequently removed in the majority of areas by later truncation. A similar pattern also occurred in relation to ditch **F.354**. Around the beginning of the 3rd century, this feature also went out of use; it was subsequently truncated by pits **F.353** and **F.357** and postholes **F.355** and **F.356**. Yet the latter features, which were aligned along the central axis of the ditch, indicate that the former boundary continued to be represented in the form of a fence-line. This second phase of activity eventually came to a close around the middle of the 3rd century AD. Overall, the nature of the occupation that occurred during the mid 2nd-mid 3rd century is difficult to interpret. No definite structural evidence was encountered, for example, although a moderately-sized assemblage of Roman tile was recovered (see Newman, below), along with several fragments of painted wall plaster that were identified during the 1967 investigation (see Timberlake, below). This indicates that a substantial, high-status building may have been situated in relatively close proximity to the site at this time. Similarly, whilst a moderately-sized assemblage of metalworking debris – including hammerscale – was also present, in the absence of additional industrial remains this material is not in itself commensurate with an exclusively craft-based interpretation of the period's activity.

Finally, the third sub-phase of Roman activity at the site represents an apparent divergence from the preceding sequence. Around the middle of the 3rd century, all trace of the former pattern of domestic/industrial occupation ceased and the area appears to have been given over for use as a cemetery (although it is possible that this transition represents the expansion of an earlier, mid 2nd-mid 3rd century burial-ground rather than a *de novo* foundation). In total, six articulated inhumations were identified that pertained to this phase – **F.113**, **F.115**, **F.118**, **F.119 = F.264**, **F.254** and **F.255** (Table 2) – along with two further possible, albeit empty, graves – **F.121** and **F.253** (Figure 10).

Feature	Skeleton	Orientation	Age	Sex	Coffin	Grave Goods
F.113	[1067]	N-S	Late 20s/early30s	?Female	No	None
F.115	[1072]	NNW-SEE	30-44yrs	Female	Yes	Hobnails, shale bracelet, Fe finger ring
F.118	[1006]	S-N	45yrs +	Male	No	None
F.119/ F.264	[1048]/ [2164]	SW-NE	45yrs+	Male	No	None
F.254	[2141]	N-S	45yrs +	Female	No	Possible hobnails?
F.255	[2147]	S-N	Adult	?	No	None

Table 2: Burial catalogue (note: orientation cites head first).

Determining the original layout and extent of this Late Roman cemetery is problematic. For while the degree of archaeological preservation encountered in Area 1 was relatively high, that in Area 2 was poor (see Figure 10). Towards the southwestern limit of the investigated area, outside the footprint of the School of Pythagoras, a series of graves were present, lying in moderately close proximity to one another; indeed, here at least one instance of direct stratigraphic succession was identified (between **F.115** and **F.255**). Beneath the structure itself, however, only one grave remained extant; although numerous fragments of human bone had been incorporated into the building's footings. Finally, in Area 3 – where medieval and post-medieval terracing had reduced the Roman ground height to *c*. 7.55m OD, below the level of the deepest surviving inhumation in the adjacent areas – no burials remained at all. Yet based upon the results of earlier nearby investigations (see summaries above and the discussion section, below) it appears likely that the cemetery originally extended in relatively dense profusion across most if not all of the excavated area. Moreover, the somewhat haphazard pattern of grave distribution that is represented in Figure 10 is typical of the period, and is likely to have been replicated across much of the remainder of the cemetery. Unfortunately, no contemporary boundary-related features were identified and the perimeter of the burial-ground remains undefined. In general, the surviving graves which constituted the cemetery were of relatively uniform size, shape and depth. Predominately comprising small shallow 'scoops', in all but one instance the grave-cuts themselves were little larger than the bodies they enclosed.

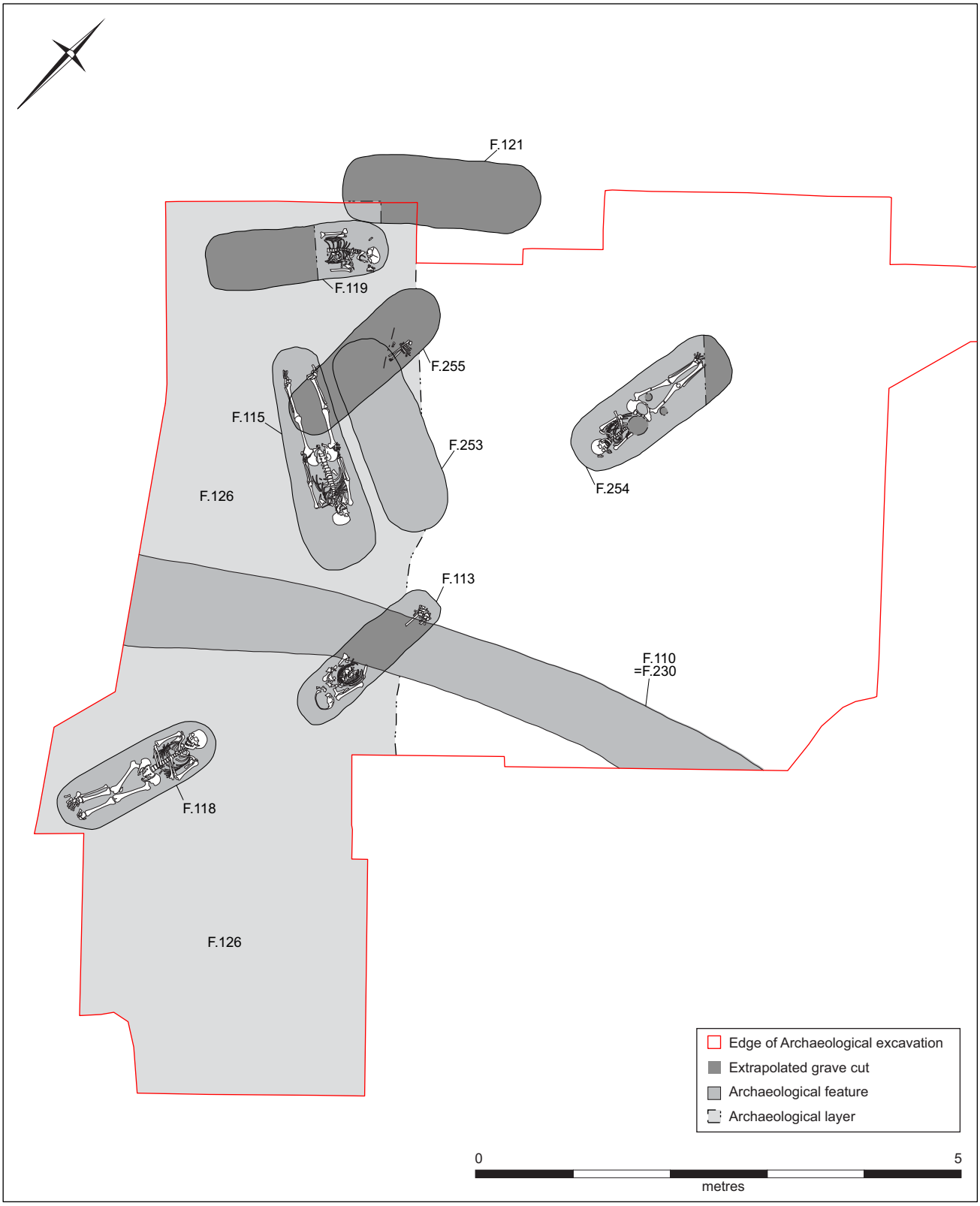


Figure 10. Plan of Late Roman cemetery in Areas 1 and 2.

Figure 11. Excavation and recording of Roman burials.

Figure 12. Burial F.118, facing north (left) and burial F.115 facing southeast (right; a composite of two stages of excavation). Both graves are shown at the same scale.

Figure 13. Burial F.254, facing south (top) and burial F.119, facing northeast (bottom). Both graves are shown at the same scale.

Figure 14. Burial F.113, facing south (top; a composite of two stages of excavation) and the surviving remnant of burial F.255, facing east (bottom).

This evidence, when taken in combination with the characteristically close-bound attitude of the majority of the interments, indicates that these individuals had been wrapped in shrouds prior to their burial. A significant exception to this pattern did occur, however. Burial **F.115** had been encoffined, and was interred within a substantially larger grave than any other that was encountered. Alongside a rectangular outline defined by a series of nails, the presence of a coffin could also be discerned via the pronounced rotation of this individual's principal joints and the marked dispersion of many of their bones; this contrasts very strikingly with the 'hunched' disposition of many of the enshrouded individuals (Figures 12-14). Notably, **F.115** was also the only individual to have been accompanied by grave goods; these comprised hobnailed shoes, a shale bracelet and an Fe finger ring (Table 2; Figure 12). Sepulchral activity most probably came to an end at the site during the late 3rd or early 4th century, although the precise date at which burial ceased is difficult to determine due to the general dearth of accompanying material culture. It was also most probably around this time – or perhaps a little later, during the succeeding Saxon period – that ditch **F.110** = **F.230** was inserted (Figure 10). Partially curvilinear in form, this feature truncated burial **F.113** – the disturbed remnants of whom were subsequently reinterred close-by, upon the ditch's base – although date-wise it contained only redeposited Mid to Late Roman ceramics. A possible clue as to this ditch's function can nevertheless be derived from the post-depositional damage that was sustained by nearby burial **F.119**. This individual's maxilla and nasal cavity had been detached from their skull and dragged some distance to the east (Figure 13). Such an impact is characteristic of plough-damage, where the blade of the plough catches and drags material in a particular direction. Therefore, whilst by no means conclusive, this combination of evidence nevertheless suggests that the area may have been put to agricultural usage prior to the commencement of Phase II.

Phase II: Medieval (*c.* 1180-1500)

Following on from the relatively intensive sequence of Roman activity that occurred during Phase I, and the apparent lacuna that succeeded it, the principal activity during Phase II comprised the establishment and occupation of a large, high-status masonry building; the School of Pythagoras itself (Figure 15). Although the main body of this structure lay outside the current area of investigation, the footprint of the building's projecting northwest-southeast aligned lateral range – which, following the terminology employed by Gray (1932) and thereafter widely adopted, is referred to here as the 'north wing' – was almost completely excavated (Area 2). Additional, albeit limited, remains pertaining to this period were also encountered within Areas 1 and 3. Consistent with the imposing presence of the extant medieval building, however, the most commonly occurring feature-types were structural in origin (Table 3). A series of foundation layers, along with a small number of cut features, were also identified, although in general it appears that the area immediately surrounding the School of Pythagoras was kept clean and relatively free of refuse in medieval times. A further taphonomic factor that must also be taken into consideration is the potential impact of the later terracing/landscape works enacted during Phase III; these may effectively have 'scalped' any horizontal stratigraphy that had accrued during the preceding period.

Feature Type	Number of Features	Percentage of Total
Layer	5	27.8%
Pit	1	5.5%
Posthole	3	16.7%
Structural (foundation) Structural (wall)	6 3	50%

Table 3: Phase II features by type.

The following account presents the results of the below-ground archaeological investigation that was recently conducted at the School of Pythagoras. Although an associated programme of standing building recording was also undertaken, the results of this work have not been included within the present report; a summary of the most pertinent findings has however been incorporated into the main discussion section, below. Providing a context for the present investigation, Figure 15 depicts what is known of the original layout of the medieval building following its construction in *c*. 1180-1200. (It should be noted that this does not represent a full-scale reconstruction, as it only shows those features for which direct physical evidence remains extant; the scale of the original fenestration, for example, is likely to have been much more substantial than that depicted due to the extent of later truncation/rebuilding).

Archaeologically, one of the most important discoveries made in relation to the initial construction of the building comprised the identification of the layout and composition of the footings of its north wing (Figures 16 to 19). A single course of unmortared pitched Barnack limestone slabs was found to have underpinned all three walls of this range (consisting of **F.215**, **F.234** and **F.270** respectively; Figure 16). Measuring on average 350mm by 300mm by 120mm in extent, these unworked, roughly-split slabs had been set into shallow trenches that measured around 2m in width – although **F.270** in particular had been subject to intensive truncation at a later date. Of particular note was the adjacent footing of the principal range itself (**F.251** = **F.347**). Composed of identical materials, and situated at an identical level – *c*. 7.75m OD – this footing was almost certainly constructed as part of a single, cohesive event that included the contemporaneous establishment of the foundations of the north wing. A further, intriguing aspect of the footings' disposition comprised their relationship to the overlying walls themselves. In the case of **F.215**, in particular, the wall was not positioned centrally – in the optimum location to evenly distribute its weight – but markedly to the northeast (Figure 16). This disjunction is rendered all the more remarkable when the alignment of the footing is compared to that of the southwest wall of the principal range; the two match almost perfectly. This provides further, compelling evidence that the foundations of the entire 'L'-shaped structure were laid out *en masse*, and that the design was later altered partway through the construction process. It is certainly clear that a hiatus occurred between the setting out of the on-edge footing and the subsequent erection of the overlying structure. This is because a substantial build-up of upcast material, measuring up to 0.12m thick, accrued between the two events (Figures 18 and 19). Composed of dark brown clay silt, this material contained both Roman pottery and disarticulated human bone. It therefore appears most likely to have been generated via the extraction of the preceding deposits located within the central portion of the north wing. As they represented potential 'soft-spots' that may have resulted in the subsidence of later floor surfaces, the majority of the Phase I pits and burials were removed from this area at the time of the building's construction, to be replaced with compacted layers of clay and gravel (**F.252**; Figure 19).

When finally constructed – perhaps following an initial period of work upon the architecturally more complex vaulted undercroft of the adjoining range – the walls of the north wing themselves were composed of an outer Barnack skin with an inner Barnack rubble, clunch and flint cobble core. Exactly the same technique was also utilised throughout the remainder of the ground-floor of the building, further underlining the north wing's probable contemporaneity. Associated with this period of construction, two postholes – **F.262** and **F.263** – were identified within the interior of this portion of the structure. Their presence implies that a system of internal scaffolding was employed; a supposition that is supported by the absence of contemporary external postholes in any of the investigated areas. Although no *in situ* medieval surfaces remained, the original floor level in this area appears likely to have lain at *c*. 7.85m OD; around 0.30m higher than that within the adjacent undercroft. A further point of interest pertains to the layout and function of the north wing. Firstly, despite detailed investigation of the remnants of its southwest and northwest walls (**F.215** and **F.234** respectively) – along with a thorough examination of its predominately extant northeast and southeast walls (**F.270** and **F.251**) – no evidence of an original entrance at ground-floor level was identified. Whilst the scale of later demolition/disturbance precludes absolute certainty, it is nevertheless likely that such a doorway would have incorporated a number of diagnostic moulded blocks. The absence of any such fragments therefore provides compelling evidence that no such entrance was present. Secondly, no additional information relating to the initial usage of the north wing was recovered. No cesspit was present, for example, thereby suggesting that this range did not function as a latrine tower. Similarly, the absence of a doorway indicates that the wing did not function as a porch or stair turret (although two treads or winders derived from a medieval spiral staircase were recovered from a residual 19th century context in this area – see further Phase IV).

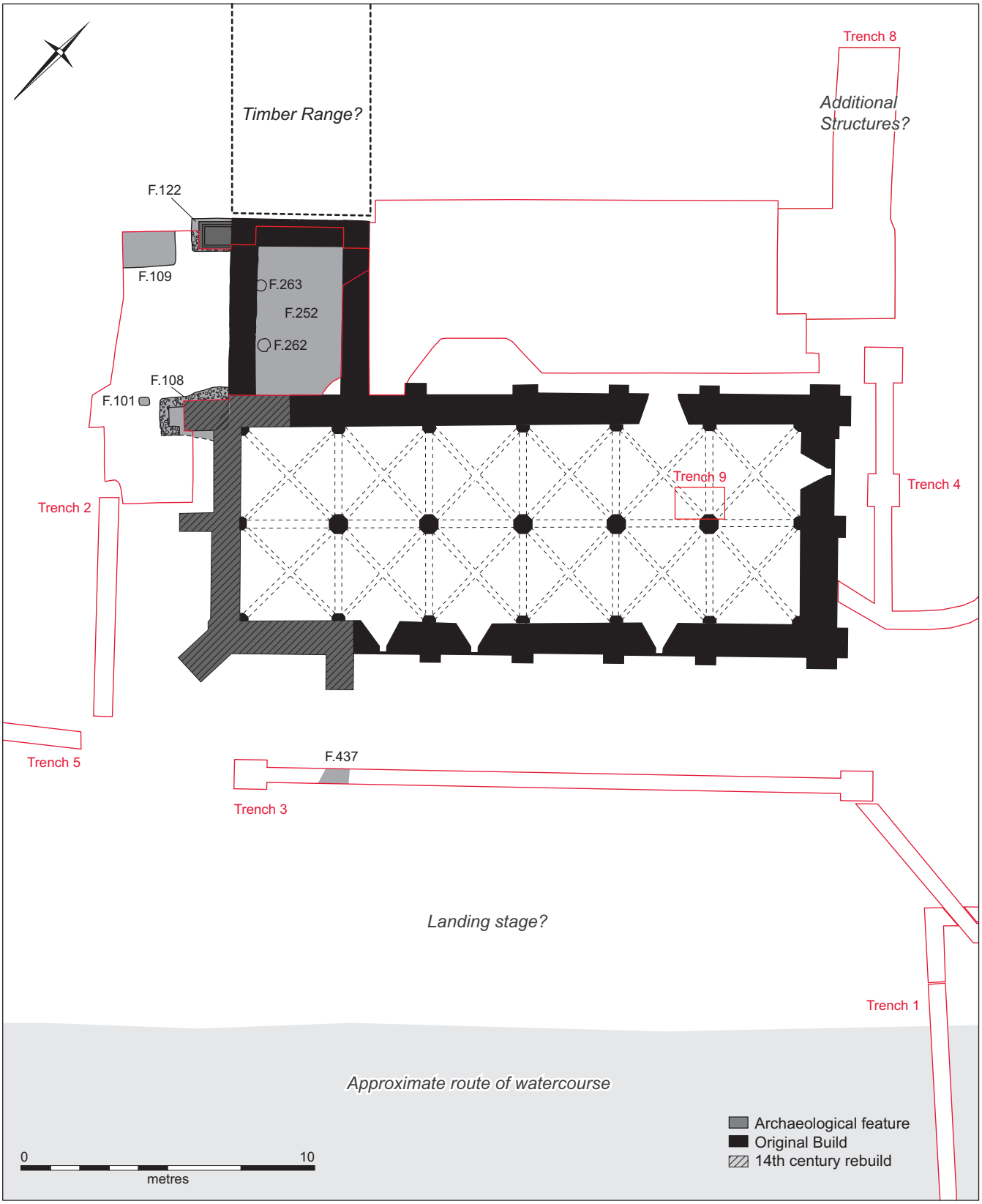


Figure 15. Phase II plan showing School of Pythagoras in relation to the adjacent palaeochannel.

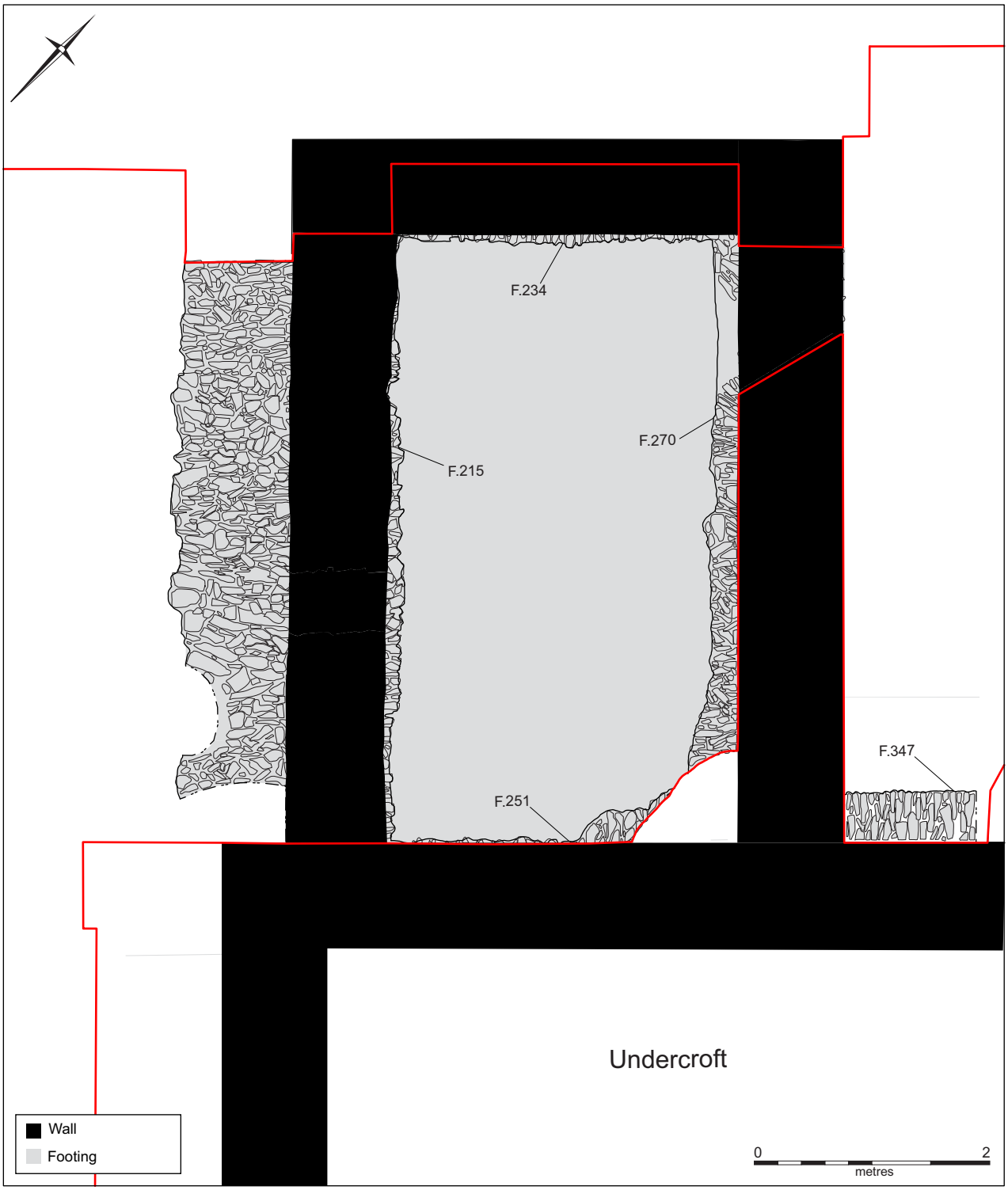


Figure 16. Detailed plan showing the walls of the north wing in relation to their footings.

Figure 17. On-edge wall footing F.215, facing northwest.

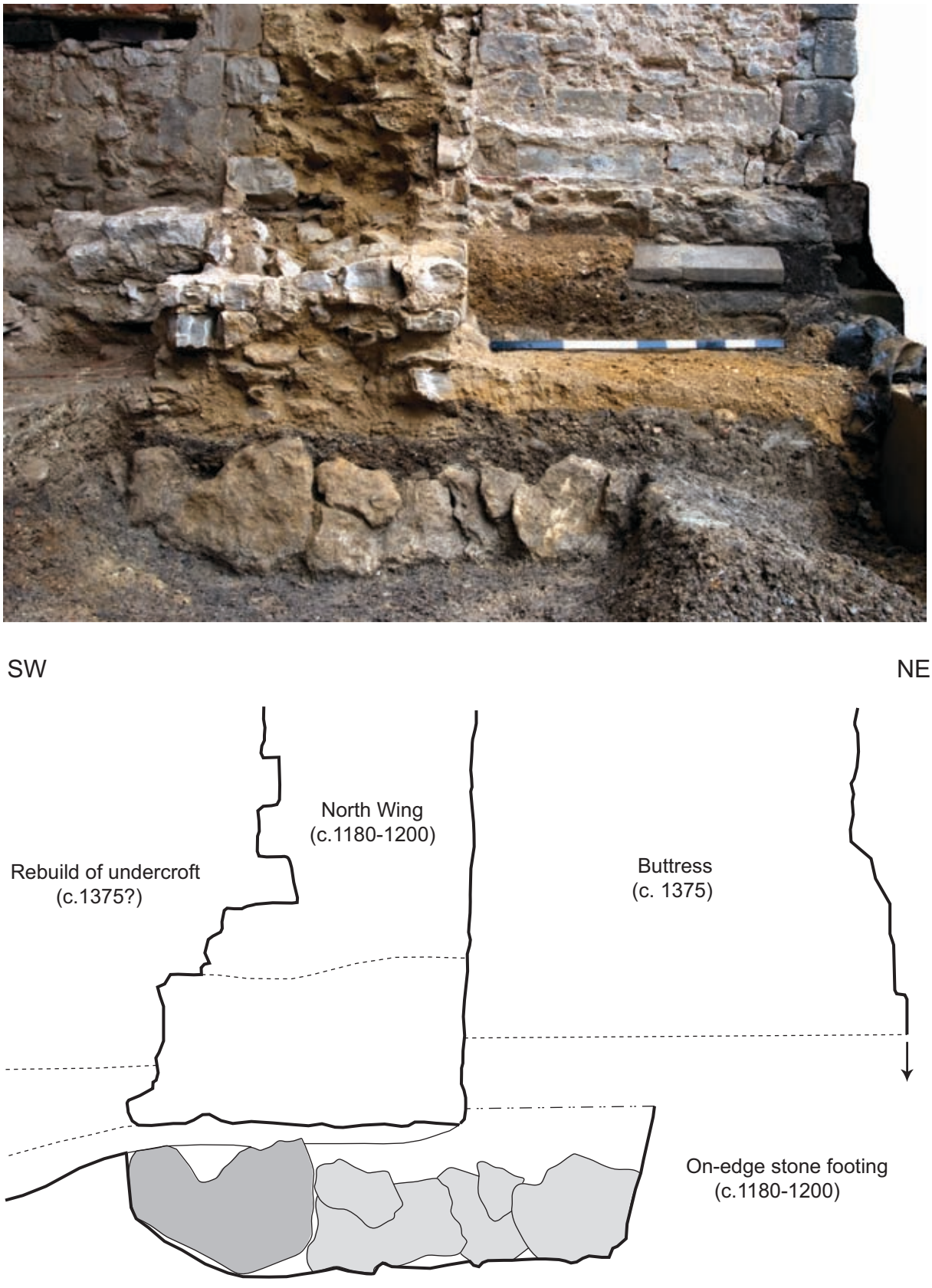


Figure 18. Northwest facing elevation of north wing showing original build plus later additions.

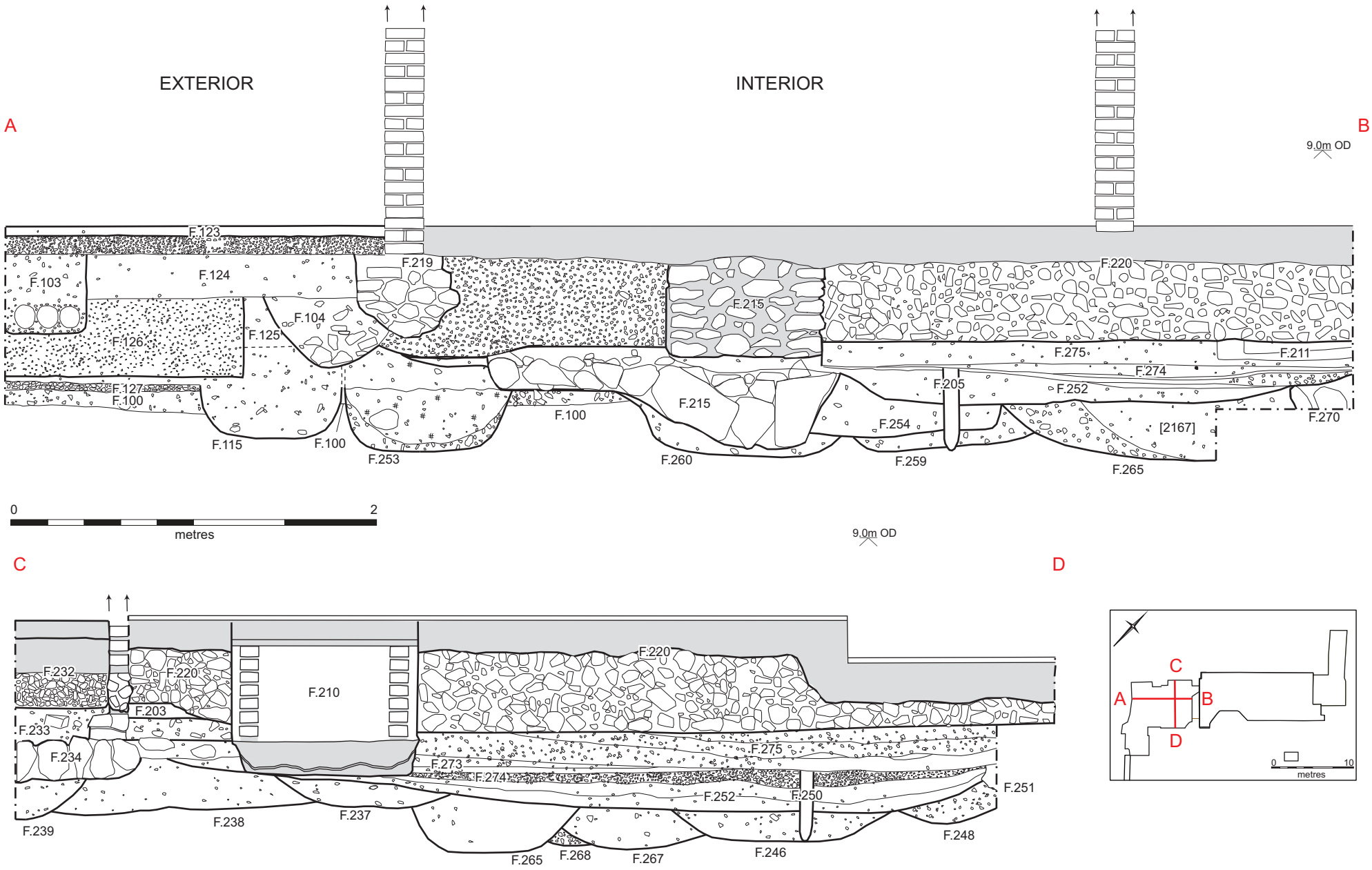


Figure 19. Area 2 sections.

In *c*. 1375, after a century of increasing structural decay that had already necessitated several episodes of repair – see further Appendix 1 – the southeast portion of the undercroft vault collapsed, and was subsequently rebuilt (RCHM(E) 1959 II, 378; Figure 10). Concomitant with this event, a series of substantial three-staged buttresses were also constructed in order to increase the stability of this portion of the building. Evidence of this extensive episode of reconstruction was encountered archaeologically during the present investigation. In the first instance, the footings of two of the aforementioned buttresses – **F.108** and **F.122** – were identified. Both footings were composed of clunch fragments bonded with coarse yellow sandy lime mortar. Yet whilst the latter foundation closely replicated the dimensions of the overlying buttress above, the former projected some distance further to the southwest, suggesting either that the footing had been deliberately over-engineered or that the design of the buttress had been altered at a later date. In addition, part of the reconstructed northwest wall of the undercroft was also identified (Figure 18). The rebuilt portion of the structure could be individuated via the increased quotient of clunch as opposed to limestone that had been employed in its construction; the latter material, being harder to obtain, was consequently more expensive and thus less commonly utilised. Because of the presence of this rebuild, which had been keyed into the remnants of the earlier fabric, the relationship between the original, above-ground builds of the two ranges could no longer be ascertained.

Externally, very few features dating to this phase were present. Across Area 3, in particular, it appears that the ground height was reduced to a little below that of the original natural surface during either Phase II or, more probably, the succeeding Phase III. As a result, any shallow remains – such as beamslots, metalled yard surfaces or horticultural layers – would almost certainly have been destroyed. Consequently, it has not been possible to determine archaeologically the presence/absence of any additional ancillary structures associated with the principal masonry building, although, overall, it appears likely that a number of such structures – of potentially quite ephemeral form – would originally have been present. Despite the scale of later truncation, however, two cut features of probable Phase II date were identified in Area 1; these comprised clunch-packed posthole **F.101** and rectangular pit **F.109** (although both contained only residual Roman material culture). A further foundation/setting – **F.437**, which was composed of clunch fragments set within a matrix of dense pale brown clay – may also have been medieval in origin. Given its location (Trench 3), it could potentially have been associated with a landing stage or hythe; such a feature is very likely to have been present at the site at this time in order to facilitate access to the School of Pythagoras from the adjacent watercourse.

Phase III: Post-Medieval (*c*. 1500-1700)

During the post-medieval period – and, especially, during the 16th century – a number of significant changes occurred in relation to the usage of the site. Firstly, the School of Pythagoras itself – which by now was doubtless regarded as an antiquated, cold and draughty place of residence – is known via historical sources to have been demoted to a predominately agricultural function, housing livestock within its undercroft and grain upon its first floor (Gray 1932, 29; see also Appendix 1). Its former role as principal dwelling appears to have been overtaken by the newly-constructed timber-framed annexe known as Merton Hall, although this structure may itself have replaced an earlier timber-built predecessor. Secondly, outside these buildings a relatively intensive archaeological sequence developed, which was dominated by postholes, pits and layers; between them, these feature-types constituted in excess of three-quarters of the total number encountered (Table 4). The principal elements of the 16th century reorganisation of both the internal and external portions of the site are depicted in Figure 20. It is immediately apparent from an examination of this plan that a much larger number of post-medieval features were encountered than had remained extant in relation to the preceding phase (*cf*. Figure 15). This pattern may in part reflect the buildings' decreasing social impotance; features were now being inserted in ever closer proximity, with little or no equivalent of the medieval 'zone of exclusion' in effect.

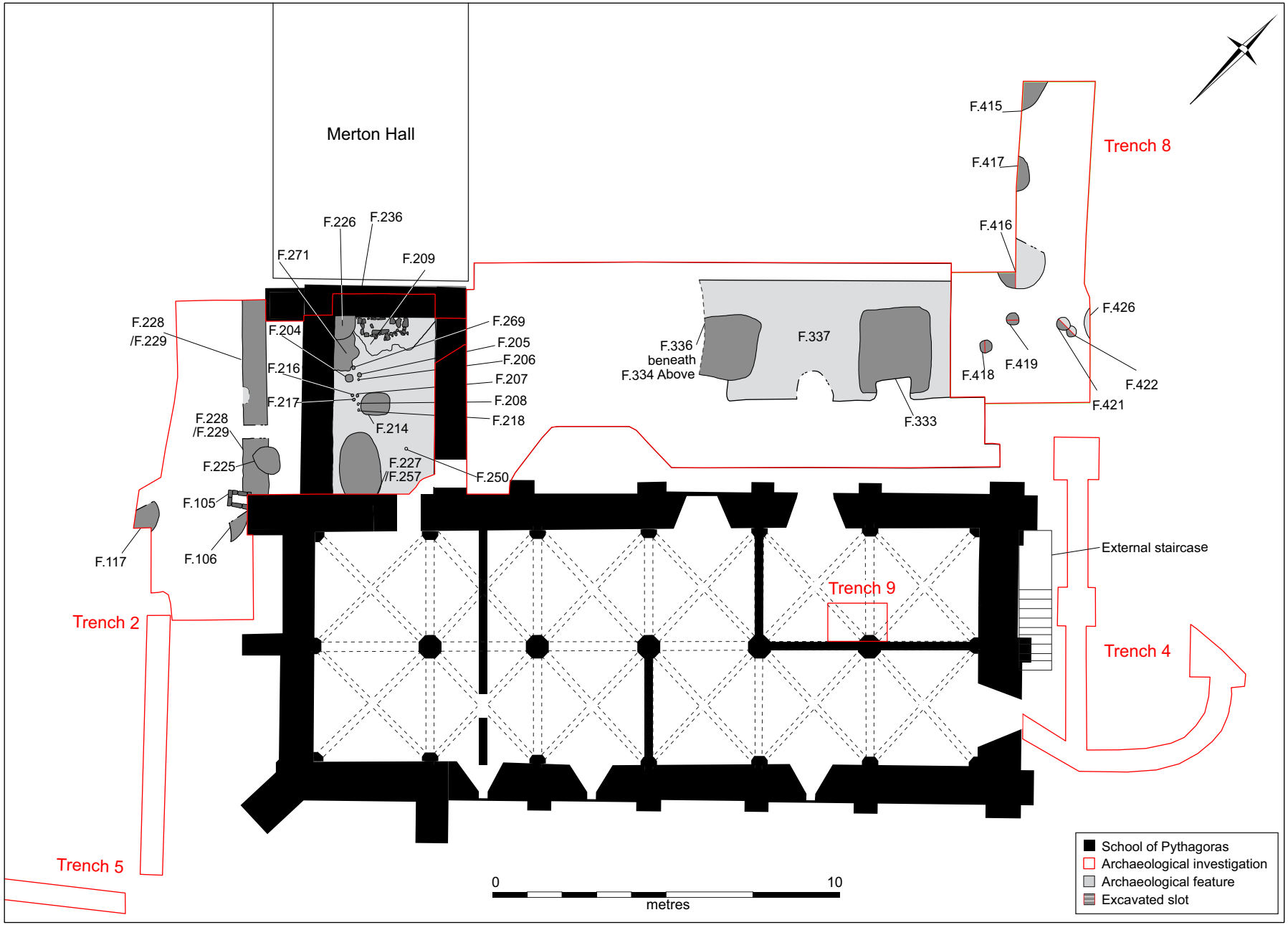


Figure 20. Phase III plan showing modifications to the School of Pythagoras, including the addition of doors to the north wing.

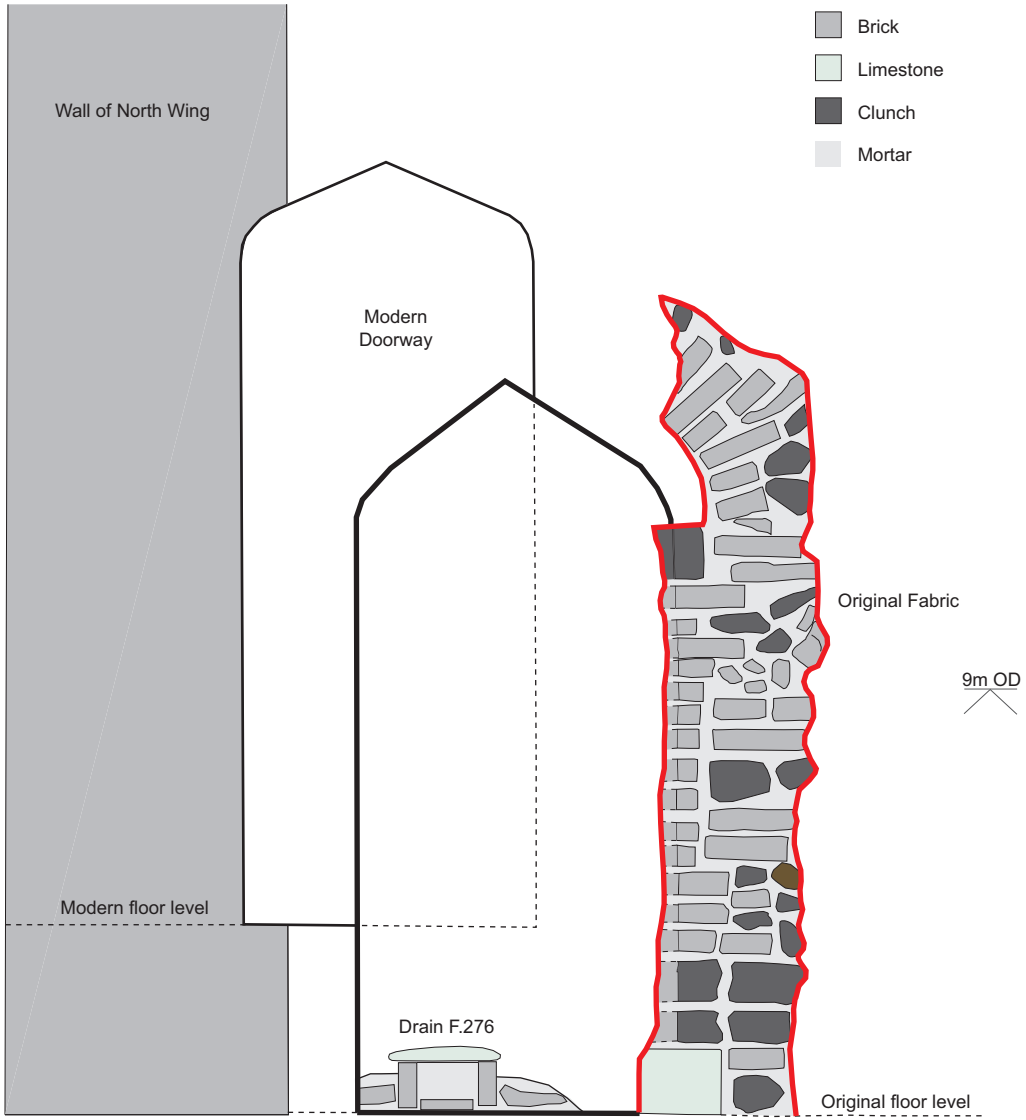


Figure 21. 16th century doorway leading from the undercroft into the north wing.

Figure 22. Hearth F.209, facing northwest. Note the scale of *in-situ* burning, and the heat affected remnants of medieval wall footing F.234 to the rear.

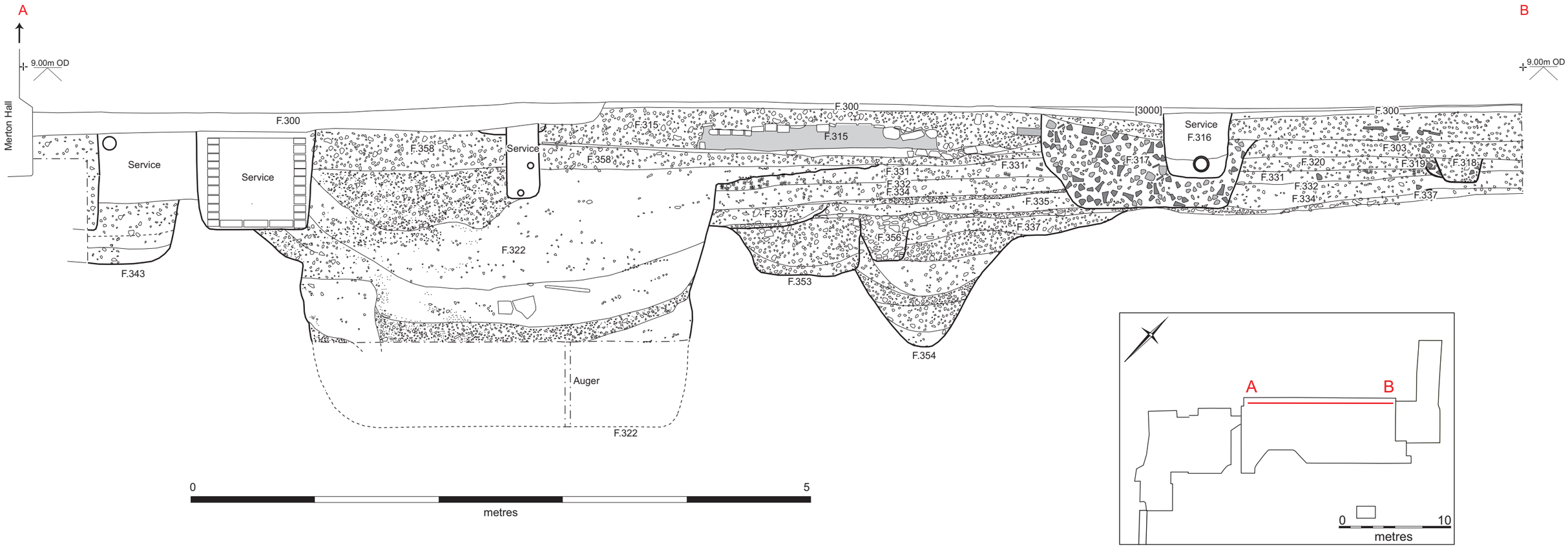


Figure 23. Area 3 section.

Feature Type	Number of Features	Percentage of Total
Gully	1	1.5%
Hearth	5	7.6%
Layer	13	19%
Metalled surface	3	4.4%
Pit	18	26.4%
Posthole	21	30.8%
Soakaway (brick-built) Soakaway (stone-built)	2 1	4.4%
Structural (beamslot) Structural (foundation)	1 3	5.9%

Table 4: Phase III features by type.

Internally, the results of the investigation conducted within the School of Pythagoras's undercroft in 1967 revealed that during the 16th century this area had been cleared of any preceding medieval deposits prior to being sub-divided into a series of bays, or stalls, via the introduction of a number of mortared clunch footings (Graham-Campbell 1968, 249-51; Figure 20). These footings are likely to have provided support for a series of timber partitions. Subsequently, within the newly compartmentalised space, a sequence of floor deposits extending up to 0.46m thick accrued (see Figure 4). Concomitant with these changes, during the present investigation a series of contemporary alterations undertaken within the building's north wing were also identified. Firstly, two doorways were introduced at ground-floor level (Figures 20 and 21). The first of these, which provided access via the northeast wall into the courtyard area situated at the rear of the School of Pythagoras, remains in use and has previously been identified as 16th century in origin (RCHM(E) 1959 II, 379). The second, however – which provided access into the north wing from the adjacent undercroft – represents a new discovery. Due to the extent of later truncation, only its southwest jamb remained extant; its head had been broken out following the gradual increase in floor height that occurred during the post-medieval period. This doorway was composed of identical materials to, and most probably took the same form as, its extant counterpart. As such, it was most probably four-centred in form, with simple stopped plain-chamfer decoration (Figure 21). Its location was nevertheless somewhat unusual. Instead of being situated in the centre of the southwestern-most bay of the undercroft, where it would have imparted the least structural impact, it was instead positioned immediately adjacent to a respond (Figure 20). The reason for this asymmetry is unclear.

Also occurring as part of the widespread program of alterations that were undertaken during the 16th century, all of the deposits that had accrued within the interior of the north wing during the preceding period were removed. Associated with the initial phase of this episode of refurbishment were shallow pits **F.227** = **F.257** and **F.214**. Varying between 0.18m and 0.32m in depth, and containing only limited amounts of material culture, these two features may perhaps represent the robbing of earlier structural settings. Regardless of their original function, however, they were rapidly overlain by make-up/levelling layer **F.274**, which was then in turn overlain by temporary clay-built hearth **F.236** and posthole **F.250**. Subsequently, these features were themselves sealed beneath compacted clay floor deposit **F.273** (see Figure 19). Then, upon this well-laid surface, clay-and-stone-built hearth **F.209** was constructed against the face of the northwest wall (Figure 22). Despite being relatively substantial in scale, and demonstrating clear evidence of prolonged usage (including extensive damage to the earlier wall), this fireplace would have been of limited efficacy due to the absence of an associated chimney; as a result of this deficiency, whenever a fire was lit a large amount of smoke would have built up within the close confines of the stone-built chamber. Situated in close proximity to the hearth were an array of contemporary stakeholes – including **F.204**, **F.205**, **F.206**, **F.207**, **F.208**, **F.216**, **F.217**, **F.218** and **F.269** – which varied between 0.04m and 0.12m in diameter and 0.09m and 0.30m in depth. In addition, two small shallow pits (**F.226** and **F.271**) were also located nearby to this group. It is thus possible that the ground floor of the north wing was put to a craft-based as opposed to residential use during this period. That is, the generation of smoke may have been the deliberate intention, instead of the provision of heat, in order to facilitate the curing or preservation of meat derived from the livestock that were being raised at the site. Further conforming to this pattern, significant quantities of burnt grain were found in association with the hearth (although this material could potentially have been deposited as a by-product of the fuel that was being employed).

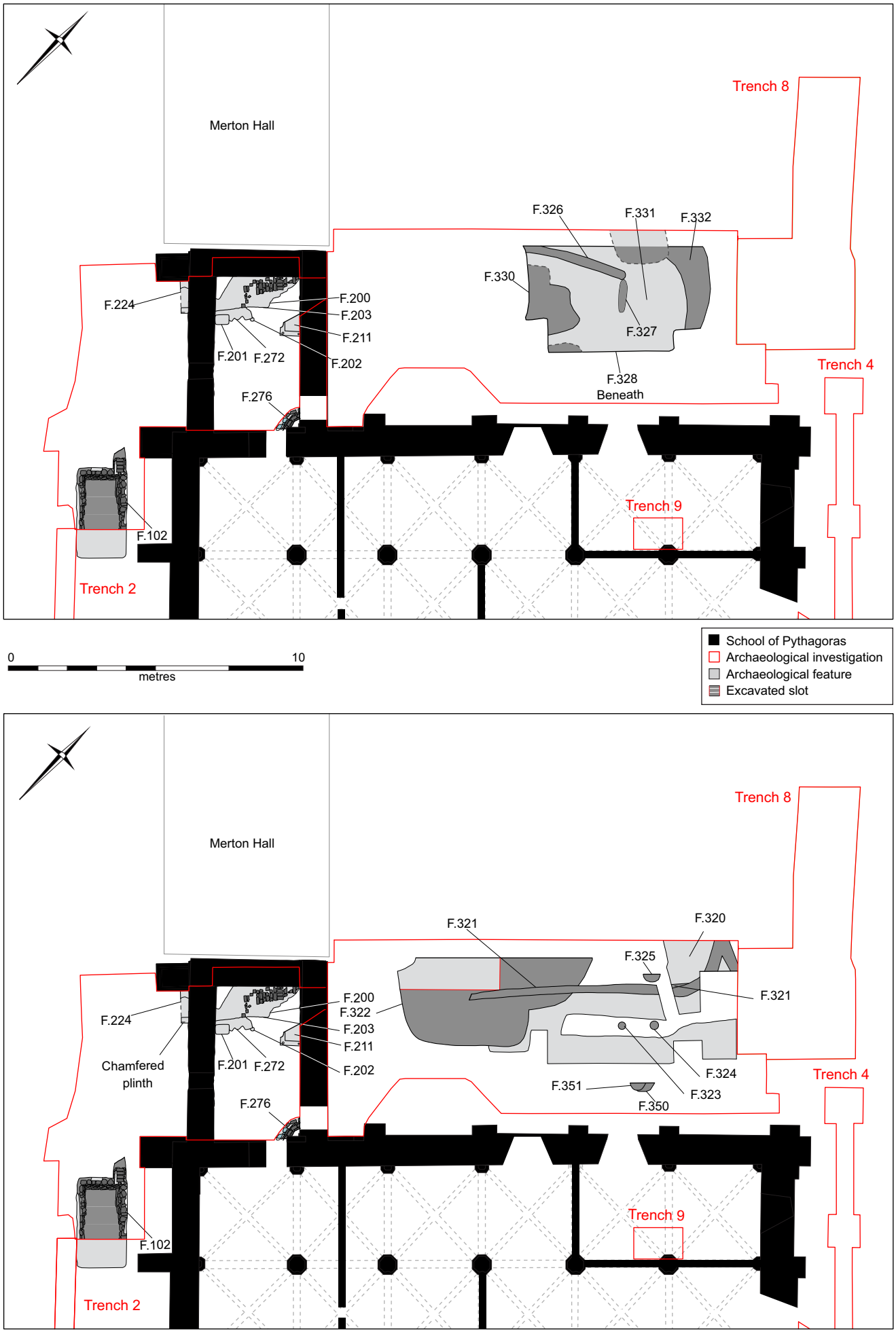


Figure 24. Plans of mid (top) and late (bottom) Phase III activity.

Figure 25. Metalled yard surface F.337, facing northwest (top) and clay-filled pit F.322, facing west (bottom).

Figure 26. Clunch-lined soakaway F.102, facing northwest.

Also present within the north wing at this time was brick-built drain **F.276** (Figure 24). This feature provided a channel for any waste material generated within the undercroft, which was flushed out into the rear yard (Area 3) via the wing's two doorways. By the 17th century, intensive activity had resulted in the accrual of significant trample deposits within the internal space, which measured up to 0.28m in thickness. Consequently, a new, flat-laid brick floor surface was introduced – lying at 8.07m OD – although only fragments of this surface had survived due to the extent of later truncation (Figure 24). Additional features associated with this later phase of the wing's usage included postholes **F.201**, **F.202** and **F.203**, clunch-built footing/foundation **F.272** and clay-built hearths **F.211** and **F.224**. In each instance, however, these features had again been heavily affected by later disturbance; therefore, little could be discerned of the precise usage of the space at this time (although, in general, it appears likely that the earlier pattern of predominately non-domestic activity continued throughout the post-medieval period).

Externally, the sequence can be divided into two distinct zones. To the southwest, in Area 1, a limited number of remains were encountered. These included 16th/17th century pits of indeterminate function **F.106**, **F.117** and **F.225**, which varied between 0.4m+ and 0.8m+ in diameter and 0.09m+ and 0.19m+ in depth, plus enigmatic linear **F.228** = **F.229** (Figure 21). This latter feature was relatively shallow in form and had vertical sides leading to a flat base. It may thus have formed the footing for an insubstantial lean-to structure or, alternatively, it might have comprised a horticultural bedding trench. Of these two possibilities, the latter is perhaps the more likely. This is because the area lying immediately to the southwest of the School of Pythagoras is known to have been laid out as a formal garden by 1592 – when the earliest reliable cartographic depiction of the site was compiled (Newman & Dickens 2011, fig. 6). Also present in Area 1 were clunch-lined soakaway **F.102** (Figure 26) and brick-built drain/soakaway **F.105**. Of this pair, the former was the more significant, being both substantial in scale – measuring 3.15m in length by 1.72m in width and 1.07m in depth – and long-lived in duration (it was not infilled until 19th century). The absence of brick within its clay-bonded construction, allied with the reuse of a small number of reused moulded blocks, indicates that it was most probably 16th or 17th century in origin. In contrast to Area 1, a more intensive series of features was encountered in Area 3, situated to the northwest of the School of Pythagoras (Figures 20, 23 & 24). Much like the interior of the north wing, this rear courtyard area appears to have served a predominately non-domestic function. Following the terracing of this space during the early 16th century, high-quality metalled yard surface **F.337** was set down (Figure 25). In its original, untruncated form, this surface appears to have extended across the entire area, thereby creating a very effective working space. Groups of 16th century pottery and faunal remains were found compacted into its surface, suggesting that it had remained in use for a significant period. By the end of the 16th century, however, the nature of the activity being undertaken within the yard area appears to have changed.

At this time a series of large, near vertically-sided pits began to be inserted. Stratigraphically, the earliest of these pits was **F.336**, which was later succeeded by **F.304** = **F.333**. Both features – which varied between 2.11m and 2.82m in length, 1.6m+ and 2.21m in width and 1.85m and 2.34m in depth – appear to have originally been revetted with timber (although in each instance this lining had been removed prior to their infilling). Both, moreover, were backfilled with compacted deposits of relatively pure Gault clay, suggesting that care was taken to ensure the stability of the surrounding ground surface following their eventual decommissioning. Despite this, however, the character of the surrounding area began to change rather markedly during this period. Firstly, earlier high-quality metalled surface **F.337** was replaced by notably inferior surface **F.335**. Then, a sequence of accumulation/trample deposits began to form; **F.334** was succeeded by **F.332** and **F.331**. Although discretely individuated during the course of the excavation, primarily via their stratigraphic relationships with intervening cut features including small, amorphous pit **F.328**, these deposits all appear to have comprised part of a more general, on-going process. This was most probably associated with the activities conducted in relation to pits **F.336** and **F.304** = **F.333**, both of which appear to have been craft-based/industrially-oriented in function. Unfortunately, no direct evidence of their original purpose could be obtained, although it is high likely to have involved the immersion of material underwater for potentially quite prolonged periods of time. Once **F.304** = **F.333** had been backfilled, during the late 16th or early 17th century, the area was levelled via the introduction of layer **F.330**, shallow features **F.326** and **F.327** were also infilled and a further, relatively poor quality cobbled surface – **F.329** – was established. The latter was directly associated with the establishment of the third, and largest, revetted pit in the sequence. Most probably 17th century in date, **F.322** measured 4.54m in length by 3m+ in width and 1.65m in depth (Figures 23

& 25). Once again no trace of a timber lining remained extant, although the size and morphology of the feature strongly imply that such a lining was originally present; also mirroring the pattern of its predecessors, **F.322** was eventually infilled with a compacted deposit of relatively pure Gault clay.

Once backfilled, **F.322** was partially overlain by southwest-northeast aligned linear **F.321** (Figure 24). Shallow in form, with vertical sides and a flat base, this feature most probably comprised a beamslot associated with an ephemeral ancillary structure. This was not necessarily a building *per se*, however; it may perhaps have been more akin to an animal pen, or a series of open stalls. Subsequently, a layer of trampled material – **F.320** – accumulated against the southeast face of this structure, whilst the presence nearby of a group of postholes – consisting of **F.323**, **F.324** and **F.325** – suggests that a second, post-built structure may potentially have succeeded its earth-fast sill beam predecessor. Yet, as a result of their methods of construction, both of these structures are likely to have been short-lived; buildings employing earth-fast techniques typically require replacement after only around twenty to forty years (Bowsher *et al.* 2007, 317–18; Horsman *et al.* 1988). The only additional features associated with this phase comprised heavily-truncated pit remnants **F.350** and **F.351**. Nevertheless, when taken in combination this evidence indicates that during the 17th century the pattern of activities being undertaken in this area had altered once again. No longer dominated by probable craft/industrial practices, the area seems instead to have been utilised as a farmyard.

Phase IV: Modern (1700-present)

From the 18th century right up until the present-day, numerous alterations have been made to the layout and function of the School of Pythagoras (RCHM(E) 1959 II, 377). In particular, significant changes occurred during the early-mid 19th and mid 20th centuries respectively. The former episode pertained to alterations that were undertaken following the collapse of the undercroft vault in *c*. 1800; the latter was associated with the purchase of the School complex by St. John's College and its subsequent conversion into a theatre. Overall, a relatively wide range of feature-types was encountered in relation to both of these events (Table 5). Moreover, in several instances – particularly during the 19th century – works conducted during this phase were found to have had a profound impact upon the surviving fabric of earlier periods.

Feature Type	Number of Features	Percentage of Total
Cobbled surface	2	4.8%
Drain	6	14.2%
Gully	1	2.4%
Hearth	1	2.4%
Layer	7	16.6%
Pit	2	4.8%
Posthole	2	4.8%
Services	6	14.2%
Soakaway (brick-built)	2	4.8%
Structural (demolition) Structural (foundation) Structural (wall)	2 5 6	31%

Table 5: Phase IV features by type.

As Figure 27 reveals, a number of significant alterations were undertaken to the fabric of the School of Pythagoras during this period. These included the introduction of substantial openings in both the northwest and southwest walls of the principal range, as well as the blocking of a number of earlier doorways. Within the north wing itself, the most significant changes pertaining to this phase occurred during the early 19th century. At this time, the southwest and northwest ground-floor walls were demolished, the southeast doorway was remodelled and a new doorway inserted further to the northeast. A new outer wall was also constructed a short distance to the northwest of its predecessor whilst, internally, an additional storey was created and a new staircase installed.

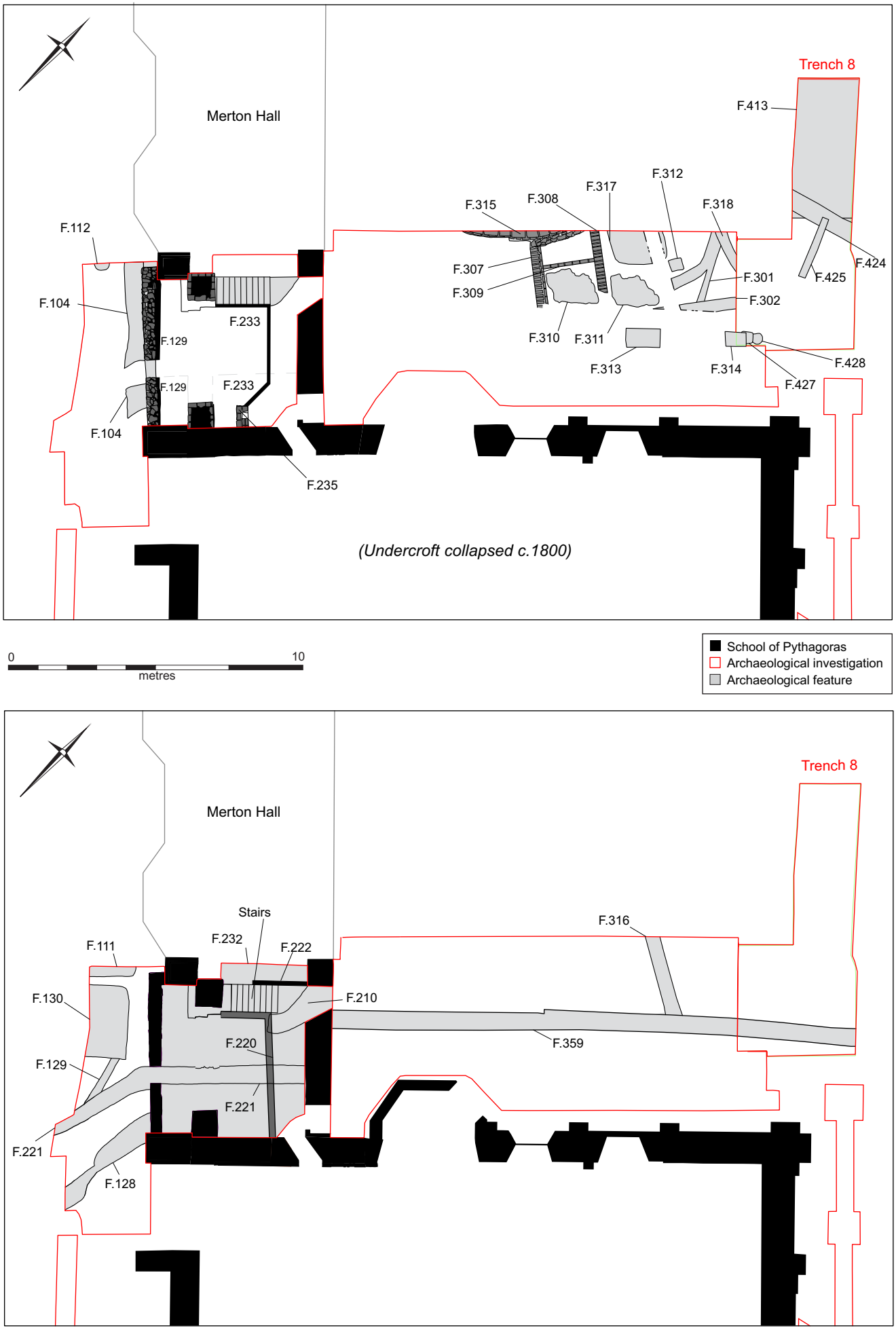


Figure 27. Phase IV early (top) and Phase IV late (bottom).

Following the demolition of the north wing's southwest ground-floor wall, the remaining first-storey portion of the structure was supported upon a timber lintel that rested in turn upon masonry-dressed piers **F.219**. Representing retained portions of the original medieval wall fabric, both piers were reinforced via the addition of reused dressed stone blocks as cladding. Although the majority of these blocks consisted of undiagnostic ashlar, several significant moulded fragments – including a number of rejoining window mullions and two treads derived from a newel or spiral staircase – were also present (see further Newman, below, and Figure 28). It is likely that these fragments were recovered during the preceding demolition phase, and subsequently reused close to their original point of origin. Concomitant with the demolition of the Phase II wall a new, expanded footprint for the north wing was established. Extending parallel to the outer face of the earlier 14th century buttresses, double-skin brick wall **F.129** – which had a mortared clunch footing (Figure 19) – was constructed. This had the effect of increasing the internal width of the north wing by around 2m; a small return given the structural difficulties engendered by the removal of the original wall foundation. It therefore appears likely that this work was also intended to fulfil a secondary function, such as the rectification of a perceived weakness, although at present the precise purpose of the alteration remains unclear. Internally, as part of this widespread program of reorganisation sub-dividing wall **F.233** was established and a timber staircase also introduced. Overall, therefore, these changes had the effect of rendering the north wing much more habitable than it had been since the Middle Ages; they thus appear to have been associated with a broader shift in the usage of the space, from craft-based to residential in focus. Moreover, at around the same time the northwestern ground-floor wall of the north wing was also substantially removed, thereby permitting much greater freedom of access between the School of Pythagoras and Merton Hall.

Externally, in Area 1 **F.104** – a probable planting bed or similar, horticulturally-associated feature – was soon established against the external face of **F.129**, whilst small pit **F.112** was also inserted. In Area 3, meanwhile, the preceding Phase II pattern of farmyard activity appears to have continued throughout much of the period. Here, for instance, the ground level was initially raised via the introduction of make-up/levelling deposit **F.358** prior to the establishment of high-quality cobbled surface **F.310** = **F.311** = **F.313** = **F.314**. Most probably 18th century in date, this yard surface was associated with two gullies – **F.318** and **F.319** – that may well originally have served as drains. Subsequently, during the early-mid 19th century, the cobbled surface was partially truncated by the construction of an ancillary building. Represented by brick-built footings **F.307**, **F.308** and **F.309**, this structure did not appear upon the detailed plan of the site that was drawn up by William Custance *c*. 1800 (Newman & Dickens 2011, fig. 11), nor on the subsequent map of the property that was compiled by Merton College *c*. 1820 (*ibid*., fig. 12). It did remain extant in 1885, however, when the 1st Edition Ordnance Survey map was produced (*ibid*., fig. 13). At some time around the mid 19th century, brick-built drain **F.315** was introduced into the interior of the building – this provides a strong indication of its probable livestock-related function. Also dating to this phase were additional brick-built wall footing remnant **F.302**, brick-lined soakaway **F.312**, planting bed or soakaway **F.317**, postholes **F.427** and **F.428** and drains **F.424** and **F.425**, plus layers **F.303** and **F.413**. All of these features are consistent with the continued, albeit perhaps limited, usage of the yard area for non-domestic activities during the 19th century.

Evidence of the more recent, mid 20th century programme of refurbishment associated with the conversion of the School of Pythagoras into a theatre was also encountered. Within the north wing itself, for example, the internal floor height was raised and replacement dividing walls **F.220** and **F.222** introduced at this time (Figure 27). Elsewhere, in Areas 1 and 3, a large number of service trenches – including **F.221**, **F.128**, **F.129**, **F.130**, **F.111**, **F.210**, **F.300**, **F.316** and **F.359** – were also established; these have since been continually added to right up until the present-day.

Watching Brief Trenches

In total, nine trenches were monitored during the watching brief phase undertaken at the School of Pythagoras site (Figure 2). Whilst the most pertinent results obtained from this work have been incorporated into the detailed account presented above, a brief summary is also presented below in order to contextualise these trenches in light of the more nuanced sequence that was identified within the main excavated areas themselves.

Aside from *Trench 8* – the results of which have been fully amalgamated into the main body of the results section, above – the two trenches within which the most intensive archaeological sequences were encountered comprised *Trenches 2* and *5*. *Trench 2* was oriented northwest-southeast and situated at the southeastern end of Area 1; it was excavated to a depth of 0.95m. *Trench 5* was oriented northeast-southwest and ran perpendicular to the southeastern terminus of Trench 2; it was excavated to a depth of 1.1m. In both instances, the density of archaeological features in these locations was found to have been equal to, if not in fact in excess of, that encountered in Areas 1 to 3. In particular, relatively intensive arrays of intercutting Roman pits, along with smaller numbers of ditches and layers, were identified. This result implies that the contemporary pattern of activity encountered further to the northwest during the present excavation most probably extended, in similar form, all the way to the fringes of the palaeochannel itself. Further corroborating this interpretation, the only trench to have been excavated within the footprint of the School of Pythagoras' principal range – *Trench 9*, which extended up to 1.25m in depth – encountered a substantial pit of probable Roman origin.

Further to the southeast, the result obtained via the auger survey conducted in *Trench 1* was also of significance. Oriented northwest-southeast and extending across the central lawned area of Merton Court, *Trench 1* was excavated to a depth of 1m, thereby exposing the uppermost portion of the palaeochannel sequence. Additional, although much more limited, exposures of channel-related deposits were also encountered in *Trenches 6* and *7*. The former was irregular in form, though predominately oriented northeast-southwest, whilst the latter was oriented northeast-southwest and ran parallel and adjacent to *Trench 6*. Both were excavated to a depth of 1m, and revealed evidence of waterborne deposition associated with a frequently inundated, alluvial environment; no archaeological features were present. To the southwest, only a very limited body of information was recovered from *Trench 3* – which was oriented northeast-southwest and ran parallel to the principal façade of the School of Pythagoras – because this trench was only excavated to a depth of 0.4m. Consequently, the principal horizon of archaeological activity was not reached. Finally, in *Trench 4* – situated immediately adjacent to the northeast end of the School of Pythagoras – no archaeological remains were identified at all, despite the excavation having extended to a depth of 0.78m; all of the preceding deposits had already been 'scalped' from this area during construction works conducted in the mid 20th century.

- MATERIAL CULTURE -

A moderately-sized material culture assemblage, comprising 3,800 items weighing in excess of 415kg, was recovered during the excavation conducted at the School of Pythagoras site. This assemblage – which includes metalwork, metalworking debris, pottery, clay tobacco pipe, worked bone, burnt clay, worked stone, moulded stone, ceramic building materials, flint and painted wall plaster – has been subdivided by material type and is discussed in detail below.

Metalwork (Grahame Appleby & Martin Allen)

A total of 181 pieces of metalwork, weighing 2526g, were recovered from archaeological features. Of these, 163 pieces have been attributed to a specific phase or period of activity (Table 6).

Provenance	Phase I (Roman)	Phase III (Post-Medieval)	Total
Burial	92	-	**92**
Cobbled surface	-	12	**11**
Ditch	17	-	**17**
Hearth	-	2	**2**
Layer	-	17	**17**
Pit	16	8	**24**
Total	**123**	**39**	**163**

Table 6: Metalwork assemblage by phase and feature type.

Of the 181 pieces, 173 items were manufactured from iron and constitute 98% of the assemblage by weight (2475g). The condition of most of the iron work is very poor, with the majority of pieces highly corroded and/or delaminating. The assemblage also includes hobnails, coffin nails and a finger ring from one Romano-British inhumation (**F.115**) and nail fragments from two other similarly dated inhumations (**F.113** and **F.118**), plus a concreted mass from **F.254** (grave fill) that may, due to its lightness, be a thin object or mineralised organic material. Of the remaining eight pieces, seven are copper alloy and one a medieval silver penny of Edward I or Edward II. Two copper alloy Romano-British brooches and a broken Late Medieval pin were also recovered; one brooch and the pin were retrieved from post-medieval features. The possible blade fragment recovered from hollow **F.339** may date from the Romano-British period to the 16th century.

The following catalogue provides detailed descriptions of selected items. Excluded from the catalogue are non-diagnostic pieces and nails; all the nails are hand forged.

Silver (Martin Allen)

<306> post-medieval layer **[3046] F.329**. An Edward I (*r*. 1272-1307) or Edward II (*r*. 1307-27) silver farthing of the London mint, class 10 (*c.* 1300-10), Withers & Withers 2001 types 28-29, 0.32g (broken into three pieces and corroded). This coin seems to be relatively unworn, although corrosion makes it difficult to assess its state of wear, and it was probably deposited in the fourteenth century. The presence of Edward I and II halfpence in the Attenborough hoard (deposited *c.* 1420) does, however, indicate that some small silver coins of Edward I and II survived in circulation into the 15th century (Archibald with MacCormick 1969, 66). From a residual context.

Copper alloy

<313> post-medieval pit **F.333 [3066]**. Fragment of a well preserved Late Medieval circular cross-sectioned copper alloy pin, bent and missing its head. Length *c*. 115mm, weight 9g.

<318> post-medieval pit **F.336 [3072]** (Figure 29A). Well preserved Colchester Derivative Romano-British brooch with a pierced catch-plate and zig-zag decorated bow ridge; pin missing. Residual find dated mid to late 1st century AD. This brooch may have originally been part of a grave assemblage that has subsequently been disturbed.

<323> Roman pit **F.345 [3091]**. Well preserved Colchester Derivative Romano-British brooch with a pierced catch-plate and backward facing hook; pin missing. As with the example described above, this brooch may have originally been part of a grave assemblage that has subsequently been disturbed. Mid to late 1st century AD.

<334> post-medieval layer **F.273 [2020]**. Copper alloy collar or tube made from folding a sheet of copper alloy. Internal diameter 13mm, length 48mm, weight 21g. Undated; probably post-Medieval.

<335> unstratified **[2080]**. Fragment of a brooch with foot and part of the catch-plate surviving; transverse groove/ridge towards end of foot. Superficially similar to an example found at Church End, Cherry Hinton (Cessford & Dickens 2007), this example may be Saxo-Norman in date.

Iron

<283> Roman layer **F.126 [1034]**. Two heavily corroded objects: a) tear-drop shaped thin plaque or plate like item, possibly decorative (requires x-raying), length 60mm, weight 18g; b) possible blade fragment, lngth 40mm, weight 10g. Probably Late Medieval or post-Medieval.

<284> Roman ditch **F.107**. Heavily corroded nail fragment; length 42mm, weight 9g. X-ray required as corrosion may result in new identification.

<305> post-medieval yard surface **F.329 [3046]**. Large heavily corroded square cross-sectioned tapering spike or tine; length *c*. 235mm; weight 137g.

<311> post-medieval layer **F.332 [3065]**. Four corroded objects: a) large, incomplete bracket or staple measuring *c*. 45mm x 55mm, weight 35g; b-d) nail fragments, total weight 20g.

<315> post-medieval layer **F.334 [3069]**. Four corroded and delaminating objects: a) fragmentary bladed tool or knife, possibly a de-fleshing knife, with a long handle and suspension loop oriented 90 degrees to the handle; weight 50g; b) small nail, clenched, length 40mm, weight 3g; c) heavily concreted fragment of an iron collar, weight 47g; d) two refitting blade fragments, heavily corroded, with tapering to a rounded end, length *c*. 85mm, width *c*. 30mm, weight 29g. Suspended knife required conservation.

<316> post-medieval yard surface **F.335 [3070]**. Collection of heavily corroded and delaminating nails and bars; original catalogue number:three nails; total weight 4g.

<317> post-medieval yard surface **F.335 [3071]**. Three objects: a) large, square, flat plate, possibly a large stud, measuring *c*. 55m x 55mm; weight 267g; possible blade fragment, length 85mm, weight 16g; possibly spur fragment, weight 16g.

<320> post-medieval pit **F.333 [3081]**. Large, heavily concreted and corroded nail; length *c*. 78mm, weight 19g.

<322> Roman pit **F.339 [3087]**. Fragment from a large, triangular bladed knife/cleaver, tool or implement. Length *c*. 135mm, weight 95g. Undated.

<321> post-medieval yard surface **F.337 [3084]**. Very corroded and disintegrating nails. Originally four nails; total weight 38g.

<324> Roman pit **F.341 [3097]**. Heavily corroded and fragmentary nails; total weight 34g.

<325> post-medieval pit **F.322 [3135]**. Unusually 'tear-drop' shaped object measuring *c*. 135mm, weighing 157g. This object is heavily concreted and wood adhesions. X-raying this object may aid interpretation and confirmation that this is an iron object, its shape and possible function.

<326> Roman ditch **F.355 [3149]**. Two lumps, one a possible corroded nail fragment; total weight 35g.

<327> Roman ditch **F.354 [3154]**. Found in the same context as <328> these are two large, well preserved rectangular cross-sectioned nails with splayed T-shaped heads; lengths 94mm and 98mm, weights 15g and 18g.

<328> Roman ditch **F.354 [3154]**. Nail or stud head, made from two pieces (head is slightly dished); diameter *c*. 18mm, weight 2g.

<329> Roman ditch **F.354**. Fragment of a rectangular cross-sectioned nail; length 30mm, weight 4g.

<332> post-medieval layer **F.275 [2018]**. Two heavily corroded and concrete items: a) large joiner's dog, bracket or staple, weight 74g; b) rectangular cross-sectioned bar tapering to a flattened diamond shaped terminal; length *c.* 130mm, weight 63g. Post-medieval?

<336> post-medieval hearth **F.209 [2009]**. Two large, corroded and concreted iron bars recovered from this hearth, Lengths 210mm and 265mm, weight 94g and 164g. Structurally or hearth related.

<339> post-medieval pit **F.411 [4026]**.Fragment of a heavily corroded large horseshoe with flange at on the terminal and one perforation; length 73mm, weight 59g.

Inhumations

Metalwork was recovered from four Late Roman inhumations, with the only substantial quantity of material retrieved from **F.115**.

*Inhumation **F.113***

<285> [1035]. Two heavily corroded nail fragments recovered from the head area of the body. Possible (redeposited) coffin nails?; lengths *c*. 18mm and 45mm.

*Inhumation **F.115***

A total of 85 iron items (weight 346g) were recovered from this inhumation, primarily consisting of nails and nail fragments. In addition, 59 hobnails were recovered from the burial, unequally distributed between the left and right feet. All of the objects are heavily corroded.

<286> [1071]. Four objects: a) probable hobnail, length 17mm, weight 2g; b) nail fragment, length 57mm, weight 8g; c) probable nail head, diameter *c*. 20mm, weight 9g; d) piece of iron sheet/binding with 90^{o} angle, length 57mm, weight 31g. This last piece is relatively heavy and is most likely from a large object, possibly residual in origin.

<287> Heavily corroded and fragmented iron ring, with central, flat bezel. The internal diameter measures *c*. 18mm. X-ray may reveal further detail on the bezel; however, due to the corroded condition of the ring, results may prove unsatisfactory.

<288> Fifteen very corroded dome-head and clenched hobnails recovered from the area of the left foot.

<289> Forty-four very corroded dome-head and clenched hobnails recovered from the area of the right foot.

<291> [1082]. Nail fragment, possibly a hobnail; length 13mm, weight 3g.

<292> [1082.1].Nail fragment, length37mm, weight 5g.

<293> [1082.2]. Large, flattish, irregularly shaped oval object, most likely a large nail head; diameter *c*. 25mm, weight 10g.

<294> [1082.3]. Large, flattish, irregularly shaped oval object, most likely a large nail head; length 35mm, width 25mm, weight 20g.

<295> [1082.4]. Large nail fragment, with broad, flat triangular-shaped head; length*c*. 60mm, weight 17g. Recommend x-raying to confirm identification.

<296> [1082.5]. Clenched nail fragment, length 30mm, weight 4g.

<297> [1082.6]. Complete nail (in three pieces), with terminal almost doubled-back on itself; length 55mm, weight 12g.

<298> [1082.7]. Nail fragment, length 30mm, weight 3g.

<299> [1082.8]. Nail fragment, length 35mm, weight 9g.

<300> [1082.9]. Nail fragment, length 50mm, weight 21g.

<301> [1082.10]. Nail fragment, length 45mm, weight 15g.

<302> [1082.13]. Nail fragment, length 50mm, weight 10g. Possible traces of mineralisation providing and estimated plank/wood thickness of *c.* 10mm.

<303> [1082.14]. Nail fragment, clenched, length 56mm, weight 15g. Due to the 90^{o} angle and narrowing thickness of the item, this piece may be a key and as such, it is recommended that it is x-rayed to confirm its form and probable function.

<304> [1082.15]. Three items: a) complete nail, length 42mm, weight 7g; b) nail fragment, length 25m, weight <1g; c) nail fragment, length 30mm, weight 5g

<330> [1082.16]. Nail fragment, length 33mm, weight 5g.

Inhumation F.118

<280> [1005]. Heavily corroded nail fragment. Possible coffin nail. Length 58mm, weight 6g.

Inhumation F.254

<458> [2141]. Two large, relatively light (194g), concreted and corroded lumps. Measuring up to 115mm in length, these lumps may represent mineralised organic materials that have incorporated iron corrosion products, such as hobnails. X-raying of these lumps will aid in identification of any material or objects contained/preserved within the corrosion matrix.

This is a small, mixed assemblage, with much of the material largely undiagnostic or residual in nature. Nonetheless, the two brooches recovered during excavation may represent items deposited with earlier, as yet unidentified burials or cremations pre-dating the inhumations excavated during this phase of fieldwork. The recovery of nails from the inhumations is not unexpected, with the large number recovered from **F.115** providing information on the length and width of the coffin used for this burial (several nails recovered closer to the body most likely represent the position in which they ended up in due to the coffin collapsing inwards and downwards as it decayed). One nail from this burial did, however, provide a potential plank thickness of *c.* 10mm, with several nails indicating that as the coffin was constructed then penetrated the coffin interior and thus required clenching to improve rigidity.

Nails and structural items recovered from Roman features attest to their use in the construction of substantial structures or fixtures during this period. Due to the presence of metalworking evidence on the site it is, however, unclear whether the items described above were being recycled, represent debris from unidentified structures, or were actually manufactured on the site. The later Medieval and post-Medieval ironwork further illustrates the use of hand-manufactured items in building construction and also their use in hearths and as decorative elements (e.g. the large stud recovered from the cobbled surface).

Metalworking Debris (Simon Timberlake)

In total, 4.2kg of iron smithing slag was recovered from the site (Tables 7 and 8). This included 15 small to large and mostly disc-shaped smithing hearth and proto-smithing hearth bases (SHBs), a collection of slag smithing 'lumps'(SSL) – some of which included small amounts of free melted iron – and various amounts of fired clay and vitrified hearth lining (VHL). In addition, a small sample of magnetic residue, which

included up to 30% hammerscale, was recovered from the <4mm sieved fraction of one of the environmental samples (<301> **F.343**). It is probable that all of the material was Roman in origin. Overall, 87.7% of the assemblage was recovered from stratified Roman contexts by count, and 83% by weight; the small, fragmentary remainder occurred residually within Phase II and Phase III deposits.

Feature	Context	Cat. No.	Count	Weight (kg)	Iron smith slag	Notes
109	1047	063	1	0.02	*	Slag smithing lump
110	1055	075	8	0.162	*	x1 proto-SHB attached to clay/sand base (50mm) + x5 small smithing slag lumps + 2 pieces of free/ part smith Fe
113	1065	080	1	0.05	*	Proto-SHB (40mm diam)
115	1071	086	4	0.06	*	x1 lump of re-melted free iron (50mm long; 36g) + vitrified hearth lining
116	1074	089	5	8g	*	Small lumps of crushed glassy slag (vitrified hearth lining?)
117	1077	094	2	0.038	*	Slag smithing lump within melted hearth + vitrified hearth lining
118	1005	017	6	0.132	*	x4 slag smithing lumps, small piece of vitrified hearth lining + 2 pieces of largely re-melted free iron
125	1001	011	1	0.024	*	Small proto-SHB
126	1034	048	3	0.124	*	x2 proto-SHBs (largest is 55mm long weighing 68g) + small piece of vitrified hearth lining
215	2005	098	1	0.066	*	Part-weathered slag smithing lump
229	2078	365	2	0.13	*	x2 pieces of scoriaceous black glassy slag with low iron content. The inclusion of larger pieces of calcined flint suggests the adding of flint and perhaps sand in slag formation.
255	2146	401	1	0.02	*	Small proto-SHB (35mm long)
322	3128	231	2	0.024	*	Vitrified hearth lining
340	3093	205	10	1.092	*	x3 SHBs + x6 smithing slag lumps; largest SHB is110mm diam. + weighs 404 g. Traces of clay hearth lining and small amounts wood + rarely charcoal. Poorly magnetic
340	3095	208	21	1.6	*	x5 SHBs + x8 slag smithing lumps + x8 pieces melted and vitrified hearth lining. Largest SHB 110mm and heaviest weighs 276g. Hearth lining with burnt flint incl. traces of charcoal. Poorly to moderately magnetic.
352	3117	225	1	0.166	*	Small SHB (80mm x 60mm) with central dimple from air blast
354	3150	263	1	0.05	*	Re-melted iron within top of vitrified hearth lining (+ calcined flint inclusions)
354	3152	271	3	0.026	*	Slag smithing lumps with wustite

Table 7: Iron slag recovered from hand-excavated contexts.

Feature & Context	Cat. No.	Sample No.	Sample Fraction	Count	Weight (g)	Iron smith slag	Notes
F.107 1042	479	2	>4mm	*c.* 100	251	VHL + SSL	Fired clay hearth with glassy slag adhering (Roman)
F.115 1071	478	5	>4mm	2	1	VHL	Small droplet (Roman)
F.118 1005	474	1	>4mm	5	6	VHL	Clay lining contains original chalk clasts (Roman)
F.260 2155	525	2	>4mm	2	49	SSL	Roman
F.333 3120	535	300	>4mm	3	1	VHL?	Residual Roman?
F.340 3093	547	303	>4mm	35	68	SSL + VHL + Fe	Hearth lining contains chalk grit + other as molten drops (Roman)
F.343 3101	539	301	>4mm	14	5	Fe	Magnetic – may be iron in slag or mix slag fragments and iron object (Roman)
F.343 3101	539	301	<4mm	>100	10	Hammer scale + Fe slag + BC	370 pieces of platey hammerscale + 26 pieces of spheroidal hammer scale (approx. 30% of sample)
F.354 3146	553	306	>4mm	8	19	SSL + VHL	Roman
F.354 3151	558	308	>4mm	4	1	VHL frags	Roman

Table 8: Iron slag and hammerscale recovered from environmental residues.

The above assemblage suggests that localised iron smithing activity occurred across the site, or within the immediate vicinity, during the Roman period. Features **F.518**, **F.396** and **F.376** were the only ones from which more than one sample were collected; this distribution of slag for the most part suggesting the dispersion of this as rubbish, although the recovery of un-weathered SHBs (*e.g.* <5965> from **F.518**) does at least imply that some of the forging sites were close by. The form of these SHBs suggests the use of shallow hearths within a chalky soil, whilst the rare impressions of charcoal suggest that this was the fuel being used. The relatively high iron content (perhaps as much as 20-30% Fe) is fairly typical of Roman slag. The constitution of this assemblage is almost identical to the much larger group of contemporary Roman iron smithing slag that has recently been recovered from the North West Cambridge site (Evans & Cessford *in prep.*). Here, from a much larger excavated area, some 76.5kg of slag was identified; this represents eighteen times the amount recovered from the School of Pythagoras site. The relative density of the material per square metre was closely comparable, however.

Pottery (Andrew Fawcett, David Hall, Craig Cessford & Richard Newman)

A moderately-sized ceramic assemblage – comprising a total of 2891 sherds, weighing 47.6kg (Table 9) – was recovered during the present excavation. This included material spanning the Roman to modern periods. The assemblage is broken down and discussed on a period-by-period basis below, following which a summary of the small assemblage recovered during the 1967 investigation is presented.

Period	Count	Weight (g)	MSW (g)
Roman (1st to 4th century)	1653 (57.1%)	18880 (39.7%)	11.4
Saxo-Norman (10th to 12th century)	2 (0.1%)	9 (0.01%)	4.5
Medieval (13th to 15th century	27 (0.9%)	597 (1.3%)	22.1
Post-Medieval (16th to 17th century)	480 (16.5%)	12725 (26.7%)	26.5
Modern (18th-20th century)	709 (24.5%)	15346 (32.3%)	21.6
Total	**2891**	**47557**	**16.4**

Table 9: The School of Pythagoras ceramic assemblage by period.

Roman Pottery (Andrew Fawcett)

A total of 1,653 sherds of Roman pottery, weighing 18.88kg, were recovered from the archaeological investigations conducted at the School of Pythagoras. The aim of this report is to assess the quality and interpretational value of the assemblage. Thereafter, recommendations shall be made as to what further analysis might be required on the assemblage.

Methodologically, each context containing pottery has been rapidly scanned and the most useful fabric and form types have been recorded for the purpose of dating. This data has also been used to estimate the amount of diagnostic material present within the assemblage, the range of form types and identifiable fabrics. The pottery has been counted and weighed by context and allocated to its relevant feature number on an Access database (see Table 12). Other recorded information within the database includes, a preliminary date for each context, comments on the condition of the pottery, and an overview of decoration. Fills have also been highlighted that potentially contain sherds for illustration. The notes section of the database has been used to add more detail about the pottery where necessary. For instance, where good quality groups occur, unusual forms, issues with mixed dating, where more detailed work may be required and any other aspects that were thought to be useful to the overall assessment.

A total of 78 different features produced 124 contexts containing Roman pottery. The larger part of the assemblage is dated from the early to later 2nd and up until the early/mid 3rd century. Smaller amounts of pottery are dated from the mid/late 1st to the early 2nd as well as possibly from the mid to later 3rd century. No individual sherds or assemblages pre-dated the Roman conquest period. Of particular interest, in relation to the burials, is the later Roman period. However, no assemblages were clearly dated from the mid/later 3rd or 4th century either. In part, the dating of the assemblage has been hindered at this early stage of analysis for several reasons, which shall be described in more detail over the forthcoming sections (see below). Four phases of activity were noted on the site, the earliest of which - Phase I - has been designated Roman. Table 10 shows a breakdown of the number of contexts containing Roman pottery from this phase as well as from the later post-Roman phases of activity on the site.

Phase	Number of contexts
I	65
II	11
III	37
IV	2
Unstratified	9

Table 10: Pottery by phased context.

The Roman pottery within these later phased contexts is presumed to be of a residual nature. This material has been given a spot date based on what is present within the fill (cohesive or not) and comments have been placed in the notes section of the database as a guide (see Table 12). The condition of the larger part of the Roman pottery assemblage, from all phases of activity, may be described as being small/fragmentary and suffering from variable amounts of abrasion. A basic analysis of average sherd weights from Phase I contexts demonstrates this. For example, in burial **F.264 [2164]** the average sherd weight is 7.5g, in ditch **F.354 [3152]** 4.8g and in burial **F.253 [2136/7]** 6.9g. Some of the Roman pottery groups within the later phases have an even lower average weight. It should also be pointed out that many of the average sherd weights per context have in fact been boosted by the consistent presence of large/storage jar body sherds from the Horningsea industry; without these, they would be lower still. Even within contexts from Phase I the pottery condition can vary enormously. For instance, in burial **F.254 [2141]**, the samian and other sherds are considerably abraded, whilst other fragments have been classed as abraded to only slightly abraded. However, in the case of the burials this might not be considered as unusual, these being dug into earlier Roman features at a later Roman date.

The fragmentary and often abraded nature of the Roman assemblage suggests significant disturbance on the site, even within the Roman period itself, as well as in the subsequent later phases of activity. This disturbance has made accurate dating difficult in relation to some contexts. Across all contexts (in all phases), despite the variable condition of the Roman pottery, there are many sherds that display only slight abrasion. There are a small number of assemblages (highlighted in the database) which are of a good sherd size too, and which overall display only slight abrasion. A good example is the assemblage in pit **F.340 [3093/5]**, which contained 172 sherds (3,374g).

Finewares

The fineware assemblage is principally made up of samian ware and Nene Valley colour coated ware. After these fabrics, only very small amounts of Colchester colour coated and unsourced colour coated ware are present. The majority of the samian ware is in a poor state of preservation being mostly small, abraded and non-diagnostic. The majority is from Lezoux in central Gaul, with smaller amounts from La Graufesenque (southern Gaul) and various locations in eastern Gaul. Not all of the samian has been fully identified at this stage, in particular the eastern Gaul fabrics (see recommendations section). Much of the La Graufesenque samian ware occurs residually in later contexts, nevertheless the presence of this fabric demonstrates (alongside a small number of coaresware fabrics and forms) an early phase of Roman activity on the site. The presence of two separate fragments of a Drg18 plate suggests activity on or near the site from the mid to later 1st century. In total, only twelve samian forms could be easily identified and most of these were cups (Drg27 and 33); thereafter, single instances of a bowl (Drg37), dish (Drg31) and dish/cup (Drg35/36) were also noted. The Nene Valley colour coated wares are equally small, often abraded and non-diagnostic. The fabric occurs in at least eleven contexts, although only a very abraded castor box fragment could be properly identified. A small number of decorated body sherds were noted with barbotine-style decoration, as well as at least one indented sherd, these are all mostly typical of the third century.

Coarsewares

As might be expected the coarseware assemblage is dominated by Horningsea fabrics. The form assemblage consists chiefly of jars with beaded rims. A variety of storage jar rims were noted too (some with bifid rims), similar in style to those recorded by Evans (1991). Also present within this fabric are dishes and possibly other form-types such as bowls or beakers; however, further detailed analysis of the fabrics would be required to be certain if they are indeed products of this industry. At this stage of analysis only a very small number of regional coarseware fabrics could be easily identified. These include very small quantities of Lower Nene Valley white and reduced ware, Hadham white slipped, oxidised and reduced ware, *Verulamium* white ware and at least two instances of a fabric imitating the London/Essex fine reduced ware style, one of which displays compass decoration. A small number of micaceous sandy greyware sherds were noted and these are possibly from Suffolk. Also of note are a number of whiteware body sherds that superficially look like Colchester white ware. The author, on several Cambridgeshire sites has previously recorded a similar fabric (Fawcett 2000; Fawcett 2001). A brief fabric description of the sherds, using pit **F.238 [2106]** as an example, can be seen on the pottery database (Table 12). The remainder of the

coarseware assemblage is made up of unsourced fabrics. These are chiefly sandy greywares, black surfaced/burnished fabrics and small quantities of white/buff wares and some finer reduced fabrics.

The condition of the coarseware assemblage is often poor, being abraded and fragmented. Correspondingly the majority of form types are too small to be identified beyond their general class of vessel (i.e. jar or bowl). Around 150 rims were noted across all contexts and about ninety-five of these belong to jars. These include a variety of beaded rims, some in the bifid style, but of note are at least six in the Going G9 style (1987) these are dated to the early-mid/late 2nd century. The second largest form group is made up of dishes and although examples of B1 and 3 are present, the majority are B2/4's, dated from the early/mid 2nd-early/mid 3rd century. The remainder of the form assemblage is composed of small quantities of bowls and beakers followed by very small numbers of *mortaria*, lids, platters and flagons. A number of beakers are certainly earlier in style with simple everted rims, and several cornice rims were also recorded which are no later than the late 2nd or early 3rd century. The presence of platter rims in fully Romanised fabrics again hints at an earlier 1st century phase of Roman activity on the site, as does the presence of the London style fabrics. Problems with dating were highlighted earlier in the report. Apart from the often fragmentary, abraded and mixed nature of the assemblage, the lack of fineware fabrics, and in particular their accompanying forms, have added to these difficulties. Furthermore, many of the coaresware fabrics are long-lived and similarly, have forms that are too small to be identified or are equally long-lived. The combination of these factors, and the frequent small number of sherds per context, has resulted in some fairly broad date ranges.

Feature Analysis

Another characteristic of the Roman pottery assemblage (as touched upon earlier) is that many of the fills contained only small numbers of sherds. Analysis of the assemblages from contexts associated with Phase I, and using pit fills as an example, shows that of the twenty-five fills, twenty-two contain less than twenty sherds and seventeen less than ten. This along with the lack of finewares, good diagnostic sherds, long-lived local fabrics and the condition of a large proportion of the pottery, has all contrived to produce a number of broadly dated contexts. Other feature types fair little better; for instance, fourteen of the seventeen ditch fills contain less than twenty sherds, and five of the ten burial fills also contain less than twenty. Table 11 shows the number of sherds and weight per context-type in Phase I.

Context type	Number	Sherd count	Weight (g)
Burial	10	254	2062
Ditch	17	296	2155
Layer	6	138	953
Pit	25	331	6541
Post-hole	2	4	41
Surface	1	14	94
Total	**61**	**1037**	**11846**

Table 11: Phase I ceramic assemblage by context type

Few of the contexts contain good quality assemblages; in fact, the average sherd weight of the pottery from ditch fills is 7.2g, whilst that from burials is 8g. The pit average sherd weight is better, although these figures (in this type of analysis) are distorted somewhat by the presence of two large groups from pit **F.340**, whose average sherd weight is a very good 22.7g. Without these contexts the average weight is still a good 17.6g; however, the presence of larger storage jar sherds in several of the pit fills has boosted this average figure. Apart from the assemblage in **F.340**, there are a number of other assemblages from Phase I features that have elements in them which are in a better state of preservation than the remainder of the assemblage, these include layers **F.100** and **F.126**, ditches **F.107** and **F.354**, pit **F.343** and burial **F.115**.

(Table 12 follows)

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
100	2081	Layer (P1)	HOR OX/RE, GRS, BSW	G tsm, base x2	Combing, incised lines	22	184	Abr-sli	No	Group is fragmentary but most with sli abr. The presence of a potential platter base fragment in fabric BSW could provide a date range of mid 1st-mid 2nd C	Mid/late 1st-early/mid 4th C (see comments)
104	1028	Structural (foundation) (P4)	LEZ SA 2 EGL SA (x4), LNV CC x 4, UNS WH, HOR OX/RE, ?GRS, UNS SH	B1, B3, B4, B?, C16, C tsm, Gnn tsm, G tsm, H tsm, base x1	Barb, rilling, cordon, incised lines	60	483	Abr-sli	No	Group is fragmentary and mostly abraded, in particular the samian. Of note a possible Horningsea reed rim bowl rim, although it is considerably abraded. If the feature/fill is cohesive potentially no later than AD200.	Mid/late 2nd-early/mid 3rd C (see comments)
104	1031	Structural (foundation) (P4)	LNV CC, HAD OX, ?UNS OX, HOR RE, GRS	B2, G x2, base x1		11	128	Abr-sli	No		Mid/late 2nd-mid 3rd C
107	1042	Ditch (P1)	HGB SA, LNV CC, UNS WS, UNS WH, ?BSW, GRF, GRS, HOR OX/RE, ?HAR SH/UNS SH	B2, B, Glid, G tsm x2, H20-23 style	Roulleting, combing, rilling	61	414	Abr-sli	No	Includes Sample 2 (26 at 84g). Outside of the sample most of the pottery displays only sli abr. The samian is shattered. GRF beaker sherd has poor imitation cornice rim. Lid seated jar could be Roman like Evans No34 in style fabric like BSW	Mid/late 2nd-early/mid 3rd C
109	1047	Pit (P2)	EGL SA, GRF, GRS, HAD RE 1, HOR OX/RE/WS, UNS SH, UNS WH	G x2 tsm, indented body sherd	Combing	28	256	Sli	No	Only clear dating evidence is indented body sherd and a small samian sherd. This is close to the Argonne style which is high fired and lacks obvious limestone within its fabric, needs more work	Mid/late 2nd-mid 3rd C
110	1056	Ditch (P1)	HOR RE	Base x1		6	60	Abr-sli	No		2nd-early/mid 4th C
110	1055	Ditch (P1)	?EGL SA, ?LNV WH, HAD WS, HOR OX/RE, UNS OX, GRS	D11 (Perrin M11) base x1	Combing	46	253	Abr-sli	No	Includes Sample 3 (18 at27g). A fragmentary assemblage with some considerably abraded sherds. All of the samian (?residual) came from the sample and is <1g. The D11 is also very abraded.	Late 2nd-mid/later 3rd C
113	1065	Burial (P1)	HOR OX/RE, GRS, UNS OX	ND	Incised lines	17	95	Abr-sli	No		2nd-early/mid 4th C
115	1071	Burial (P1)	EGL SA/UNS SA x4, LNV CC x4, ?LNV RE, HOR RE, GRS	B,B/T Drg35/36, Gx3, E, base x3 + 2 x indented body sherds	Barb dots, scales	61	623	Abr-sli	No	Includes Sample 6 (1 at <1g). The samian and a few coarseware sherds are very abraded in comparison to remainder of assemblage ?residual. The barbotine and indented sherds provide the best date; a folded bowl is also late	Late 2nd-late 3rd/?early 4th C

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
116	1074	Ditch (P1)	GRS	Base x1		4	9	Abr	No	All from Sample 4.	Roman
116	1075	Ditch (P1)	?EGL SA	B Drg31R base		1	27	Very	No		c Mid/late 2nd-early/mid 3rd C
117	1077	Pit (P3)	LNV CC, HOR RE, UNS OX	B?2		8	52	Abr-sli	No	The single LNV CC sherd is very abraded	Mid 2nd-mid 3rd C
118	1006	Burial (P1)	HOR RE	ND		1	2	Sli	No		Mid/late 1st-early/mid 4th C
118	1005	Burial (P1)	GRS, HOR RE, UNS SA, UNS WH, UNS SH	B2/4, G tsm x2, base x1		37	234	Abr-sli	No	Predominantly fragmentary coarseware bodysherds	Mid 2nd-mid 3rd C
121	1085	Pit (P1)	UNS BU	G tsm		1	3	Sli	No		Roman
125	1050	Layer (P3)	LGF SA, HOR RE/OX, GRS	ND		10	62	Abr-sli	No	Both of the samian sherds are small and shattered, mixed?	Mid/late 1st-early/mid 4th C
125	1001	Layer (P3)	UNS OX	Miniature? Or the top of a vessel		1	104	Gc	No	This is a highly unusual hand-made fabric which is coarse and ill sorted, containing quartz, clay pellets/grog, some organics, lime/chalk, flint. The surface has possibly degraded. The shape looks Roman beaker like, but not convinced it is Roman	Early ?Med
126	2080	Layer (P1)	BSW, GRS, HOR RE	ND	Incised lines	10	63	Abr-sli	No		Mid/late 1st-early/mid 4th C
126	1034	Layer (P1)	LGF SA, UNS SA, LNV CC, UNS WH, HOR RE, GRS	B2/4 x3, BC/H, G tsmbase x1	Rilling, grooving	51	340	Abr-sli	No	Fragmentary assemblage with few forms, samian sherds both small and abraded, some earlier material too present	Mid/late 2nd-early/mid 3rd C
126	1004	Layer (P1)	HOR RE, GRS	ND	Combing	4	33	Abr	No		Mid/late 1st-early/mid 4th C
126	1033	Layer (P1)	?COL WH, HOR RE/OX, GRS	G tsm x3, G?9/H?6	Cordon, combing	36	172	Abr-sli	No	Fragmentary assemblage, poor dating evidence	Early to later 2nd C
127	1054	Trackway, (P1)	?COL CC, LNV WH, GRG, HOR RE	ND	Incised lines	14	94	Abr-sli	No	Fragmentary assemblage. The LNV WH sherd is part of a mortaria but this is extremely abraded	?Early 2nd-early 3rd C

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
203	2008	Hearth (P3)	?HOR RE	ND		1	3	Abr	No		Mid/late 1st-early/mid 4th C
209	2017	Hearth (P3)	GRS + Lmed	ND		16	5	Abr-sli	No	All from Sample 200. The sherds are extremely small	Roman & Lmed
214	2039	Pit (P3)	UNS WH, UNS OX, GRS, HOR RE, ?base x1 (possibly part of cheese press?)	Gtsm x2	Combing	22	199	Abr	No	Most look 2nd C+	Mid/late 1st-early/mid 4th C
215	2005	Structural (foundation) (P2)	GRS, HOR RE	G?9 style	Combing	7	63	Abr-sli	No	The one jar rim is very small and abraded	Early/mid 2nd+?
215	2070	Structural (foundation) (P2)	UNS OX, HOR RE	ND	Rilling	8	40	Abr-sli	No		Mid/late 1st-early/mid 4th C
225	2067	Pit (P3)	LNV CC, HOR RE, GRS	ND, LNVCC is an abraded fragment of a castor box		5	13	Abr	No	Very fragmented	Late 2nd-4th C
229	2078	Structural (foundation) (P3)	LNV CW, UNS OX, GRS, HOR RE	B?1, 2/4, G tsm, H tsm		21	130	Abr	No	Very fragmentary	Mid 2nd-mid 3rd C
230	2082	Ditch (P1)	UNS WH, LNV RE, HOR RE	ND		5	20	Abr	No	Fragmentary. If the white ware is from Colchester the group may be no later than the early 3rd C, needs more work.	Mid/late 2nd-3rd/early 4th C (see notes)
234	2097	Structural (foundation) (P2)	LEZ SA 2, HOR RE?, UNS OX	G tsm		4	18	Abr-sli	No	Samian is abraded	Early-later 2nd C
237	2104	Pit (P1)	GRS, HOR RE	G tsm	Rilling	5	120	Sli	No		Mid/late 1st-early/mid 4th C
238	2106	Pit (P1)	UNS WH, UNS OX, GRS, HOR RE	ND	Rilling	15	182	Sli	No	The UNS WH sherds are in a fabric that occurs in small numbers across several contexts. It contains calcite, red iron ore, quartz, silver mica and sparse gold mica. It looks at x20 very similar to COL WH	Mid/late 1st-early 3rd C?+

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
239	2109	Pit (P1)	HOR RE	G tsm/shattered		1	17	Sli	No		Mid/late 1st-early/mid 4th C
245	2120	Pit (P1)	BSW,GRS, HOR RE	G tsm	Rouletting	14	381	Sli	No		Mid/late 1st-early/mid 4th C
246	2122	Pit (P1)	GRS, HOR RE	ND	Rilling	11	60	Abr-sli	No		Mid/late 1st-early/mid 4th C
252	2047	Structural (foundation) (P2)	LGF SA, LNV WH, UNS WH,UNS OX ?LON FR, GRS, HOR RE	A Drg18, C no match (LON FR), H7 style tsm, base x4	Rilling/ combing, corrigation	72	760	Abr-sli	No	Fragmentary, of a mixed Roman date, however the presence of LGF SA, LON FR style sherds etc, demonstrates some mid-late 1st/early 2nd C material present albeit small and abraded. However these are the only three forms present, needs more work	Mid-late 1st/early 2nd C+
252	2045	Structural (foundation) (P2)	UNS BU, UNS OX, GRS	G tsm		8	53	Abr	No		Roman
253	2137	?burial (P1)	?COL WH, GRS, HOR RE	G x3 tsm, H tsm x2, J	Rilling	65	354	Abr-sli	No	Includes Sample 202, Very fragmented small and mostly abraded. Appears to be mixed dated assemblage the possible COL WH flagon fragment is unusual like Cam 167b more research is needed	?Mid/late 1st-early/mid-4th C
253	2136	?burial (P1)	UNS WH, GRS, HOR RE	A tsm, H tsm	Accute lattice, rilling	24	262	Abr-sli	No	Variable size but most are fragmentary and abraded, mixed deposit, more detailed fabric analysis may help, early and later pottery. The platter fragment is in a GRS fabric and is mid 1st to c mid 2nd C.?Cohesive	Mid 1st-early/mid 4th C
253	2138	?burial(P1)	HOR RE	ND		1	59	Sli	No		Mid/late 1st-early/mid 4th C
254	2141	Burial (P1)	?LGF SA, LEZ SA 2, ?EGL SA, UNS CC x2,, UNS WS, UNS WH, BSW,GRS HOR RE	G x2, C/K?, indented beaker sherds, base x2 (one is a T Drg27)	Combing, rilling	31	291	Abr-sli	No	Looks like a mixed deposit, samian is abraded. The Drg27 AD120-160, whereas the latest are the indented sherds have a date of late 2nd to late 3rd/early 4th C. Only slight chance that the assemblage is cohesive, but needs more work	Early 2nd-late 3rd/early 4th c (see notes)

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
255	2146	Burial (P1)	?HOR RE	ND	Rilling	4	41	Abr	No	One of these is fired clay	?Mid/late 1st-early/mid 4th C
257	2151	Pit (P3)	HOR RE + Pmed	G		3	94	Abr-sli	No	Roman sherds are abraded	Mid/late 1st-early/mid 4th C + Pmed
258	2153	Pit (P1)	GRS,HOR RE	ND	Rilling	4	55	Abr-sli	No		Mid/late 1st-early/mid 4th C
259	2155	Pit (P1)	HOR RE	Base x1	Rilling	3	84	Sli	No		Mid/late 1st-early/mid 4th C
260	2153	Pit (P1)	GRS, HOR RE, UNS SH	ND	Rilling	15	40	Abr-sli	No	All from Sample 203. Fragmented	Mid/late 1st-early/mid 4th C
261	2158	Pit (P1)	HOR RE	G tsm	Rilling	2	44	Sli	No		Mid/late 1st-early/mid 4th C
262	2161	Posthole (P2)	UNS OX	ND		1	10	Sli	No		Roman
264	2165	Burial (P1)	LEZ SA 2, UNS WH, UNS OX, UNS BB, GRS, HOR RE	B2/4, G?37nn, J?		13	101	Abr-sli	No	Samian and flagon are shattered and abraded. This appears to be mixed B2 is mid 2nd-mid 3rd, but the possible G37 is late 2nd-3rd/4th C	Early/mid 2nd-mid3rd/early-mid 4th C
265	2167	Pit (P1)	LNV CC, GRS, HOR RE	G x2 tsm	?Barbotine, rilling	12	95	Abr-sli	No	Includes Sample 204. Assemblage is fragmentary	Mid/late 2nd-4th C
266	2169	Pit (P1)	UNS OX.HOR RE	G tsm	Rilling	6	178	Sli	No	All are HOR storage sherds except one	Mid/late 1st-early/mid 4th C
267	2171	Pit (P1)	HOR RE	ND	Rilling	2	35	Abr-sli	No		Mid/late 1st-early/mid 4th C
273	2020	Layers (P3)	LON FR, HOR RE	ND	Partial compass	3	16	Abr-sli	No	The LON FR sherd is light grey and micaceous and probably from a C10 bowl imitating samian (abraded), but group looks mixed judging by size and abrasion	Late 1st-early 2nd C
275	2018	Layer (P3)	GRS	ND		1	2	Sli	No		Roman

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
304	3019	Pit (P3)	LNV CC	ND		1	2	Abr	No		Mid/late 2nd-4th C
305	3022	Layer (P3)	GRS	H7 style	Combing	2	31	Sli	No	Butt beaker with more research may produce a better date	Roman (possibly 2ndC+)
322	3076	Pit (P3)	UNS BB	K		1	4	Sli	No	Fabric is close to DOR BB1 in style	Roman (could be early 2nd C?+)
322	3042	Pit (P3)	GRS, HOR RE	Base x1	Incised lines	2	34	Sli	No		Mid/late 1st-early/mid 4th C
322	3077	Pit (P3)	LEZ SA 2 x3, COL WH, UNS OX, GRS, HOR RE	C ?Drg 37, G9.1, K, T Drg27	Accute lattice, grooving	15	245	Sli	Yes	Good group, possible illustration examples	AD120/25-150/160
322	3043	Pit (P3)	LEZ SA 2,GRS, HOR RE	Base x1	Rilling	8	116	Abr-sli	No	Only the samian sherd is small and abraded	Early-later 2nd C?+
322	3130	Pit (P3)	UNS OX, GRS	Carinated body sherd, base x1	Diagonal lines	4	109	Sli	No		Mid 1st-2nd C
322	3129	Pit (P3)	GRS, HOR RE		Rilling	3	48	Sli	No		Mid/late 1st-early/mid 4th C
322	3128	Pit (P3)	?VER WH, UNS BB, GRS, HOR RE	G tsm x2, G9 style, H6.2/3,base x3		27	489	Sli	No		Early/mid-later 2nd C
328	3063	Pit (P3)	GRS + Med	G tsm		2	7	Sli	No		Roman & Medieval
330	3056	Layer (P3)	VER WH	D1/2		1	73	Sli	No	Like Ver 2658, no grits survive on surface	2nd C
330	3057	Layer (P3)	GRS	G24		1	61	Sli	No	Needs a better form match	2nd-4th
331	3061	Layer (P3)	EGL SA, GRS, HOR RE	?C tsm, G tsm		3	13	Abr-sli	No		Mid/late 2nd-mid 3rd C
332	3065	Layer (P3)	LGF SA, BSW, ?COL WH, GRS, HOR RE	G tsm, T Drg27, base x1	Diagonal lines	13	79	Abr-sli	No	Assemblage is fragmentary, the samian is small and abraded. The date range will be later if the group is not cohesive	Mid 1st-early 2nd C?+
333	3081	Pit (P3)	GRS	ND		1	14	Sli	No	Could be a HOR RE	Roman
333	3066	Pit (P3)	GRS, UNS OX	ND		3	24	Sli	No	One of the sherds is hand-made and very similar to F125 (1001)	Roman +?

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
333	3067	Pit (P3)	?HOR RE	ND	Rilling	2	17	Sli	No	Sherds join	Mid/late 1st-early/mid 4th C
334	3069	Layer (P3)	?GRS, HOR RE	G tsm		5	105	Sli	No		Mid/late 1st-early/mid 4th C
335	3070	Metalled surface (P3)	UNS BU, HOR RE, GRS	ND	?Rouletting	6	40	Abr-sli	No	All except one are abraded	Mid/late 1st-early/mid 4th C
335	3071	Metalled surface (P3)	?HOR RE	ND		2	36	Sli	No	A HOR variant	Mid/late 1st-early/mid 4th C
336	3118	Pit (P3)	?LGF SA			1	2	Sli	No	Sherd is shattered	Mid 1st-early 2nd C
336	3074	Pit (P3)	UNS OX	H1		1	2	Sli	No	Unusual fine fabric with mostly fine lime but also with larger pieces. The rim looks to be in an early cornice style on a globular beaker	Mid-late1st/early 2nd C
336	3073	Pit (P3)	GRS, HOR RE	ND		5	48	Sli	No		Mid/late 1st-early/mid 4th C
337	3084	Metalled surface (P3)	BSW, HOR RE	ND	?Incised lines	2	26	Abr-sli	No		Mid/late 1st-early/mid 4th C
337	3083	Metalled surface (P3)	LEZ SA 2, HOR RE	Base frag of T Drg33	Rilling	4	35	Abr-sli	No		Early-later 2nd C
339	3087	Pit (P1)	?HOR RE	ND		1	16	Abr	No		?Mid/late 1st-early/mid 4th C
340	3095	Pit (P1)	UNS WH, GRS, HOR RE	G24 style x5, H (as 3093), base x1	Rilling	81	1661	Sli-gc	Yes	Good group, needs more work on coarseware forms for better date	Mid 2nd-early/mid 3rd C
340	3093	Pit (P1)	LEZ SA 2, VER WH, UNS OX, GRS, HOR RE, UNS SH	B3.2, G Ver 2308, 2245 G x9, H Ver 2068/70, K, T Drg 33, base x 5		91	2073	Sli-gc	Yes	Includes Sample 303. Good group, date could be slightly later after a more detailed analysis, into early third.	Early/mid-later 2nd C

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
341	3097	Pit (P1)	?BSW,GRS,HOR RE	G21 style x3	Rilling	8	148	Sli	No	A grey, soapy and micaceous sherd looks to be no later than 2nd C	Late 1st/2nd-4th C (see notes)
342	3099	Pit (P1)	GRS, HOR RE	G tsm x2	Rilling, combing	8	91	Sli	No		Mid/late 1st-early/mid 4th C
343	3102	Pit (P1)	UNS BU, HOR RE	ND		2	45	Sli	No		Mid/late 1st-early/mid 4th C
343	3101	Pit (P1)	?LGF SA, UNS SA, BSW, GRS, HOR RE	B2/4, G x5, K x2	Rilling	39	1002	Abr-sli	No	Includes Sample 301. Samian is very small and abraded in comparison to remainder, both sherds despite size look southern Gaulish, ?residual One of the jars is a large narrow necked storage type.	Early/mid 2nd-mid 3rd C
345	3106	Pit/posthole (P1)	GRS	ND	?Cordon & bulge	2	16	Abr-sli	No	This could be no later than mid 2nd C	Mid/late 1st-2nd C
347	3110	Structural (foundation) (P2)	GRS	ND		1	9	Sli	No		Roman
347	3142	Structural (foundation) (P2)	GRS	ND		2	25	Abr-sli	No	One sherd looks possibly late med	Roman
348	3113	Pit (P1)	UNS WS, BSW	ND		2	35	Sli	No		?Earlier Roman
348	3114	Pit (P1)	UNS BU	ND		1	3	Sli	No		Roman
352	3117	Layer (P1)	LEZ SA 2?, UNS BU, GRS, BSW,HOR RE	T Drg27, K	Rilling	15	161	Abr-sli	No		Early to c mid 2nd C
354	3152	Ditch (P1)	?LEZ SA 2, UNS OX, BSW, GRF, GRS, HOR RE	G (lid), base x1	Cordon, rilling	14	68	Abr-sli	No	Fragmentary, in particular samian, UNS OX are very abraded and small. The lid seated jar has no clear match but is close to Verulamium types 2310/12 dated from the mid-later 2nd C (Wilson 1984).	?Mid-later 2nd C
354	3154	Ditch (P1)	UNS BB, UNS WS	B2.3/B4	Accute lattice	2	38	Sli	No		Early/mid-late 2nd/mid 3rd C

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
354	3151	Ditch (P1)	LNV CC, GRF, GRS,UNS SH	B2/4?other, B2/4, G? tsm, base x3	Rouletting, rilling, corrigation	51	363	Abr-sli	No	Includes Sample 308. Group is fragmentary except UNS SH dish. This is unusual, it seems to be early version of the more down turned rim style (Brown 1994, 61, Perrin 1999, 123) and has more in common with the Going incipient version B5	?Mid/late 2nd-mid 3rd C?+
354	3150	Ditch (P1)	LGF SA, UNS OX,BSW, GRS, HAD RE 1, ?HOR RE	G tsm x2, H20-23, base x1	Rouletting	30	169	Abr-sli	No	Fragmentary, samian is small and abraded. The cornice rimmed bag shaped beaker has rouletting beneath it and is more likely no layer than the later 2nd C	Early/mid-late 2nd/early 3rd C (see notes)
354	3149	Ditch (P1)	EGL SA, UNS BU, UNS OX, GRS,?HOR RE	G 28 (bifid)		8	39	Abr-sli	No	Fragmentary, samian is very small and abraded, it contains common silver mica and is more likely from Rheinzabern. The bifid rim style is similar to that produced in the Nene Valley and Verulamium and is no later than the 3rd C	Mid/late 2nd-mid 3rd C
354	3148	Ditch (P1)	GRS, HOR RE	G tsm	Rilling	7	85	Abr-sli	No		Mid/late 1st-early/mid 4th C
354	3147	Ditch (P1)	LEZ SA 2, UNS OX, HOR RE	?C, Gstor	Rilling	7	121	Abr-sli	No	One of the samian sherds is very abraded. Group is fragmentary	Early-late 2nd C
354	3146	Ditch (P1)	UNS BU, UNS OX, GRS, HOR RE	?B, G stor, base x2	Rilling, ?cordon & bulge	24	126	Abr	No	Includes Sample 306. Fragmentary. Could be no later than mid 2nd C if the cordon and bulge decoration is present.	Mid/late 1st-2nd C?+
354	3154	Ditch (P1)	GRS	ND		1	4	Sli	No		Roman
355	3156	Posthole (P1)	BSW	ND	Rilling	1	21	Sli	No		Roman
357	3171	Pit (P1)	GRS	ND	Rilling	3	20	Abr-sli	No		Roman
400	4004	Ditch (P1)	HOR RE	G stor tsm	Grooving	3	130	Sli	No		Mid/late 1st-early/mid 4th C
402	4011	Pit (P1)	HOR RE	ND	Rilling	2	61	Sli	No		Mid/late 1st-early/mid 4th C
405	4024	Structural (foundation) (P2?) Tr. 3	LEZ SA 2, BSW, GRS, HOR RE	A/B or B Drg18/31 or 31, base x1	Rilling	8	169	Abr-sli	No		Early/mid-later 2nd C

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
407	4031	Pit (P1)	HOR RE	ND	Grooving	3	96	Sli	No	All join, storage jar sherds	Mid/late 1st-early/mid 4th C
408	4032	Pit (P1) Tr. 5	UNS BU, ?BSW, GRS, HOR RE	G21 Ver 2170, base x1	Rouletting, rilling	9	96	Sli	No	The ?BSW jar rim has a very short neck with a small everted rim. The style is similar for instance to those recorded at Baldock and is likely to date from the late 1st to early/mid 2nd C, needs more research. A butt beaker sherd is also present	Mid/late 1st-early/mid 2nd C (see notes)
408	4033	Pit (P1) Tr. 5	GRS?	ND	Rilling	2	25	Sli	No	These look HOR RE related	Roman
410	4036	Pit (P?) Tr. 5	GRS, HOR RE	Base x1		4	70	Abr	No	Base is shattered	Mid/late 1st-early/mid 4th C
410	4037	Pit (P?) Tr. 5	HOR RE	ND		4	22	Abr-sli	No	Small	Mid/late 1st-earl/mid 4th C
412	4046	River channel Tr. 7	HOR RE,?UNS OX	ND		2	26	Sli	No	The small and abraded UNS OX sherd is doubtful Roman, possibly an intrusive fragment?	Mid/late1st-early/mid 4th C
414	4059	Ditch (P1) Tr. 8	HOR RE, ?UNS WH	G tsm		8	64	Abr-sli	No	The jar rim is extremely abraded	2nd-early/mid 4th C
414	4052	Ditch (P1) Tr. 8	GRS,HOR RE	A/K, base x1	Rilling	12	114	Sli	No	If this is a platter rim it is dated mid 1st-mid 2nd C	Mid 1st-mid 2nd C?+ (see notes)
414	4061	Ditch (P1) Tr. 8	LGF SA, UNS WH, GRS, HOR RE, UNS SH	A Drg18, ?H		6	51	Sli	No	If this is cohesive then it is early based on the samian ware plate	Mid to later 1st?+
415	4055	Pit (P3) Tr. 8	?GRS two others look Med	ND		3	41	Sli	No	The two possible medieval fabrics contain abundant quartz and common lime/chalk and are not wheel thrown	?Roman & Med
436	4021	Layer (P2) Tr. 3	?UNS OX, HOR RE	Base x1	Incised lines	5	168	Abr-sli	No		Mid/late 1st-early/mid 4th C
-	4076	Unstratified (Tr. 8)	HOR RE		Incised lines	2	66	Sli	No		Mid/late 1st-early/mid 4th C

Feature	Context	Type	Fabric	Form	Decoration	Count	Weight (g)	State	Illustrate?	Comments	Context date
-	2069	Unstratified (Area 2)	LNV CC,UNS WH, UNS OX, BSW, GRS, GRF, HOR RE	B2/4?, Handle, G x3 tsm, G lid /med,	Barbotine, rouletting, rilling	49	440	Abr-sli	No	Group is fragmentary with one or two possible medieval sherds. Nothing obviously later than 3rd C in Roman terms, however no forms are present except a possible dish for any other dating	Mid/late 1st-3rd C?+ & Medieval
-	1030	Unstratified (Area 1)	?EGL SA, UNS WH, GRS, HOR RE,UNS SH + Pmed fabrics	G9 style, G tsm but late in style, base x2	Rilling, combing	50	325		No	Fragmentary, samian extremely small and abraded	Mid/late 2nd-3rd/4th C
-	1035	Unstratified (Area 1)	UNS OX, BSW, GRS	B2/4	Rilling	7	42	Sli	No		Mid 2nd-mid 3rd C
-	4038	Unstratified (Tr. 5)	UNS WH, BSW, GRS, HOR RE	G9 style, G x5 tsm, G stor, base x3	Rilling, lattice, combing	38	762	Abr-sli	No		2nd C
-	3092	Unstratified (Area 3)	LEZ SA 2, VER WH, BSW, GRS, HOR RE	B2/4, D tsm, G tsm x2, K, base x2	Barbotine dots, winding scroll	25	597	Sli	No		Early/mid 2nd-mid 3rd C

KEY: ***Fabric code***

La Graufesenque samian ware	LGF SA
Lezoux samian ware 2	LEZ SA 2
Heiligenburg samian ware	HGB SA
Rheinzabern samian ware	RHZ SA
Eastern Gaulish samian ware	EHL SA
Unsourced samian ware	UNS SA
Colchester colour coated ware 2	COL CC 2
Lower Nene Valley colour coated ware	LNV CC
Unsourced colour coated ware	UNS CC
Colchester white ware	COL WH
Lower Nene Valley white ware	LNV WH
Verulamium white ware	VER WH
Unsourced white ware	UNS WH
Unsourced buff ware	UNS BU
Hadham white slipped ware	HAD WS
Unsourced white slipped ware	UNS WS
Hadham oxidised ware	HAD OX
Horningsea oxidised ware	HOR OX
Unsourced oxidised	UNS OX
Unsourced black burnished ware	UNS BB
Black surfaced/Romanising ware	BSW
Hadham reduced ware 1	HAD RE 1
Horningsea reduced ware	HOR RE
Lower Nene Valley grey ware	LNV RE
Unsourced fine grey ware	GRF
Unsourced sandy grey ware	GRS

Form code

A = platter, B = dish, C =bowl, D = mortaria, E = bow;-jar, G = jar, H = beaker, J = flagon, K = lid, ND = non-diagnostic, tsm = too small to identify

Table 12: Spotdates of Roman ceramic assemblage.

Recommendations for further work

Despite a number of negative aspects, which have been highlighted earlier in the report, the assemblage does hold some potential for further analysis. In general, itwould benefit from a more detailed fabric and form analysis. This would improve site dating and reveal more information about the site economy, as well as some limited insight into the function and status of Roman activity. The information recorded from the final pottery analysis would be used in conjunction with the full finds concordance and other site information to provide a final report. The final analysis of the Roman pottery would also seek to address a number of specific outstanding questions, such as the extent of earlier Roman activity on the site, by seeking out sherds dated from the mid/late 1st to early 2nd century across contexts from all phases. Specifically, this would include a better identification of the samian ware, some coarseware fabrics and their associated forms such as platters, beakers, bowls and any other earlier form types that may be in the assemblage. Although the main period of Roman activity, based on the initial assessment, dates from the early/mid 2nd to early/mid 3rd century, a more detailed analysis of fabric and form will help to improve the dating of this period. In particular a thorough analysis of the eastern Gaulish samian fabrics, the Nene Valley colour coats, the white/buff wares and forms within the coarseware assemblages dated to this period would be undertaken.

A more comprehensive analysis of pottery forms, principally those related to the Horningsea industry, may help to identify pottery dated to the later Roman period, if it is present on the site. With respect to this, particular attention will be paid to the burials in the search for later ceramic evidence. These lay outside of the 4th century perimeter of the Roman town and appear to have been dug into earlier Roman activity on the site. Initial research suggests that no later ceramic evidence is present. However, it will be important to see if the accompanying pottery assemblages are consistent in date in any way, or if they do represent distinct periods of activity. Outside of the burials, other contexts appear to contain Roman pottery of a mixed date. The extent of this residuality will need to assessed in order to ascertain if, for example, this pottery too is mostly of a similar date across the site, or just in specific features. Other forms of research would include analysis of the pottery by feature, its distribution across the site and comparison of the Roman assemblage with sites of a similar nature in Cambridge where possible. It is thought that no more than twenty sherds would be selected for illustration.

Saxo-Norman and Medieval Pottery (David Hall & Richard Newman)

A relatively small ceramic assemblage of Saxo-Norman to medieval date was recovered, comprising 29 sherds weighing 606g (Table 13). This result is particularly surprising given the scale of contemporary activity at the site, as represented by the presence of the School of Pythagoras itself. It therefore appears likely that a combination of a well-maintained space – commensurate with the prestige of the associated structure – allied with the degree of later truncation may have served to substantially reduce the quantity of material present.

Ware	Count	Weight (g)	MSW (g)	Date range	Source
Blackborough End-type	1	14	14	13th century	Various sources
Coarse Buff	3	38	12.7	13th- 15th century	Cambridgeshire/ Essex
Coarse Grey	13	389	29.9		
Coarse Pink	1	7	7		
Coarse Red	5	31	6.2		
Developed St. Neots-type	1	6	6	13th century	Various sources
Ely-Grimston	1	99	99	14th century	Isle of Ely
Essex Red	2	13	6.5	Late 13th to 15th century, with a 15th century *floruit*	Essex
St Neots-type	2	9	4.5	10th- 12th century	Various sources
Total	**29**	**606**	**20.8**		

Table 13: Saxo-Norman and medieval ceramics by fabric.

The earliest, Saxo-Norman material was recovered from a residual context. The paucity of sherds of this date, even within similar residual contexts, indicates that little contemporary activity occurred at the site prior to the construction of the School of Pythagoras at the end of the period. During the succeeding medieval period, however, a slightly larger – although nevertheless still small – amount of material was deposited. As is typical of medieval assemblages generally in the wider Cambridge region, coarsewares comprised the much most common constituent of this group (*e.g.* Edwards & Hall 1997; Cessford & Dickens *in prep*.). In total, these fabrics amounted to 22 sherds weighing 465g; this equates to 81.5% of the overall medieval assemblage by count and 77.9% by weight. The only individual item of interest comprised the base of an Ely/Grimston ware lamp, which was recovered from a post-medieval floor layer within the building's north wing. Due to the restricted size of the assemblage, little if any interpretation of contemporary activities can be deduced.

Post-Medieval Pottery (David Hall & Richard Newman)

A moderately-sized post-medieval ceramic assemblage was recovered, which totalled 480 sherds weighing 12.7kg (Table 14). Once again, in common with the preceding group, the composition of this material was relatively typical of assemblages of this date recovered from across the Cambridge region.

Provenance	Ware	Count	Weight (g)	MSW (g)
Ely Products	Babylon-type Iron-glaze	25	387	15.5
	Ely Bichrome	14	223	15.9
	Ely Fineware	7	86	12.3
	Glazed Red Earthenware	359	10698	29.8
Probable Ely Products	Plain Buff	1	69	69
	Plain Grey	9	102	11.3
	Plain Pink	7	20	2.9
	Plain Red	23	163	7.1
Other Sources	Frechen Stoneware	24	731	30.5
	Iron-Glazed	3	50	16.7
	Tin-Glazed Earthenware	6	156	26
	Westerwald Stoneware	2	40	20
	Total	**480**	**12725**	**26.5**

Table 14: Post-medieval ceramics by fabric.

Much the most significant component of this group comprised Glazed Red Earthenware, a utilitarian fabric that predominately superseded plain coarseware during the 16th and 17th centuries. This ware accounted for 74.8% of the overall post-medieval assemblage by count and 84.1% by weight. The majority of the Glazed Red Earthenware is likely to have been manufactured on the Isle of Ely (Cessford *et al.* 2006). A number of other Ely fabric-types were also present, including Babylon-type iron-glaze, Ely Bichrome and Ely Fineware. In addition, a number of imports from further afield were also identified. This included German stonewares from Frechen and Westerwald (Gaimster 1997), along with tin-glazed earthenware from Netherlandish, Anglo-Netherlandish and/or English sources (Archer 1997; Crossley 1990, 264-66). No large groups or items of individual significance were noted.

Modern Pottery (Craig Cessford & Richard Newman)

A moderately-sized 18th and 19th century ceramic assemblage was recovered; this totalled 709 sherds, weighing 15.3kg (Table 15). In contrast to the two preceding periods, a wider range of fabric-types was identified. This represents part of a wider pattern of increasing industrialisation of the pottery production process.

Amongst the 18th century wares identified at the site were Chinese Export Porcelain, Creamware and Pearlware, all of which occurred in low numbers. A much more substantial 19th century assemblage was present, however. This was dominated by mass-produced, often transfer-printed whitewares, which account for 84.5% of the overall modern assemblage by count and 72.8% by weight. Other contemporary fabrics included Sunderland-type coarse, Mocha-type whiteware, Late Staffordshire-type slipware and both English and Continental Utilitarian Stonewares. The largest single group of 19th century date was recovered from the backfill of clunch-lined soakaway **F.102** (357 sherds, weighing 8044g). The only individually significant item comprised a mid-late 19th century blue and white transfer-printed plate with the legend '...Y STREET W. BIRD CAMBR...'.

Ware	Date range	Count	Weight (g)	MSW (g)
Bone China	19th century	31	395	12.7
Chinese Export Porcelain	18th century	3	18	6
Continental Utilitarian Stoneware	19th century	1	123	123
Creamware	Late 18th century	6	30	5
English Utilitarian Stoneware	19th century	31	1075	34.7
Flowerpot	18th-19th century	18	1047	58.2
Late Glazed Red Earthenware	18th-19th century	4	163	40.7
Late Staffordshire-type Slipware	19th century	1	55	55
Mocha-type whiteware	19th century	7	140	20
Notts/Derby Stoneware	18th-19th century	1	16	16
Pearlware	Late 18th-early 19th century	1	3	3
Staffordshire-type Slipware	18th-19th century	1	22	22
Sunderland-type Coarseware	19th century	5	388	77.6
Whiteware	19th century	599	11167	18.6
	Total	**709**	**15346**	**21.6**

Table 15: Modern ceramics by fabric.

Ceramic Assemblage from 1967 Investigation (David Hall & Richard Newman)

A relatively small ceramic assemblage – comprising 45 sherds, weighing 2.9kg – was recovered during the investigation undertaken within the undercroft of the School of Pythagoras by Alan Carter and James Graham-Campbell in 1967. With only one exception, this group solely consisted of fabrics dating to the 16th and 17th centuries.

Dominating the assemblage were a range of post-medieval fabrics that were almost certainly manufactured on the Isle of Ely. These included Glazed Red Earthenware (18 sherds, weighing 1351g), Ely Fineware (16 sherds, weighing 97g), plain red courseware (7 sherds, weighing 1152g) and Ely Bichrome (2 sherds, weighing 65g). Also present were single sherds of 17th century Staffordshire-type slipware (weighing 22g) and 13th century grey coarseware (weighing 209g). The composition of this group is entirely consistent with the build-up of post-medieval deposits within the earlier structure. Moreover, the marked absence of medieval material within the assemblage indicates either that the space had previously been well-maintained, so that little material had accrued, or – more likely – that any preceding deposits had been deliberately removed during the 16th century. Whilst the majority of sherds were small and fragmentary, one near-complete vessel was recovered. This consisted of a 16th century plain red coarseware 'chicken feeder'; a circular vessel composed of three concentric trays situated one inside the other. Measuring 208mm in diameter, the fabric of this vessel is consonant with that of contemporary Ely products (see Cessford *et al*. 2006, 46-53). Although the precise usage of vessels of this type remains debatable, it is nevertheless probable that they were associated with the provisioning of livestock. The presence of such an item within the undercroft at this date therefore accords with the surviving historical accounts, which indicate that during the 16th century the area was utilised for the keeping of animals (Gray 1932, 29).

Clay Tobacco Pipe (Craig Cessford)

A very small quantity of clay tobacco pipe was recovered which provides limited dating evidence. The presence of clay tobacco pipe fragments in a context indicates a date of the late 16th to early 20th centuries (*c.* 1580-1910). The bowls were classified according to Oswald's simplified general typology (1975). They comprised:

F.102 [1007]. Type 24 bowl, *c*. 1810-40.

F.105 [1037]. Stem fragment marked …VER on one side and CAM… on the other. A member of the Cleaver/Cleever family of pipemakers, who were active in Cambridge *c*. 1839-83.

[3028] Unstratified. Type 6 bowl *c*. 1660-80 and Type 9 bowl, *c*. 1680-1710.

Worked Bone (Richard Newman with Vida Rajkovača)

Two worked bone artefacts were recovered from the site. The first consisted of a double-sided comb of Late Roman or medieval date, the second a post-medieval knife handle.

[1030], **<38>**. Unphased (cleaning). The fragmentary remnant of a finely-finished double-sided comb; weight 3g. Sub-oval in form and without obvious decoration, the comb originally measured 57mm long by 46mm wide and 1.5mm thick; the narrow, finely sawn teeth are 14mm in length. Of a common, utilitarian (though well-manufactured form), this item may be Late Roman or medieval in origin. As it is well preserved and closely conforms to Ashby's medieval Type 14b, dated *c*. 1400-1700 (Ashby 2011), the date latter appears the most probable.

F.320, **[3039]**, **<113>**. Phase III (16th century). A well-worked, near-complete 'pistol-grip' knife handle manufactured from a radially-split sheep-sized metapodial. It measures 74mm long by 15mm wide and a maximum of 22mm thick, and weighs 20g. The two scales have been worked into three facets on each side, whilst the rear protrusion is finely shaped. Remnants of the iron tang remain *in situ*, held in place by four iron pins.

Burnt Clay (Simon Timberlake)

A single fragment of burnt clay daub was recovered from medieval wall foundation **F.252**. This material had been incorporated into the masonry footing.

<381> F.252 [2047]. An amorphous lump of burnt clay daub (30mm diameter; weight 26g). This contains visible organic including burnt-out grass plus small flint grit inclusions; possibly part of an infilling wall structure.

Worked Stone (Simon Timberlake)

A relatively small worked stone assemblage was recovered from the School of Pythagoras site. This group included a shale bracelet, three fragments of rotary quern and two whetstones. All of the material is Roman in origin, and the assemblage can be broken down as follows:

Shale Bracelet

A fairly unusual and very fine example of a more massive type of well-finished and polished lathe-turned shale arm bracelet found associated with Late Roman burial **F.115** (Figure 29B).

<**001**> **F.115**. Weight 56g. The bracelet has been made from a chestnut-brown to dark brown coloured hydrocarbon-rich mudstone rock (most probably this was quarried from one of the nodular

horizons of Kimmeridge Shale outcropping in the cliffs near Kimmeridge in Dorset) and is almost circular in shape (in fact it is slightly oval: 85mm x 92mm external diameter and 61-63mm internal diameter), being 13mm deep and 15mm thick with a rounded D-shaped x-section. Faint traces of the lathe grooves can be seen on one of the lateral faces, whilst most of the impressions of the turning chisel or circular saw tooth cuts are still visible around its internal circumference. The survival of the latter suggests that the bracelet may have been relatively new when worn, and possibly had not been there for long prior to its wearer's decease. However, some degree of external abrasion in the form of use-wear polish, but with few scratches or chips, implies instead the care of a much-prized object; the workmanship involved in this bracelet suggesting that it was a relatively high-status piece when compared to the type commonly found associated with burials (such as the altogether thinner greyish coloured lathe-turned shale bracelet which was recovered from Burial 45 at Babraham; Timberlake & Armour 2007). The earliest production of shale bracelets from the 'Blackstone Bed' of the oil-rich Kimmeridge Shale began in the Early Iron Age, exploiting cliff sources at Kimmeridge and Brandy Bays on the Dorset coast (www.pmmmg.org/Kimmeridge; www.soton.ac.uk/-imw/Kimmeridge-Oil-Shale); one of the first production centres for their manufacture having been identified at Eldon's Seat, Enscombe in Dorset (Cunliffe 1978). From its Iron Age origins (Clark 1986, 31) this industry then became more important in the Roman period, with lathe-turned examples of bracelets becoming common from the 1st century onwards. The generally thinner Iron Age/Early Roman bracelets are typically found broken, the latter being undoubtedly more fragile.

Rotary quern

Approximately 2kg of lava quern was recovered from the site, the majority of which comprised two pieces from the lower and possibly upper disc-shaped stones of a <400mm diameter Roman hand mill from **F.331**. Quite possibly, the worn stones had been broken up and burnt prior to being deposited as rubble fill.

<**143**> **F.331 [3061]**. Weight 1.552 kg; x2 pieces, possibly from the same quern - 170mm x 100mm x 30-60mm (lower stone) + 80mm x 120mm x 55mm (upper stone). Fragments both from the lower and possibly the upper stone of a small hand-operated rotary lava quern made of vesicular basalt from the Mayen quarries (Niedermendig) imported from the Eifel region of the Rhineland. The grinding surfaces of both lower and upper (?) stones have been deeply furrow cut in a segmented radial pattern, as was the norm with these lightweight lava querns (Watts 2002, 34), with that of the lower stone being marginally less worn (suggesting little use), though the wear on the upper may in part be an erosional effect resulting from its exposure to weathering or as a result of it having been burnt to crack and break up the stone. The undersides of both stones have been very crudely worked and were not faced. Although a complete outer rim edge does not survive, the largest fragment of lower stone does indicate an approximate circumference curvature which suggests a diameter of around 350-420 mm, which is probably the norm for these stones. More than likely the stone was broken up after extensive use as a quern, then used as rubble fill. The trade in lava quern, which came into Eastern England via Colchester, seems to have all but ceased by the 3rd century AD, suggesting a likely 1st-2nd century date for their use (*ibid*.).

<439> [4038] Unstratified. Weight 0.498kg; 105mm x 100mm x 30mm (thick). Probably part of a worn lower stone. A fragment from the rim of a thin, well-worn lower stone composed of lava quern. The lithology of this vesicular basalt quern is quite different to the above (<143>) suggesting that this came from a different quarry source or lava bed. This quern also shows no evidence for the cutting of radial furrows; in fact, the concentric undulations and wear pattern on the grind surface suggests that it was not dressed. A large crystal vugh inclusion within the basalt which appears to be filled with calcite may well have been responsible for the failure of this stone following its fracture. However, the near perfect preserved rim of this suggests an original diameter of 480mm.

Whetstones

Fragments of two sandstone whetstones totalling 130g were recovered. Both were fairly typical of the type(s) of whetstone recovered from Roman/Romano-British settlement sites.

<018> F.118 [1005]. Weight 54g; fragment from a broken rectangular – triangular whetstone (40mm long x 30mm wide x 20mm thick). Worked on all sides and along the corner edges except for on the most recent break. The underside shows particular emphasis in sharpening, with three knife grooves cut to sharpen the edge of a blade. The rock type appears to be Upper or Lower Greensand; in this case a fine grained light grey-green (glauconitic) sandstone with mica and a proportion of calcium carbonate in the cement. This same type of lithology was recorded amongst the whetstones recovered from the Romano-British settlement at Vicar's Farm, Cambridge (see Hayward in Lucas & Whittaker 2001). The nearest outcrops of Lower Greensand fitting this description are to be found at Cottenham, Chittering and Upware (Cambridgeshire).

<146> F.328 [3062].Weight 76g; dimensions 75mm x 25mm x22mm thick. Two adjoining pieces from a broken rounded rectangular shaped whetstone composed of a micaceoushematitic sandstone, most likely from the New Red Sandstone (Trias). The nearest outcrop of this is to be found in the West Midlands. From a post-medieval context.

Moulded Stone (Richard Newman)

A moderately-sized, yet significant, assemblage of moulded stone was recovered during the recent excavation (Table 16). This comprised a total of 18 blocks. In addition, a single moulded fragment was retained from the 1967 investigation; this has also been incorporated into the following discussion.

Catalogue no.	Context no.	Feature no.	Building stone	Patterns	Component element	Major element	Comments
029a	1012	102	Clunch	Casement and hollow	Mullion	Window	Heavily eroded
029b	1012	102	Clunch	Casement?	Mullion?	Window?	Very heavily eroded
100	3010	302	Limestone	Hollow chamfer	Mullion	Window	Broken and abraded
354	2042	215	Limestone	Ashlar	Quoin?	Wall	Discarded
354a	2042	215	Limestone	Ashlar	Quoin?	Wall	Discarded
354b	2042	215	Limestone	Ashlar	Quoin?	Wall	Discarded
354c	2042	215	Limestone	Ashlar	Quoin?	Wall	Discarded
357a	2135	219	Clunch	Ashlar	Quoin?	Wall	Discarded
357b	2135	219	Limestone	Abraded	Mullion?	Window?	Very badly damaged. (357b-357h all portions of the same window?)
357c	2135	219	Limestone	Casement	Mullion	Window	357b-357h all portions of the same window?
357d	2135	219	Limestone	Casement	Mullion	Window	357b-357h all portions of the same window?
357e	2135	219	Clunch	Cusp	Tracery	Window	357b-357h all portions of the same window?
357f	2135	219	Clunch	Casement	Mullion	Window	357b-357h all portions of the same window?
357g	2135	219	Clunch	Casement	Mullion	Window	357b-357h all portions of the same window?
357h	2135	219	Clunch	Casement	Mullion	Window	357b-357h all portions of the same window?
357i	2135	219	Limestone	Newel	Tread/ winder	Staircase	Part of spiral staircase
357j	2135	219	Limestone	Newel	Tread/ winder	Staircase	Part of spiral staircase
358	2006	224	Limestone	Plain chamfer	Plinth/ string?	Plinth/ string?	Discarded
/	/	/	Clunch	Stiff-leaf decoration	Capital	Window	Recovered in 1967. Projection hacked flush

Table 16: Provisional moulded stone identifications.

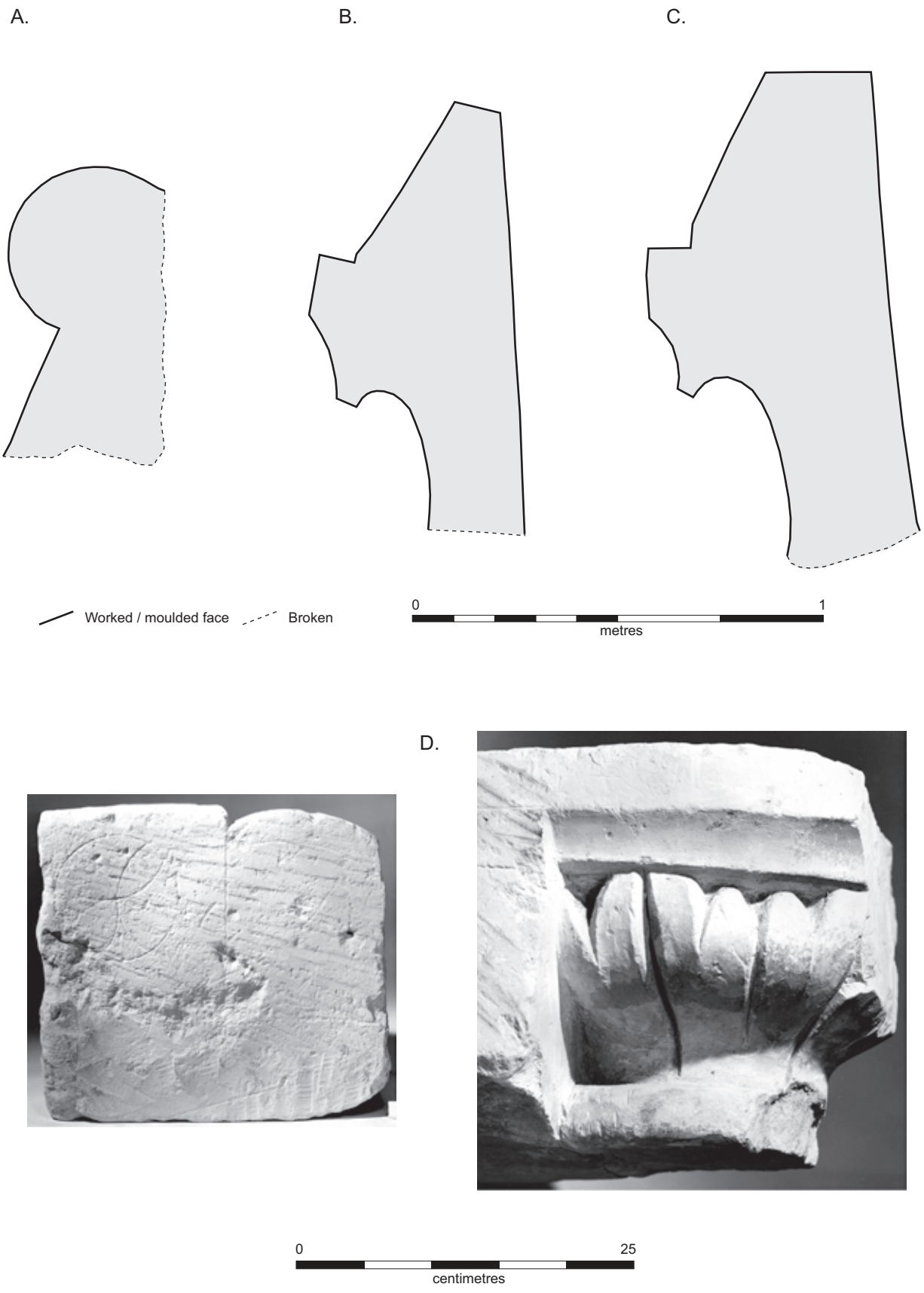


Figure 28. Significant elements of the moulded stone assemblage. A) Tread or winder from F.219, B-C) window mullions from F.219, and D) Stiff-leaf window captial recovered in 1967.

The purpose of this report is to highlight elements of the assemblage that merit further investigation and detailed recording, as well as to provide a preliminary assessment of their significance. All identifications remain provisional at this stage.

Two types of building stone were present at the site: limestone and clunch. The limestone blocks were predominately composed of hard bioclastic ooidal Barnack Stone. During the Middle Ages, Barnack Stone is known to have been quarried from the banks of the river Welland near Stamford (Gallois 1988; Alexander 1995, 115-6). This material was first used in Cambridge during the early to mid 12th century – at Holy Sepulchre Church and Stourbridge leper chapel – and was in frequent use in the town from the late 13th century onwards (Purcell 1967, 29-34). Its robusticity made it an excellent, hard-wearing though coarse-grained building material. Notably, blocks of Barnack Stone previously recovered from the bed of Whittlesea Mere have been used to identify the presence of a sunken medieval barge (Hutchinson 1994, 121). This appears to have been a flat-bottomed, double-ended vessel measuring 9.0m long with a beam of 3.0m and a draught of less than 1.0m (Jenkins 1993a; Jenkins 1993b). Such vessels, with their valuable cargo, would have reached Cambridge via the extensive network of Fenland rivers. The proximity of the School of Pythagoras to a navigable river channel would have greatly facilitated the importation of this material to the site. Once delivered, it was predominately used in its rough, unworked form to construct the on-edge foundations and the more robust walls of the lower storey of the building.

The second material-type present within the moulded stone assemblage is clunch. This is a fine-grained chalk with a relatively high silica content. The quarrying and carving of clunch within the Cambridgeshire village of Burwell, as well as the neighbouring settlements of Reach and Isleham, was a significant local industry during the 14th and 15th centuries. Fresh clunch, especially that which was derived from the Totternhoe Stone or Burwell Rock horizon of the Lower Chalk, was relatively soft and grey when quarried but would rapidly harden and turn white upon exposure to air. At the quarry sites themselves the material was initially soaked in pits before being crudely cut into ashlar blocks for transport by barge (Garrow 2000; Newton 2010). Finer moulding work was then usually undertaken either at or close to the final site of construction, once the clunch had hardened sufficiently. Much more tractable than limestone, clunch was typically employed for detailed or intricate mouldings such as tracery. As such, therefore, this material was widely used throughout the region, especially at religious houses including Anglesey Abbey, Denny Abbey and Ramsey Abbey – the latter of whom owned at least one of the Burwell quarries during the late 14th century (Lethbridge 1929, 97-98) – as well as numerous religious and secular buildings in Cambridge (Purcell 1967, 24-28). At the School of Pythagoras itself, this material was primarily employed within the construction of the more lightweight walls of the upper storey of the building, as well as the decorative mouldings of the majority of its doors and windows.

Significant elements of the assemblage

The following blocks represent the most significant constituents of the group:

<357b-357h>, **F.219**. These seven blocks all appear to have been derived from a single – or potentially two matching – window(s). The use of a casement moulding (Figures 28B & 28C) indicates that the window dates to the 15th or more probably 16th century. It is therefore likely to have been associated with the widespread programme of refurbishment that appears to have been undertaken around this time. The window was also very well constructed. Its basal blocks were composed of limestone, whilst the remainder – which gradually reduced in size commensurate with their height – were composed of clunch. Given the extensive demolition of the southwest wall of the north wing in the 19th century, earlier windows situated upon both the ground and first-floors appear to have been removed at this time. This provides much the most likely provenance for this group.

<357i-357j>, **F.219**. Two treads or winders derived from a newel or spiral staircase (Figure 28A). Both are badly broken, and the 19th century context from which they were recovered represents the secondary or even tertiary reuse of the material. Whilst it is possible that they were imported to the site from elsewhere, this appears unlikely; especially given the nature of the material with which they were associated (see above).

Unstratifed (1967). Window capital, with fine stiff-leaf decoration and a compass-drawn 'daisy-wheel' design etched on its upper face (Figure 28D). This moulding type, which depicts a fleshy leaf with trefoil termination, was extremely popular in England during the late 12th and early 13th centuries. The presence of capitals of this type – additional examples of which remain extant on the first-floor of the building – comprises one of the primary means of ascertaining the date of the School of Pythagoras.

Ceramic Building Materials (Richard Newman)

A moderately sized assemblage of ceramic building materials – including both brick and tile, as well as fragments that are indeterminate between the two – was retained from the recent excavation. This totalled 400 fragments, weighing 26.2kg. The assemblage is broken down by phase and material-type in Table 17.

	Phase I		Phase II		Phase III		Phase IV	
Type	**Count**	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**	**Count**	**Weight (g)**
Brick	-	-	-	-	16	5810	2	431
Tile	25	953	8	426	172	10737	109	3888
Brick/tile	15	109	2	51	23	207	2	14

Table 17: Ceramic building material assemblage by type and phase (excluding intrusive and unstratified material).

The assemblage was dominated by material of post-medieval and modern date; the former accounted for 56.4% of the total by count and 74% by weight, and the latter 30.2% by count and 19.2% by weight. Both of these groups were dominated by peg-tile fragments, which constituted much the most substantial component of the overall assemblage by both count and weight. Whilst these tiles were predominately post-medieval in origin, it is probable that some medieval roof tiles were also represented. Amongst this group, for example, 12 glazed peg-tile fragments, weighing 1014g, were identified. These are most probably 14th century in origin, and are likely to have been situated towards the apex of the roof in association with a glazed and/or moulded ridge (no fragments of which were present). As the most substantial structure in the vicinity at this time, it is probable that these tiles were originally derived from the roof of the School of Pythagoras itself. A second notable feature of the assemblage comprised the presence of numerous fragments of Roman CBM. All of the material recovered from both Phase I and II deposits originated during this period (that is, 13.4% of the total assemblage by count, and 6.8% by weight). Moreover, a small percentage of the fragments recovered from later, post-medieval deposits are also likely to have originated during Roman times. Although primarily small and abraded, thereby inhibiting positive identification, it appears that small quantities of *tegulae*, *tubulae* and *pilae* were present within the Roman assemblage, as well as a possible *imbrex*.

Flint (Lawrence Billington)

A small assemblage of nine worked flints was recovered from the excavation (see Table 18). The assemblage is clearly chronologically mixed and represents residual material inadvertently incorporated into later deposits. Although small and lacking in closely dateable forms, this assemblage provides evidence for prehistoric activity in the vicinity of the site, probably from the Mesolithic through to at least the Early Bronze Age.

Feature	Context	Flake	Blade	End scraper	Totals
107	1042	1	-	-	**1**
109	1047	1	-	-	**1**
110	1055	-	-	1	**1**
322	3077	-	1	-	**1**
337	3083	1	-	-	**1**
354	3150	1	-	-	**1**
-	1033	2	-	-	**2**
-	1054	1	-	-	**1**
Totals		**7**	**1**	**1**	**9**

Table 18: Worked flint assemblage by type.

The flint itself is generally of good quality translucent grey to dark grey colour. Surviving cortical surfaces are thin and abraded, typical of material collected from secondary fluvial gravel sources. The condition of the assemblage is varied but minor edge damage and rounding is very common and is characteristic of flintwork recovered as a residual element within later features and deposits. Cortication ("patination") is common, occurring on five of the flints and varying from a light blue sheen to a heavy white. This cortication appears to have some chronological significance with the finer flake based and blade based pieces of probable Mesolithic and Neolithic date exhibiting cortication. On the basis of technological traits and cortication five of the flints appear to be of Mesolithic or Neolithic date. These include four waste flakes alongside the medial section of a robust blade and a convex end scraper made on a blade like flake. The remaining four, uncorticated pieces, are technologically simpler, with an absence of platform preparation or evidence for systematic core reduction strategies. These are likely to be post Neolithic in date, probably representing Early or Middle Bronze Age activity.

Painted Plaster (Simon Timberlake)

Seven pieces of painted wall plaster, weighing in total 474g, were examined from assemblage recovered during the 1967 investigations within the undercroft of the School of Pythagoras (Figure 29C). Although there is no exact context or location for these fragments of wall plaster, it is clear from the style of these that they are Roman (and probably Late Roman) in date, and were probably associated with a moderately high status building situated somewhere in the vicinity.

(1) 50mm x 50mm x 15mm thick (46g): two parallel lines (each 3-4mm wide) composed of brick-red and medium-light grey paint over a thin cream-white limewash background painted directly (?) onto a white-buff coloured coarse sandy plaster with inclusions of rounded grit, rare crushed tile and flint (1-3mm diameter).

(2) A similar painted piece to the above, only 55mm x 50mm x 7mm thick (38g) with a thicker coat of fine lime plaster on top (2-5mm thick.

(3) Not an adjoining, but a related piece of white lime-washed plaster with the same two parallel lines meeting another light grey line at 90˚. The piece is much larger, but apparently from the same area of painted border: 115mm x 75mm x 15-23mm (142g). Here the surface limewash has been painted on top of a very thin layer of fine plaster (between 1-5mm) covering a coarse layer of plaster. The latter covers another basal layer, on the underside of which can be seen the impression of the wall surface, part of which shows a faint comb decoration reminiscent of hypocaust tile.

(4) A thin piece of plaster (70mm x 60mm x 7-10mm thick (66g)) with an off-white to very pale grey limewash coat and a single 5mm wide painted light grey line. The underlying buff-coloured fine plaster surface rests directly on the coarse plaster, and there are some of the clearest indications on the underside of this of its direct application to what appears to be a hypocaust tile.

(5) This is part of another group of painted line motifs on plaster, this piece being 70mm x 70mm x 5-17mm thick (58g). Two similar 5mm wide parallel painted lines of black and red meet a previously painted straight red line (6mm wide), also at 90˚. The immediately underlying fine white plaster layer is thicker (2-6mm), this being lain as a level layer on top of the more uneven coarse sandy wall plaster, the latter once again having been laid directly on top of the coarse plaster. One small fragment of this has broken away, but still re-fits to one side of the piece.

(6) An intermediary (but not adjoining piece) to 5, preserving the parallel red and black line motif, but here slightly more abraded (45mm x 45mm x 7mm (18g)). Mortar can be seen attached to the underside of the thin layer of coarse plaster.

(7) A larger and better preserved piece of the above, with the ends of the parallel red and black line motifs meeting and partly covering a red painted line, the angle of junction of these being approx. 105˚. Size 75mm x 70mm x 9mm thick (66g) with a slightly thicker (2-5mm) fine plaster layer on top. This piece has been repaired (glued together) post-excavation.

Both Vitruvius (in *De Architectura*) and Pliny (*Natural History*) say something about the techniques of Roman wall plastering and the use of pigments in painting (Ling 1991). The softer pastel colours were sometimes painted onto the *secco* (or dry) plaster, although the usually final designs were painted directly onto the *fresco* (or fresh) plaster. Vitruvius for instance describes the composition and the making of pigments: black from burnt pine chips, vine stems or burnt bone, red from cinnabar or more commonly from iron (hematite) ochre, yellow from mined ochre (iron hydroxides), blue from a fusing of sand, chalk and copper (perhaps chrysocolla or azurite) known as Egyptian Blue, green from 'green earths' such as glauconite, but occasionally from the copper mineral malachite, and purple from the dye extracted from sea whelks (Pye 2000). A visual analysis of the handful of pieces from the School of Pythagoras would seem to confirm the use of iron ochre (hematite) to produce the red paint, burnt carbon for black paint, a palette mixture of this and white lime to make the light grey, with the background whitewash almost certainly being composed of slaked lime.

With this small and incomplete assemblage of wall plaster it is very hard to say much about the styles or designs of painting. What seems most likely though is that these were all relatively simple bordered friezes made up of thin geometric lines. Such commonplace and considerably less intricate wall painting designs may be compared with several useful studies which have been carried out; a prime example of this being the categorisation of styles based on the fragmentary plaster remains from the Abbey Farm villa site at Minster, Kent excavated by the Thanet Archaeological Society and the Trust for Thanet Archaeology (see Thanetarch.co.uk/virtual museum). The patterns of both colour and design found on the small fragments from the Abbey Farm site have been catalogued as evidence of distinct but composite 'styles' as a means to characterise such painting in cases where it has been impossible to reconstruct any larger design or painted forms. Nevertheless, some similarities in painting style and 'schools' of decoration can be guessed at when comparing these pieces with other equally fragmented assemblages. Although relatively few direct similarities can be seen with the Abbey Farm motifs (some of which evidently contain more floral designs), a few those pieces show similar narrow line geometric forms to the Pythagoras examples, something which might suggest a sort of 'common' frieze-like design. For example, certain parallels in colour, line width and pattern were noted within the Abbey Farm assemblage: Style 53 (20 pieces - thin grey-black lines on white meeting at c 125˚ parallel to a red border); Style 208 (45 pieces – thin grey line on white background); Style 96 (7 pieces – thin grey line on white (similar to 208)); Style 206 (3 pieces - thinner grey line on white); Style 202 (7 pieces – thin red line on white); Style 70 (5 pieces – thin grey line on white parallel to a straight red painted border.

Painted wall plaster is a comparatively rare find from Roman sites around Cambridge. However, some 8.26 kg of painted wall and floor plaster of a similarly basic (but quite different) design was recently recovered from excavations carried out at the Babraham Research Campus (Collins 2012). Whilst the original context for the latter (as dumped material) remains unknown, the likelihood is that painted plaster is indicative here of what is probably a higher status buildings such as a shrine, villa or bathhouse. The Roman painted wall plaster from the Pythagoras School, which seems in one place to have been laid onto hypocaust tile, may well reflect the presence of an important Roman building in this vicinity prior to the establishment of the substantial Medieval town house. It is however possible that the material was imported from elsewhere, although it fragility and good level of preservation indicates that it was not transported a long distance.

- ECONOMIC AND ENVIRONMENTAL DATA -

In addition to the material culture discussed above, a reasonably-sized assemblage of economic and environmental material was also recovered. This assemblage – which includes human remains, faunal remains, bulk environmental material and pollen – has been subdivided by material type and is discussed in detail below.

Human Remains (Natasha Dodwell)

Six adult skeletons of probable late 3rd/early 4th century date were identified in shallow, truncated graves at this site. One had been interred in a coffin (as evidenced by a coffin stain and associated nails) and buried with hobnail boots, a jet bangle and an iron finger ring. Two further possible, albeit empty, graves were also identified. All of the graves were on differing alignments and are believed to be to be part of a larger cemetery; sixty-five fragments of disarticulated human bone, representing further disturbed burials were recovered from contemporary and later features across the site, while contemporary burials have been found during earlier work at the School of Pythagoras itself (Graham-Campbell 1968) as well as the adjacent Merton Hall (Meckseper *et al*. 2011) and Cripps Building (Boys Smith 1964).

Feature	Skeleton	Orientation*	Age & sex	Pathology	Stature	Grave Goods
F.113	[1067]	N-S	Middle adult ?female (late 20s/early30s)	Calculus	-	-
F.115	[1072]	NNW-SEE	Middle adult female (30-44yrs)	Caries, abscess, calculus, periodontal disease, Schmorl's nodes in thoracic vertebrae	159.952cm ±3.55	Hobnails, shale bracelet (l. wrist), Fe finger ring
F.118	[1006]	S-N	Mature adult male (45yrs +)	OA in spine, & l. wrist, degenerative disease in all limb joints, periodontal disease & calculus	162.798cm ±3.27	-
F.119 = **F.264**	[1048], [2164]	SW-NE	Mature adult male (45yrs+)	Caries, calculus, abscesses, periodontal disease	167.32cm ±3.27	-
F.254	[2141]	N-S	Mature female (45yrs +)	AMTL, calculus, periodontal disease	160.16cm± 3.66	Hobnails?
F.255	[2147]	S-N	Adult	Degenerative disease in l. elbow	-	-

Table 19: Osteological and contextual data of skeletons from graves (* = position of the head recorded first, AMTL = ante mortem tooth loss, OA = osteoarthritis).

Preservation of the material

Three of the skeletons (**F.115**, **F.118** and **F.254**) were almost complete, **F.113** is truncated by ditch **F.110** through the centre of her body, the lower half of **F.119** had been truncated by a foundation wall and a pit, **F.109** and **F.255** was represented only by an arm (disarticulated elements that were recovered from both ditch **F.110** and pit **F.109** derived from the skeletons they had truncated). The surviving bones from the skeletons are in excellent condition with some post-mortem breaks and concretions of modern mortar. The disarticulated elements are more fragmentary, with long bones often missing articular surfaces.

Feature	Feature type	Phase	Element	Comments
F.104	Structural (foundation)	IV	L. prox. femur	
F.109	Pit	II	R. forearm, pelvis, femur, tibia, l. forearm & tibia	Cuts burial F.119 (all elements appear to derive from this skeleton)
F.110 = F.230	Ditch	I	?r. 5th metacarpal, r. pelvis (F), radius, fibula mid shaft, l. distal radius & u/s tibia & femur shaft, 1st metatarsal & carpal	Cuts burial F.113 (all elements appear to derive from this skeleton)
F.117	Pit	III	L. distal tibia	
F.125	Layer	III	U/s femur mid shaft	
F.126	Layer	I	U/s tibia mid shaft , 2x hand prox. phalanges	
F.127	Metalled trackway	I	U/s tibia mid shaft	
F.203	Hearth	III	U/s tibia mid shaft	
F.225	Pit	III	L. distal tibia & fibula shaft	
F.234	Structural (foundation)	II	R. prox. & mid shaft of femur, humerus & ulna shaft & scapula	
F.242	Pit	I	Scraps of pelvis	
F.335	Metalled surface	III	R. distal humerus & thoracic spinous process	
F.337	Metalled surface	III	R. distal/mid tibia shaft, prox/mid humerus, prox. ulna, scapula	
F.348	Pit	I	L. ribs x 2	
F.354	Ditch	I	Subadult l. humerus & r. prox femur. Adult r prox femur (x2), skull fragments inc. mandible, upper & lower limb shafts, cuboids (x2), extremities & rib	A *min*. of 3 individuals represented; a sub-adult, a mature adult ?male and an adult ?female
F.414	Gully	I	Mandible	
[3092]	Spoil – Area 3	N/A	L. femur shaft	
[4045]	Spoil – Trench 3	N/A	L. distal tibia, frontal	
[4047]	Spoil – Trench 7	N/A	R. distal femur	

Table 20: Disarticulated human bone from all areas and phases.

Methodology

Osteological analysis was undertaken using the standard methodologies (Brickley & McKinley 2004). The age of each skeleton was assessed where possible by the stage of epiphyseal fusion (specifically the clavicle, which is the last bone in the body to fuse), changes to the pelvis and the

degree of dental wear. The immature disarticulated bone could be aged with more precision using long bone length (Schaefer *et al.* 2009). An estimate of sex was made by assessing sexually dimorphic traits on the skull and pelvis. Where possible, an estimate of stature was calculated using long bone lengths and a regression equation (Trotter & Gleser 1958).

Results

A summary of the results is presented in Table 19. All of the articulated skeletons were adults, with those that could be aged more precisely being over 30years of age. One could not be sexed (**F.255**), two were male (**F.118** and **F.119**) and the remaining three were female or ?female. Disarticulated bone was recovered from sixteen features across the site including ditches, pits and metalled surfaces. Bone was also recovered from three separate spoil heaps resulting from groundworks. The elements identified and the associated contextual data is presented in Table 20. In some instances, where for example a pit or a ditch truncated one of the known burials, it was possible to directly link the disarticulated bone (*e.g.* the bone from ditch **F.110** was derived from burial **F.113**). Based purely on the number of duplicated elements, the bones represent a *minimum* of four individuals. Ten contexts from ditch **F.354** contained human bone elements from a *minimum* of 3 individuals; an adult ?male, an adult ?female and a subadult aged *c*. 9-12years.

Degenerative changes, both in the limb joints and the spine, and dental pathologies were recorded in each of the skeletons. Unsurprisingly these were most severe amongst the more mature individuals.

Potential for future work

No further work needs to be undertaken on this assemblage as detailed osteological recording has been completed for each skeleton. The prevalence rates of dental diseases could be calculated, a task more worthwhile/productive if the sample was increased to include material found in earlier excavations.

Faunal Remains (Vida Rajkovača)

The archaeological investigations at the School of Pythagoras resulted in the recovery of a small faunal assemblage with a raw fragment count of 1087 and a total weight of 19909g. The majority of contexts were possible to date. These generated a combined total of 749 assessable specimens, whilst the material from the unstratified contexts remains unstudied. The largest amount of animal bone by far came from the Post-Medieval phase, followed by the Roman period. Perhaps somewhat surprising was the remarkably low numbers of medieval bone, bearing in mind the building's medieval date. On the other hand, considering the origin of the excavated bone, and some alterations to the existing building during later periods, it is probably expected to see the animal bone waste had been cleared away.

Methods: Identification, quantification and ageing

The zooarchaeological investigation followed the system implemented by Bournemouth University with all identifiable elements recorded (NISP: Number of Identifiable Specimens) and diagnostic zoning (amended from Dobney & Reilly 1988) used to calculate MNE (Minimum Number of Elements) from which MNI (Minimum Number of Individuals) was derived. Identification of the assemblage was undertaken with the aid of Schmid (1972), and reference material from the Cambridge Archaeological Unit. Most, but not all, caprine bones are difficult to identify to species; however, it was possible to identify a selective set of elements as sheep or goat from the assemblage, using the criteria of Boessneck (1969) and Halstead (Halstead *et al.* 2002). Ageing of the assemblage employed both mandibular tooth wear (Grant 1982; Payne 1973) and fusion of proximal and distal epiphyses (Silver 1969). Where possible, the measurements have been taken (Von den Driesch 1976). Sexing was only undertaken for pig canines, based on the basis of their size, shape and root morphology (Schmid 1972, 80). Withers height calculations follow the conversion factors published by Von den Driesch and Boessneck (1974). Taphonomic criteria including indications of butchery, pathology, gnawing activity and surface modifications as a result of weathering were also recorded when evident.

Preservation, fragmentation and taphonomy

The overall preservation ranged from moderate to quite good, with only two specimens showing some signs of surface erosion and weathering. The numbers corresponding to each of the preservation categories are given in Table 21. Categories such as good, or poor were not recorded.

Preservation	*Phase I*		*Phase II*		*Phase III*		*Phase IV*	
	Contexts	**Fragments**	**Contexts**	**Fragments**	**Contexts**	**Fragments**	**Contexts**	**Fragments**
Quite good	8	50	1	3	25	354	.	.
Moderate	28	124	3	31	22	166	1	19
Quite poor	1	1	1	1	.	.	.	.
Total	**37**	**175**	**5**	**35**	**47**	**520**	**1**	**19**

Table 21: Preservation categories: number of contexts and fragments by phase.

As indicated by the numbers given in Table 21, only a negligible percentage of material showed any signs of surface erosion. Only two specimens were recorded as burnt, both from post-medieval contexts. Gnawing was recorded throughout; implying bone waste was within reach of scavengers for some time before being deposited. Perhaps the most interesting aspect of taphonomy was the butchery. The recorded percentages were overall high, and especially high in the Post-Medieval period (Table 22). A closer look at the marks and the patterns proves there are marked differences in butchery actions between different periods. Contrary to the expected crude chops and frequent use of cleavers, the Romano-British butchery was restricted to fine knife marks indicative of meat removal, and shallow chop marks probably consistent with preparation for disarticulation. Only one specimen was axially split for marrow removal. The post-medieval butchery showed a more varied range of actions, including skinning and splitting. Marks consistent with disarticulation were particularly common, accounting for *c.* 50% of all butchered bone from the phase. Meat removal was also common (23.7%) and so were the ribs cut to pot sizes (12.4%). Meat removal and vertical splitting for marrow removal were also recorded. The use of heavy blades and saws increased in the later periods.

Taphonomy	*Phase I*		*Phase II*		*Phase III*		*Phase IV*	
	Fragments	***% of sub-set***	**Fragments**	***% of sub-set***	**Fragments**	***% of sub-set***	**Fragments**	***% of sub-set***
Eroded	4	*2.3*	.	.	13	*2.5*	.	.
Burnt	.	.	.	.	2	*0.4*	.	.
Butchered	13	*7.4*	3	*8.6*	97	*18.7*	2	*10.5*
Gnawed	19	*10.9*	1	*2.9*	35	*6.7*	2	*10.5*

Table 22: Taphonomy: fragment count by phase.

Representation of species by phase

Sheep/goat were the dominant species in all phases, accounting for between *c.* 40% and *c.* 70% of the identified species count, with both sheep and goats being positively identified (Table 23). The full range of domesticates is represented, including pig as the third main 'food species', horse, dog and cat. The general over-reliance on domestic sources of food is not surprising and is typical for all periods represented here. A single, tentative roe deer ulna fragment indicated that game was only occasionally eaten. The amount of bird bone is remarkably low and the overall lack of remains of poultry is unusual.

Taxon	*Phase I*			*Phase II*			*Phase III*			*Phase IV*			Total NISP
	NISP	%NISP	MNI	NISP	%NISP	MNI	NISP	%NISP	MNI	NISP	%NISP	MNI	
Cow	18	*24.3*	1	2	*15.4*	1	63	*26.1*	3	2	*28.6*	1	85
Sheep/ goat	39	*52.7*	4	9	*69.2*	1	112	*46.5*	13	3	*42.8*	1	163
Sheep	3	*4*	1	.	.	.	20	*8.3*	4	.	.	.	23
Goat	1	*1.4*	1	.	.	.	2	*0.8*	1	.	.	.	3
Pig	3	*4*	1	1	*7.7*	1	26	*10.8*	1	1	*14.3*	1	31
Horse	6	*8*	1	.	.		11	*4.6*	1	.	.		17
Dog	1	*1.4*	1	.	.	.	4	*1.7*	1	.	.	.	5
Cat	.	.	.	1	*7.7*	1	.	.	.	.	.	.	1
?Roe deer	.	.	.	.	.	.	1	*0.4*	1	.	.	.	1
Mouse	1	*1.4*	1	.	.	.	.	.	.	.	.	.	1
Galliformes	.	.	.	.	.	.	2	*0.8*	1	.	.	.	2
Chicken	1	*1.4*	1	.	.	.	.	.	.	.	.	.	1
?Raven	1	*1.4*	1	.	.	.	.	.	.	.	.	.	1
Frog/ toad	.	.	.	.	.	.	.	.	.	1	*14.3*	1	1
Sub-total to species/ order	**74**	*100*	**.**	**13**	*100*	**.**	**241**	*100*	**.**	**7**	*100*	**.**	**335**
Cattle-sized	38	.	.	15	.	.	159	.	.	4	.	.	216
Sheep-sized	63	.	.	6	.	.	114	.	.	6	.	.	189
Rodent-sized	.	.	.	.	.	.	1	.	.		.	.	1
Mammal n.f.i.	.	.	.	.	.	.	1	.	.		.	.	1
Bird n.f.i.	.	.	.	1	.	.	4	.	.	2	.	.	7
Total	**175**	**.**	**.**	**35**	**.**	**.**	**520**	**.**	**.**	**19**	**.**	**.**	**749**

Table 23: Number of Identified Specimens (NISP) and the Minimum Number of Individuals (MNI) for all species from all features – breakdown by phase; the abbreviation n.f.i. denotes that the specimen could not be further identified

Phase I – Romano-British

There were no large bone deposits within this phase. The total of 175 specimens were recovered from 37 contexts; excavated from a series of pits and a few ditches. As indicated by the mandibular tooth eruption and wear, animals of all age ranges were present on site. The sheep/goat cohort accounted for more than half of the identified species count. In view of the generally accepted notion of cattle-dominance in the period (King 1991; King 1999) this ratio is somewhat atypical, yet not entirely rare in the area. For instance, early Roman deposits excavated as part of the Castle Hill investigations contained a similarly proportioned sheep/goat component (Evans & Ten Harkel 2010). This could be taken to suggest the Roman town was not fully 'Romanised', and, in fact, sites in the town's hinterland town – such as Vicar's Farm (Lucas & Whittaker 2001) and North West Cambridge (Evans & Cessford *in prep.*) – appear to have been very little distinguished from those within it. From the perspective of faunal remains, this is reflected in higher percentages of cattle remains, coupled with high percentages for pig and wild fauna, as well as in the type of butchery practices.

Phase II – Medieval

The almost negligible amount of animal bone came from a pit and wall foundation deposits: **F.109**, **F.215** and **F.252**; the majority is likely to represent redeposited Phase I material. The ratio of species is broadly similar to those from the preceding and the succeeding phases (Table 23).

Phase III – Post-medieval

The Post-medieval bone amounted to 520 specimens, a figure which corresponds to *c.* 70% of the assemblage. Of 29 features or deposits, four were particularly rich in animal bone (**F.322**, **F.330**, **F.332** and **F.335**). These four generated the combined total of 223 specimens (*c.* 43% of the sub-set and *c.* 30% of the entire assemblage). The ovicaprid cohort dominated again, accounting for more than half of the identified species count (55.6%), followed by cattle and pigs. The most common butchery action recorded in the sub-set was splitting of carcasses into left and right portions, down the sagital plane, indicated by split vertebrae. The majority of the marks were recorded 'off-centre' implying blades were not sharp or heavy enough to chop through the dense vertebra centrum. The skeletal element count for cattle and pigs showed all body parts are represented in the assemblage. This also stands for ovicapra, with the exception of an unusually high numbers for metapodials. The over-representation of these body parts may be taken to suggest joints of high meat value were exported from site. Biometrical data obtained from some 15 specimens showed the ovicapra ranged in shoulder height from 52cm to over 70cm.

Phase IV

Contexts dated to the 19th century or later generated a small amount of animal bone, identified as sheep/goat, cow and pig. The two unidentified bird specimens were limb bone shaft fragments.

Discussion

With its dominant sheep cohort and no signs of crude Romano-British butchery practices, the small assemblage broadly mirrors patterns observed locally (*e.g.* Rajkovača 2010). Despite there being no signs of a prehistoric presence within the investigated area, the Roman assemblage had many characteristics of Iron Age animal use, again showing that if we want to investigate Romano-British economy strategies, we have to look outside the boundaries of the Roman town. Moving onto the later phases, faunal remains which could be securely linked to the Medieval period are not as abundant as those from the preceding or the succeeding phases. The prevalence of sheep, the low pig count and the absence of wild species could be interpreted as indications of a rural character, although we must bear in mind the small numbers recorded within this sub-set. It was not possible to note many changes in the range of exploited species between the periods. With the exception of a possible roe deer, the post-medieval assemblage showed no evidence for the use of wild faunal resources. Animals must have been an important economic asset, being used for food and secondary products (hide, wool, traction etc.) and undoubtedly live animals and excess products were part of the local trade and exchange network. The overall prevalence of sheep is probably associated with the increasing importance of wool.

It will not be necessary to target the assemblage for any further zooarchaeological analyses. Further consideration of some of the results, however, and their comparison with known patterns of animal use will undoubtedly add to our understanding of nature of urban occupation, especially during the medieval and post-medieval periods.

Bulk Environmental Remains (Val Fryer)

Excavations at the School of Pythagoras recorded features of Roman to Post-medieval date. Samples for the retrieval of the plant macrofossil assemblages were principally taken from pit, ditch and hearth contexts, although three (samples <101>, <105> and <106>) were from deposits closely associated with Roman skeletons **F.115** and **F.118**. A total of seventeen samples were submitted for assessment. The samples were bulk floated by the CAU and the flots were collected in a 300 micron mesh sieve. The

dried flots were scanned under a binocular microscope at magnifications up to x16 and the plant macrofossils and other remains noted are listed in Tables 24-26. Nomenclature within the table follows Stace (1997) for the plant macrofossils and Kerney and Cameron (1979) and Macan (1977) for the molluscan remains. Most plant macrofossils were charred, but de-watered remains were noted within the assemblages from Roman ditch **F.354** (samples <306>, <307> and <308>) and post-medieval pit **F.333** (sample <300>). Modern roots, seeds and arthropod remains were also recorded.

Results

Cereal grains/chaff and seeds of common weeds, wetland plants and tree/shrub species were present at varying densities in all but four samples. Preservation of the charred macrofossils was moderately good, although some grains were puffed and distorted (probably as a result of combustion at high temperatures), and other macrofossils were abraded and fragmentary. The de-watered macrofossils were generally well-preserved, although some crushing and distortion had occurred, probably as a result of the compaction of the deposits from which the samples were taken.

Oat (*Avena* sp.), barley (*Hordeum* sp.) and wheat (*Triticum* sp.) grains were recorded, with wheat occurring most frequently. A single possible rye (*Secale cereale*) grain was noted within the assemblage from sample 201 (post-medieval hearth **F.236**). Of the wheat grains, both elongated 'drop' forms typical of spelt (*T. spelta*) and more rounded, hexaploid type forms of probable bread wheat (*T. aestivum/compactum*) or rivet wheat (*T.turgidum*) type were recorded along with spelt glume bases and bread wheat and rivet wheat rachis nodes. Other food plant remains included possible pea (*Pisum sativum*) and bean (*Vicia faba* type) seeds, although none retained intact testae or hila.

Weed seeds were generally scarce, although more were noted within the de-watered assemblages and the samples from the Post-medieval hearths (samples 200 and 201). Of the charred specimens, most were of common segetal weeds including corn cockle (*Agrostemma githago*), cornflower (*Centaurea* sp.), small legumes (Fabaceae), corn gromwell (*Lithospermum arvense*), medick/clover/trefoil (*Medicago/Trifolium/Lotus* sp.), grasses (Poaceae) and dock (*Rumex* sp.). Within the de-watered assemblages, ruderal weeds were more common, with taxa noted including cabbage type (Brassicaceae), thistle (*Cirsium* sp.), henbane (*Hyoscyamusniger*), black nightshade (*Solanum nigrum*), chickweed (*Stellaria media*) and stinging nettles (*Urtica dioica*). Wetland plant macrofossils occurred relatively infrequently, but did include sedge (*Carex* sp.), saw-sedge (*Cladium mariscus*) and spike-rush (*Eleocharis* sp.) nutlets and seeds of celery-leaved crowfoot (*Ranunculussceleratus*). Tree/shrub macrofossils included fragments of charred hazel (*Corylus avellana*) nutshell and a de-watered damson (*Prunus domestica*) type fruit stone. De-watered elderberry (*Sambucus nigra*) 'pips' were abundant within the assemblages from Roman ditch **F.354**. Charcoal/charred wood fragments were present throughout, although rarely at a high density. Other plant macrofossils occurred infrequently, but did include indeterminate culm nodes and inflorescence fragments. De-watered root/stem fragments were common within ditch **F.354**.

Of the fragments of black porous and tarry material, those within the assemblages of Roman date were most likely to be residues of the high temperature combustion of organic remains at very high temperatures. However, those within post-medieval hearth **F.236** and hearth rake-out layer **F.209** appeared to be different, being both very hard and very brittle. It was considered most likely that these were by-products of the combustion of coal, small fragments of which were particularly abundant within sample <200>. Other remains were generally scarce, but did include small fragments of bone (some of which were burnt/calcined), pellets of burnt or fired clay, fish bones and globules of vitreous material.

Although specific sieving for molluscan remains was not undertaken, shells were recovered from all but one of the Roman assemblages and from Post-medieval pit **F.333** (sample <300>). Although some were very well preserved, possibly indicating that they were intrusive within the feature fills, others were abraded and fragmentary, probably suggesting that they were contemporary with the features from which the samples were taken. All four of Evans' (1972) ecological groups of terrestrial taxa were represented, with open country species occurring most frequently. A small

number of shells of marsh/freshwater species were also noted, possibly indicating that some features were occasionally wet or water filled.

Discussion

With the exception of ditch **F.354** and pits **F.265** (<204>), **F.343** (<301>) and **F.340** (<303>), the assemblages of Roman date are sparse, containing little other than occasional cereals or seeds. It would appear most likely that the majority of these remains are derived from very small quantities of scattered detritus, which accidentally became incorporated within a range of open features, including the Roman graves. The same is essentially true for ditch **F.354**, but in this instance, the waterlogged ditch fills have preserved the seeds of plants which were growing within or adjacent to the ditch. These appear to indicate that the immediate environs comprised rough, poorly maintained grassland, although the presence of a small number of seeds of ruderal species may suggest that some nearby land was disturbed or under cultivation. The ditch itself may have been intermittently overgrown by colonising shrubs. Although it would appear that the ditch was occasionally damp, there is nothing to indicate that it ever acted as drainage for the surrounding landscape.

The three above-mentioned Roman pit assemblages contain slightly higher densities of charred material than other contemporary features, but even here, the overall quantity of macrofossils is low. This is possibly of note, as other evidence from the site (*i.e.* the painted wall plaster) appears to indicate that a structure of some status may have been located within the near vicinity. There is certainly nothing within the plant macrofossil record to suggest that this was the case, although it would appear that the refuse from high status buildings was often disposed well away from the structures themselves in order to both maintain their integrity and to minimise the risk of accidental fires.

The two hearth deposits of post-medieval date (<200> and <201>) both contain high densities of cereal grains (principally wheat and barley) along with large pulses (<201>) and occasional weed seeds. Although the remains may be derived from foodstuffs which were accidentally charred during culinary preparation, it is possibly worth noting that while barley (and occasionally oats) was often used whole within soups or stews, wheat was nearly always milled prior to consumption. The predominance of wheat may, therefore, suggest that these remains are derived from either an attempt at grain drying (which possibly went disastrously wrong) or from storage waste, which may have been used as tinder or kindling.

Although charred remains are very scarce within the assemblage from post-medieval pit **F.333**, de-watered plant macrofossils are recorded. As with the Roman assemblage from ditch **F.354**, these appear to indicate that the pit was situated within an area of grassland, although in this instance, meadow plants are slightly more common, possibly suggesting a modicum of habitat management. Ruderal weeds are again present, suggesting that some nearby land was under cultivation, but it is, perhaps, of especial note that a number henbane seeds are also recorded. As henbane is most commonly found growing in very nitrogen rich conditions, this may indicate that pit **F.333** either functioned as a cess pit or was used for the disposal of human sewage or animal ordure.

Conclusions and recommendations for further work

In summary, the assemblages of Roman date are small (<0.1 litres in volume) and generally very limited in composition. There is little to suggest that the excavated features were in close proximity to any focus of either domestic or agricultural/pastoral activity, with the de-watered assemblage from ditch **F.354** indicating that the local environment comprised rough and poorly maintained grassland. Whilst the post-medieval hearth assemblages are definitely anthropogenic in origin, the material from pit **F.333** suggests that the local environment had undergone few changes since the Roman period, although it would appear that the grassland was better managed and less overgrown. Although the assemblages from samples <200> and <201> both contain a sufficient density of material for quantification (*i.e.* 100+ specimens), analysis of this material would probably add very little to the data already contained within this report. As none of the other assemblages are quantifiably viable, no further work is recommended at this stage.

Sample No.	**101**	**105**	**106**
Context No.	**1006**	**1071**	**1071**
Feature No.	**118**	**115**	**115**
Cereals and other food plants			
Triticum sp. (grains)	x		
Other plant macrofossils			
Charcoal <2mm	x	x	x
Charcoal >2mm	x	x	
Other remains			
Black porous 'cokey' material	x	x	x
Black tarry material			x
Small coal frags.	x	x	x
Woodland/shade loving species			
Oxychilus sp.	x		
Open country species			
Helicidae indet.	x		
Vallonia sp.	x		
Catholic species			
Trichia hispida group	x		x
Sample volume (litres)	**1**	**1**	**1**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**	**100%**

Table 24: Bulk environmental remains recovered from Phase I burial deposits (key: x = 1-10 specimens).

(*Tables 25 and 26 follow*)

Sample No.	**102**	**103**	**104**	**306**	**307**	**308**	**202**	**203**	**204**	**301**	**303**
Context No.	**1042**	**1053/5**	**1074**	**3146**	**3152**	**3151**	**2137**	**2155**	**2167**	**3101**	**3093/5**
Feature No.	**107**	**110**	**116**	**354**	**354**	**354**	**253**	**260**	**265**	**343**	**340**
Feature type	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Pit**	**Pit**	**Pit**	**Pit**	**Pit**
Cereals and other food plants											
Avena sp. (grains)											
Hordeum sp. (grains)				xcf					xcf		x
Triticum sp. (grains)	x					x	x		xx	x	
(glume bases)									x	xx	x
(spikelet bases)	x								x	x	
(rachis internodes)										x	
T. spelta L. (glume bases)						x	x			x	x
T. aestivum/compactum type (rachis nodes)						x					
Cereal indet. (grains)	x		x			x			xx	x	xfg
Herbs											
Anthemis cotula L.					xw						
Arctium sp.					xcfw						
Asteraceae indet.									x		
Atriplex sp.					xw						
Brassicaceae indet.					xw						x
Bromus sp.										x	
Carduus sp.					xw						
Chenopodiaceae indet.					xw						
Cirsium sp.					xxxw						
Fabaceae indet.										x	x
Fumaria officinalis L.						xw					
Lamium sp.						xw					
Leontodon sp.					xw						
Lithospermum arvense L.											x
Onobrychis viciifolia Scop.					xcfw						
Persicaria maculosa/lapathifolia					xw						
Small Poaceae indet.							x		x		x
Large Poaceae indet.	x									x	
Polygonum aviculare L.					xw						
Rumex sp.					xw				x	x	x
Solanum nigrum L.					xw						

Sample No.	**102**	**103**	**104**	**306**	**307**	**308**	**202**	**203**	**204**	**301**	**303**
Context No.	**1042**	**1053/5**	**1074**	**3146**	**3152**	**3151**	**2137**	**2155**	**2167**	**3101**	**3093/5**
Feature No.	**107**	**110**	**116**	**354**	**354**	**354**	**253**	**260**	**265**	**343**	**340**
Feature type	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Pit**	**Pit**	**Pit**	**Pit**	**Pit**
Sonchus asper (L.)Hill					xw						
S. oleraceus L.					xw						
Stellaria media (L.)Vill					xw						
Thalictrum flavum L.											xcf
Urtica dioica L.					xxw						
Wetland plants											
Carex sp.					xw						
Cladium mariscus (L.)Pohl	x					xcf					
Ranunculus sceleratus L.					xw						
Tree/shrub macrofossils											
Corylus avellana L.									x		x
Prunus domestica type					xw						
Sambucus nigra L.				xxxw	xxw	xxw					
Other plant macrofossils											
Charcoal <2mm	xxx	x	xx	x	x	xx	xx	xx	xx	xx	xxxx
Charcoal >2mm	xx	x	x		x	x	x	x	x	x	xx
Charcoal >5mm	xx					x	x	x	x	x	xx
Charcoal >10mm				x			x		x		x
Indet.seeds	x				xw	x					x
Waterlogged root/stem					xxx	xx					
Other remains											
Black porous 'cokey' material	xxx	x	x			x	x	x	x	xx	x
Black tarry material	xx	xx					x			x	
Bone					x			x	x	x xb	x
Burnt/fired clay							x	x		xx	x
Ferrous globules	x	x									x
Fish bone										x	x
Small coal frags.	xxx	xx	xx	x		x	xx	xx		xx	x
Small mammal/amphibian bones	x							x		x	
Vitreous material	x	x									x
Waterlogged arthropod remains					x	x					
Woodland/shade loving species											
Carychium sp.										x	x
Oxychilus sp.	x	x			xcf	x	x		x		x

Sample No.	**102**	**103**	**104**	**306**	**307**	**308**	**202**	**203**	**204**	**301**	**303**
Context No.	**1042**	**1053/5**	**1074**	**3146**	**3152**	**3151**	**2137**	**2155**	**2167**	**3101**	**3093/5**
Feature No.	**107**	**110**	**116**	**354**	**354**	**354**	**253**	**260**	**265**	**343**	**340**
Feature type	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Ditch**	**Pit**	**Pit**	**Pit**	**Pit**	**Pit**
Zonitidae indet.							x				
Open country species											
Helicella itala	x	x			x	x	x		x		x
Helicidae indet.											
Pupilla muscorum	x	x				x	x		x		x
Vallonia sp.	x	x		x		x				x	xx
V. costata	x	x				x	x			x	x
V. excentrica		xcf							x	xcf	
Vertigo pygmaea	x	x							x		x
Catholic species											
Cepaea sp.	x										
Cochlicopa sp.	x	x	x				x		x	x	x
Nesovitrea hammonis										x	
Trichia hispida group	xxx	xx	x	x	x	x	xx	x	x	x	xxx
Marsh/freshwater species											
Anisus leucostoma									x		
Gyraulus albus											x
Lymnaea sp.										x	
Planorbis planorbis										x	
Succinea sp.											x
Valvata cristata		x									
Vertigo angustior							x				
Sample volume (litres)	**12**	**10**	**4**	**8**	**8**	**10**	**15**	**12**	**10**	**9**	**15**
Volume of flot (litres)	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**	**<0.1**
% flot sorted	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**	**100%**

Table 25: Bulk environmental remains recovered from Phase I features (key: x = 1-10 specimens, xx = 11-50 specimens, xxx = 51- 100 specimens, xxxx = 100+ specimens, cf = compare, fg = fragment, w = de-watered, tf = testa fragment, b = burnt, Skel = skeleton, HR = hearth rake out).

Sample No.	**200**	**201**	**300**
Context No.	**2017**	**2101**	**3120**
Feature No.	**209**	**236**	**333**
Feature type	**HR**	**Hearth**	**Pit**
Cereals and other food plants			
Avena sp. (grains)	xcf	x	
Hordeum sp. (grains)	xx	xx	x
(rachis node)	x		
Hordeum/Secale cereale type (rachis nodes)	x		
Secale cereale L. (grain)		xcf	
Triticum sp. (grains)	xxx	xxx	x
(rachis internodes)	x	x	
T. aestivum/compactum type (rachis nodes)	xx	x	
T. turgidum type (rachis nodes)	x		
Cereal indet. (grains)	xxx	xxxx	x
(detached embryos)	x		
Pisum sativum L.		xcf	
Vicia faba L.		xcf	
Large Fabaceae indet.		xxx	
Herbs			
Agrostemma githago L.		x	xtfw
Anthemis cotula L.		x	
Atriplex sp.		x	xw
Brassicaceae indet.			xw
Carduus sp.			xw
Centaurea sp.	x	x	
Cirsium sp.			xw
Euphrasia/Odontites sp.			xw
Fabaceae indet.	x	xx	
Hyoscyamus niger L.			xxw
Lithospermum arvense L.	x	x	
Malva sp.	x		
Medicago/Trifolium/Lotus sp.	x	xx	
Mentha sp.			xw
Papaver argemone L.			xw
Small Poaceae indet.	x	x	
Large Poaceae indet.	x	x	
Polygonum aviculare L.		x	
Potentilla sp.			xw
Ranunculus acris/repens/bulbosus		x	xw
R. parviflorus L.			xw
Raphanus raphanistrum L. (siliqua frags.)		x	xw
Rumex sp.	x	x	
Silene sp.			xw
Sinapis sp.	xtf		
Solanum nigrum L.			xw
Stellaria media (L.)Vill			xw
Thalictrum flavum L.			xw
Urtica dioica L.			xxw
U. urens L.			xw
Wetland plants			
Carex sp.		x	xw
Cladium mariscus (L.)Pohl	x	xx	
Eleocharis sp.			xw
Ranunculus sceleratus L.			xw
Tree/shrub macrofossils			
Sambucus nigra L.			xw
Other plant macrofossils			

Sample No.	200	201	300
Context No.	**2017**	**2101**	**3120**
Feature No.	**209**	**236**	**333**
Feature type	**HR**	**Hearth**	**Pit**
Charcoal <2mm	xxxx	xxxx	x
Charcoal >2mm	xxxx	xx	x
Charcoal >5mm	xxx	xx	
Charcoal >10mm	xx	x	
Charred root/stem	x		x
Indet.culm nodes	x		
Indet.inflorescence frags.		x	
Indet.seeds	x	x	xw
Waterlogged root/stem			x
Other remains			
Black porous 'cokey' material	xxxx	xxxx	x
Black tarry material	xxxx	x	x
Bone	x	xb	
Burnt/fired clay	x		
Eggshell	x		
Fish bone	x		
Marine mollusc shell	x		
Mineral concretions		xxx	
Small coal frags.	xxxx	x	xx
Small mammal/amphibian bones	x		
Vitreous material	xx	x	
Waterlogged arthropod remains			x
Open country species			
Vallonia sp.			x
V. costata			x
Sample volume (litres)	**10**	**3**	**10**
Volume of flot (litres)	**0.2**	**0.1**	**<0.1**
% flot sorted	**50%**	**100%**	**100%**

Table 26: Bulk environmental remains recovered from Phase III deposits (key: x = 1-10 specimens, xx = 11-50 specimens, xxx = 51- 100 specimens, xxxx = 100+ specimens, cf = compare, fg = fragment, w = de-watered, tf = testa fragment, b = burnt, Skel = skeleton, HR = hearth rake out).

Pollen Analyses (Steve Boreham)

This report presents the results of assessment pollen analyses of six sub-samples of sediment taken from a borehole through a palaeo-channel sequence and from a deep ditch-fill feature (**F.354**) at the St John's College School of Pythagoras, Cambridge. For the palaeo-channel sequence, two sub-samples of silty clay (1.05-1.2m and 2.0-2.2m depth) were taken for pollen analysis from a borehole located 18.5m along a linear transect. For feature **F.354** two 50cm monolith samples <304> & <305> were taken through the ditch-fill sequence. The basal pollen sub-sample was taken from a grey silty clay unit (**[3152]**) at 5cm above the base of monolith <304>. A second pollen sub-sample was taken from darker silty organic material at 26cm at the top of **[3152]**. Above this, a further pollen sub-sample was taken from a grey silty clay unit (**[3150]**) at 37cm. The upper pollen sub-sample was taken from a further unit of grey silty clay (**[3148]**) at 15cm above the base of monolith <305>. Due to the overlap of the two monolith tins this sub-sample would be approximately 55cm above the base of monolith <304>. The six sub-samples were prepared using the standard hydrofluoric acid technique, and counted for pollen using a high-power stereo

microscope at x400 magnification. The percentage pollen data from these six samples is presented in Table 27.

	Boreholes		F.354			
Location/Feature	**18.5m**	**18.5m**	**304**	**304**	**304**	**305**
Context	**-**	**-**	**3152**	**3152**	**3150**	**3148**
Sample	**1.05-1.2m**	**2.0-2.2m**	**5cm**	**26cm**	**37cm**	**15cm**
Trees & Shrubs						
Pinus			0.0		0.0	1.8
Corylus			1.9		1.6	1.8
Herbs						
Poaceae			26.9		29.0	29.1
Cereals			3.8		1.6	1.8
Cyperaceae			1.9		8.1	3.6
Asteraceae (Asteroidea/Cardueae) undif.			3.8		4.8	7.3
Asteraceae (Lactuceae) undif.			5.8		11.3	9.1
Centaurea nigra type			0.0		1.6	0.0
Caryophyllaceae			0.0		0.0	1.8
Chenopodiaceae			3.8		4.8	1.8
Brassicaceae			11.5		8.1	9.1
Fabaceae			0.0		3.2	1.8
Filipendula			5.8		1.6	1.8
Helianthemum			1.9		0.0	3.6
Plantago lanceolata	*barren*	*barren*	3.8	*barren*	0.0	3.6
Ranunculus type			3.8		1.6	1.8
Rosaceae undiff.			0.0		1.6	0.0
Rumex			1.9		0.0	0.0
Urtica			5.8		1.6	1.8
Apiaceae			1.9		0.0	1.8
Lower plants						
Pteropsida (monolete) undif.			9.6		14.5	10.9
Pteropsida (trilete) undif.			5.8		4.8	5.5
Aquatics						
Sparganium type			0.0		3.2	0.0
Sum trees			0.0		0.0	1.8
Sum shrubs			1.9		1.6	1.8
Sum herbs			82.7		79.0	80.0
Sum spores			15.4		19.4	16.4
Main Sum	**-**	**-**	**52**	**-**	**62**	**55**
Concentration (grains/ml)	**<1052**	**<1052**	**28783**	**<1052**	**20377**	**36152**

Table 27: Percentages of pollen identified.

Unfortunately, both pollen sub-samples from the borehole (1.05-1.2m and 2.0-2.2m depth) and the sub-sample from **F.354** <304> 26cm proved to be barren. The remaining three pollen sub-samples from the ditch-fill sequence had pollen concentrations that ranged between 20,377 and 36,152 grains per ml. Pollen preservation was quite poor in these samples, and assessment pollen counts from

single slides for these samples barely achieved pollen sums in excess of 50 grains. Since no samples exceeded the statistically desirable total of 300 pollen grains main sum, caution must be employed during the interpretation of these results.

F.354 *<304> 5cm [3152]*

The basal pollen sample was dominated by grass (Poaceae) pollen (26.9%), and had a limited range of herbs including members of the cabbage family (Brassicaceae) (11.5%), members of the thistle and lettuce families (Asteraceae) (together 9.6%), meadowsweet (*Filipendula*) (5.8% and the eutrophication indicator nettle (*Urtica*) (5.8%). Cereal pollen and the disturbed ground indicator ribwort plantain (*Plantago lanceolata*) were both present at 3.8%. Arboreal taxa were represented only by hazel (*Corylus*) (1.9%). Undifferentiated fern spores together accounted for 15.4%.

F.354 *<304> 37cm [3150]*

This pollen sub-sample was dominated by grass (Poaceae) pollen (29.0%), and again had a limited range of herbs including members of the thistle and lettuce families (Asteraceae) (together 16.1%), sedges (Cyperaceae) (8.1%) and members of the cabbage family (Brassicaceae) (11.5%). Cereal pollen was present at 1.6%. Arboreal taxa were again represented only by hazel (*Corylus*) (1.6%). Undifferentiated fern spores together accounted for 19.3%, and obligate aquatics were represented by bur-reed (*Sparganium*) (3.2%).

F.354 *<305> 15cm [3148]*

The upper pollen sample was dominated by grass (Poaceae) pollen (29.1%), and also had a limited range of herbs including members of the thistle and lettuce families (Asteraceae) (together 16.4%) and members of the cabbage family (Brassicaceae) (9.1%). Cereal pollen (1.8%) and the disturbed ground indicator ribwort plantain (*Plantago lanceolata*) (3.6%) were both present in this sample. Arboreal taxa were represented by pine (*Pinus*) and hazel (*Corylus*) (both 1.8%). Undifferentiated fern spores together accounted for 16.4%.

Discussion and Conclusions

The failure to extract pollen from the palaeo-channel samples is probably due to microbial breakdown of the material, which in turn is almost certainly the result of fluctuating water tables at the site. The barren nature of the organic sample from **F.354** <304> 26cm is surprising, but suggests post-depositional oxidation of material *in situ* during a period of sub-aerial exposure as the ditch infilled. The poor preservation of the pollen in the remaining samples coupled with the relatively high proportions of heavily armoured and resistant Astercaeae pollen and Pteropsid spores hint that pollen assemblages observed have been modified by similar processes. In general terms, all three pollen sub-samples from **F.354** present similar pollen spectra with evidence for an ostensibly tree-less environment with just a little hazel scrub (or hedgerow), extensive meadows with tall-herb, ruderal weeds and riparian (bank-side) communities and arable cultivation with disturbance and eutrophication indicators. Obligate aquatic vegetation appears to be absent from the local area, apart from a little bur-reed (*Sparganium*) detected in sub-sample <304> 37cm. It is hard to pick out a clear story or progression throughout the ditch-fill sequence with regards to vegetation change. Whilst there are minor differences between the samples, given the low assessment main sum and the evidence for post-depositional modification of the pollen signal, their significance is difficult to judge. For example, the riparian indicator meadowsweet (*Filipendula*) appears to be more abundant in the basal sample <304> 5cm than further up the sequence, and the disturbance indicator ribwort plantain (*Plantago lanceolata*) appears to be absent in the middle sample from <304> 37cm.

Taken together, these pollen sub-samples present evidence for pastoral and arable activity, but scant information about environment and vegetation within the ditch (**F.354**) itself. Usually, flowing or standing water engenders aquatic vegetation that produces a clear local signal, and although a riparian (bank-side) community is evident, one possible conclusion is that this ditch-cut was almost always dry, and therefore perhaps more of a boundary marker than a conduit for drainage. It is also possible that the aquatic pollen signal has been degraded by post-depositional oxidation processes. Unfortunately, there are few hints from the pollen about the age of the ditch-fill sequence, except to say that it could comfortably fit into the Roman or Medieval landscape. Finally, it is interesting that there was no clear evidence for exotic types or a preponderance of particular herbs that might be associated with garden cultivation perhaps expected to be in this area in more recent times.

- DISCUSSION -

As the above results attest, the two most significant periods in the sequence of activity at the site comprise the Roman and the medieval. Accordingly, it is these periods that form the principal focus of the following discussion.

Roman Activity

A relatively long and complex Roman sequence was identified, which can be subdivided into three broad phases. Uniting these strands, and directly or indirectly influencing much of the activity that occurred during this period, was the site's riverine, waterfront locale. Such a pattern is by no means unusual, as waterfront contexts – and in particular riverine islands – have been identified as particular *foci* during both prehistoric and historic times (see Brown 2003). Although a detailed understanding of the immediate area's environmental history lies well outside the scope of the present study, some information pertaining to the wider ecosystem of the period has been recovered during previous waterfront investigations in Cambridge. Perhaps the most useful data was derived from an investigation conducted in close proximity to the Cam at 24 Thompson's Lane (Newman 2008a; Figure 3, no. 4). Here, radiocarbon determinations have revealed that the well-preserved alluvial sequence stretches back into the Late Neolithic period. Of particular relevance to the present excavation was the fifth layer in the stratigraphic sequence. Although this first began to accumulate during the Iron Age, its later stages contained a small quantity of Roman pottery. Moreover, whilst still alluvial in character the deposit nevertheless appears to have formed in relatively dry conditions. Samples from this material contained no surviving pollen, for example, thereby suggesting that after deposition the sediments dried out and soil formation began, causing oxidation and the breakdown of the constituent palynomorphs. Similarly, there were no waterlogged plant remains, although a bulk environmental sample was rich in charcoal and contained two cereal grains, one spelt wheat glume base (*Triticum spelta*), two grass stem nodes (wild or cultivated) and two wild grass seeds (indet. Poaceae). The mollusc assemblage was also indicative of a drier environment.

Further evidence of this wider pattern of environmental change during the Roman period was identified during an excavation conducted within the Chapel Court and Master's Garden of St. John's College (Dickens 1996). Although several phases of work were conducted here between 1990 and 1993, of greatest relevance to the present project were two trenches, referred to as Areas 1 and 2, that were both excavated during the summer of 1992 (Figure 3, no. 16). In Area 1 the earliest surviving deposit comprised a dark grey sandy clay alluvial layer that was truncated by at least ten intercutting quarry pits, which ranged from 0.90m to 3.75m in diameter. In contrast, the earliest soil horizon in Area 2 was a sandy clay loam that contained evidence of "expos[ure] after deforestation and ploughing/human activities" (*ibid.*, 8). This was later sealed beneath a deliberately introduced deposit of dark grey fine to medium sandy silt with frequent poorly sorted gravel inclusions, which was in turn cut by eleven stakeholes with no discernable pattern that were between 0.08m to 0.10m in diameter. It thus appears likely that at least some of the material extracted from the quarry pits in Area 1 was used to create the gravel surface in Area 2, and the pottery recovered in both areas indicates that this activity probably occurred during the 4th century AD. The purpose behind the creation of these features is somewhat unclear, however; it may be that they were associated to waterfront activity of some

kind (*ibid.*, 9-10), although this remains unproven. Towards the very end of Roman period both areas became sealed beneath a deposit of dark greenish brown humic silty clay, subsequent to which a raised east-west orientated gravel pathway was created (*ibid.*, 10). It thus appears that the surrounding area had reverted back to its former wetland state, but that access continued to be maintained across the site; however, the pathway soon became sealed beneath further alluvial deposits as inundation continued throughout the Saxon period.

Although a small number of additional investigations have been conducted in waterfront locations in and around Cambridge – most notably at Riverside, Thompson's Lane (Firman & Pullinger 1987), Trinity Hall Library (Alexander 1997) and Clare College Master's Garden (Clarke 2002) – none has yet penetrated to a sufficient depth to encounter the underlying Roman sequence. Therefore, a more detailed investigation is clearly required in order to map the network of relict palaeochannels that characterised, and to some extent no doubt defined, the topography of the Roman town. This would provide invaluable information regarding both the landscape of the settlement itself and the nature of its surrounding environs.

At the School of Pythagoras site, the earliest phase of Roman activity – which occurred during the mid 1st to early-mid 2nd century – represents something of an 'off-stage' presence. Although a moderately-sized ceramic assemblage of this date was recovered, for example, it consisted solely of small and abraded sherds that were primarily derived from residual contexts. Similarly, two Colchester Derivative brooches of early to mid 1st century date also occurred residually within later features (Figure 29A). But much the most significant component of the Early to Mid Roman assemblage comprised the numerous fragments of disarticulated human bone that were recovered. Stratigraphically predating the articulated inhumations that were interred during the Late Roman period, these remains appear to have been deposited within a wide range of secondary contexts alongside the other aforementioned material-types (Figure 30). Their origin, however, is much less clear cut. Inhumation comprised an unusual, although not entirely unrecorded, burial rite during the Early Roman period. Moreover, the quantity of disarticulated material that was encountered – which equated to a minimum of four individuals – would only have been generated within a large cemetery in which burials frequently intercut. Such a proposition, at this early date, is extremely unlikely. A second possibility, therefore, is that these remains were initially associated with a shrine or similar ritual centre; indeed, in this context the site's riverine context could well be significant. Overall, therefore, the presence of such material at the site is both unusual and intriguing. Further analysis is clearly required, supplemented by an associated programme of radiocarbon dating.

Although it appears that a small number of quarry pits were excavated at the site during the mid 1st to early-mid 2nd century, between the early-mid 2nd and the mid-late 3rd century a much more intensive array of features was created. This group included a metalled trackway, which was aligned perpendicular to the open watercourse, along with a much larger number of pits and ditches (Figure 7). Unfortunately, however, the limited scale of the present excavation – in conjunction with its location, at a distance of 20m or more from the waterfront itself – precludes certainty with regard to the nature of the activities that were being undertaken at the site at this time. One possibility is that much of the recovered material was deliberately introduced in order to facilitate the reclamation of the riverside area. Such a theory was previously

advanced in relation to the remains encountered beneath the nearby Cripps Building in the 1960s, for example (Boys Smith 1964). Yet, although some degree of reclamation work is indeed likely to have taken place, the vast majority of the present finds assemblage was recovered from stratified features as opposed to layers of made-ground or later, residual contexts. Similarly, the nature of some of its constituent material – such as small fragments of hammerscale, along with delicate pieces of painted wall plaster – indicates that it was most probably generated in relatively close proximity to the site as opposed to being imported from some distance away. This strongly suggests that occupation occurred concurrently in the near vicinity. Moreover, the composition of the assemblage is also indicative of the types of activity that have previously been encountered in suburban contexts at other Roman towns. In Lincoln, for example, "evidence is gradually accumulating for an urban fringe, where stone and gravel quarrying, pottery manufacture and perhaps ironworking were carried out" (Jones 1999, 109). A similar pattern also appears to have predominated at the small town of *Durobrivae*, near Peterborough (Fincham 2004, 28-32).

The School of Pythagoras discoveries are by no means unique in the context of Roman Cambridge. A number of investigations conducted within the immediate environs of the town have previously identified very similar sequences. In the first instance, during a watching brief undertaken a short distance to the north at the corner of Northampton Street and Pound Hill, the 4th century ditched boundary of the town was identified (Cessford 2008, 5; Figure 3, no. 13). This same feature had previously been recorded on a similar alignment by A. H. A. Hogg in 1949 (RCHM(E) 1959 I, 8; Figure 3, no. 14). Earlier investigations conducted in similar locations within the immediate hinterland of the Roman settlement have also encountered evidence of relatively intensive occupational activity. This includes a large earthen mound, a flagstoned path and numerous rubbish pits that were identified in the grounds of Magdalene College to the east (Walker 1911; Figure 3, no. 21), as well as a large quantity of surface finds that were recovered from the area of Lady Margaret Road to the north (Macalister 1895; Figure 3, no. 11). Additional finds of Roman pottery were also made on Magdalene Street (Browne 1973, Map 2 no. 51; Figure 3, no. 23) and Madingley Road during the late 19th century (Browne 1973, Map 1 40; Figure 3, no. 12). More recently, evaluation trenching conducted within the grounds of Westminster College, to the northeast of the present site, identified evidence of relatively intensive Early Roman activity (Collins 2013; Figure 3, no. 10). Finally, significant Roman remains, including structures, were also identified during excavations undertaken at the Cambridge & County Folk Museum (Cessford 2003; Figure 3, no. 15) and Chesterton Lane Corner sites (Cessford with Dickens 2005; Figure 3, no. 22), as well as further to the north at New Hall, now Murray Edwards College (see Evans 1996; Evans & Ten Harkel 2010; Webb & Newman 2011).

The relatively close parallels between many of these sites can be demonstrated via a comparison of the density of the ceramic assemblages that were recovered from them (Table 28). It is important to note that not all excavated assemblages from Roman Cambridge can be included in such a comparison, however, due to both quantitative and qualitative differences in the available data. Much the most notable absence is the material from John Alexander's Castle Hill excavations, which to date comprise the most substantial investigations of the small Roman town; although a summary account of this work has been published (Alexander & Pullinger 2000), few detailed statistics can be extracted.

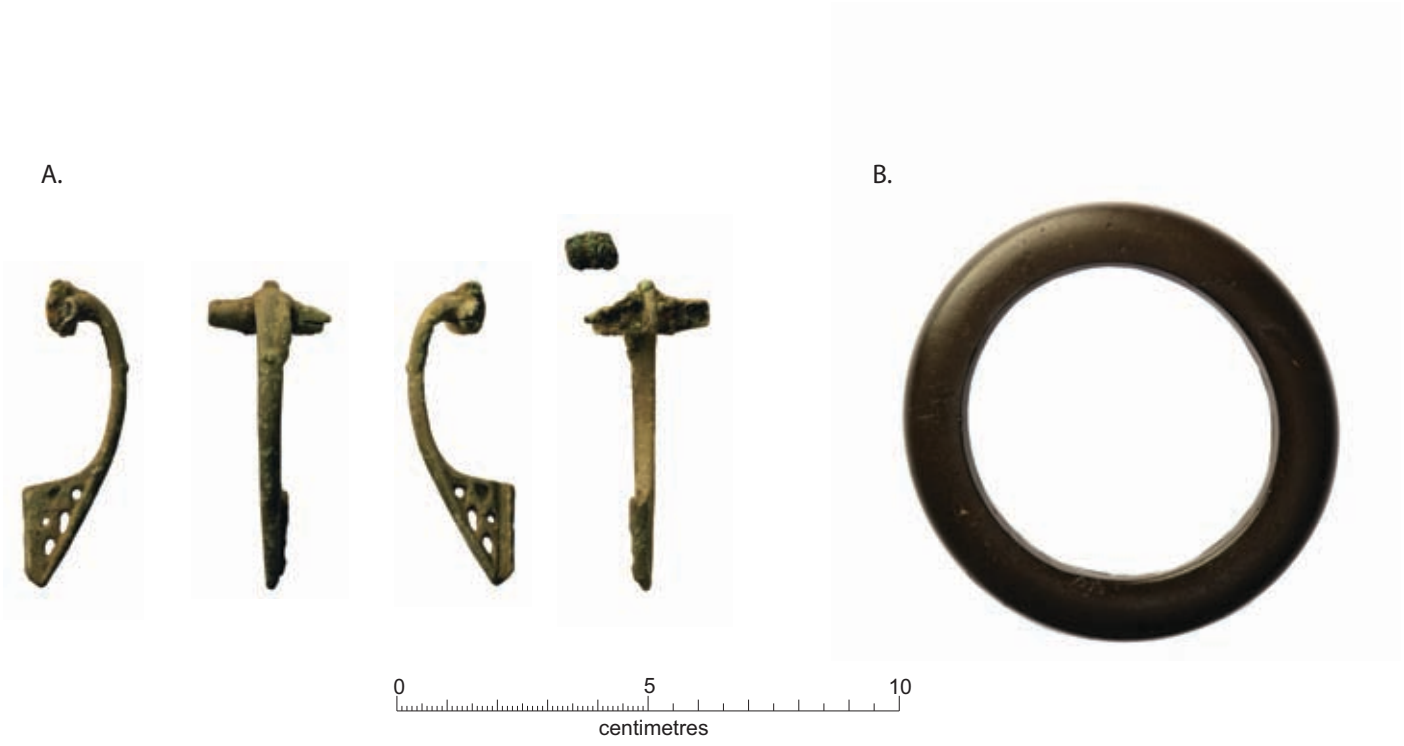


Figure 29. Elements of the Roman finds assemblage; A) 1st century Colchester-derivative brooch, B) Shale bracelet and C) painted wall plaster .

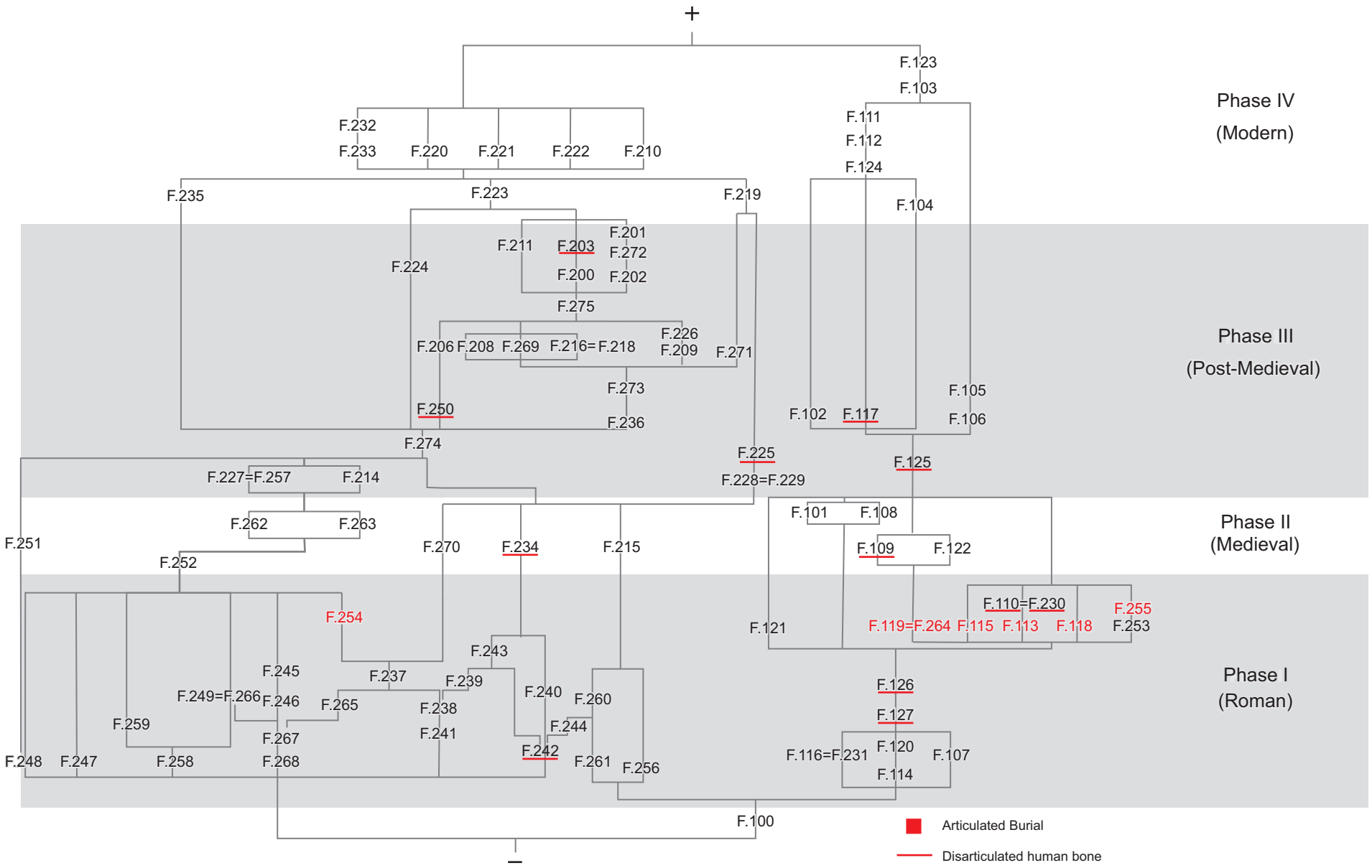


Figure 30. Harris matrix of Areas 1 and 2, showing distribution of articulated and disarticulated human remains.

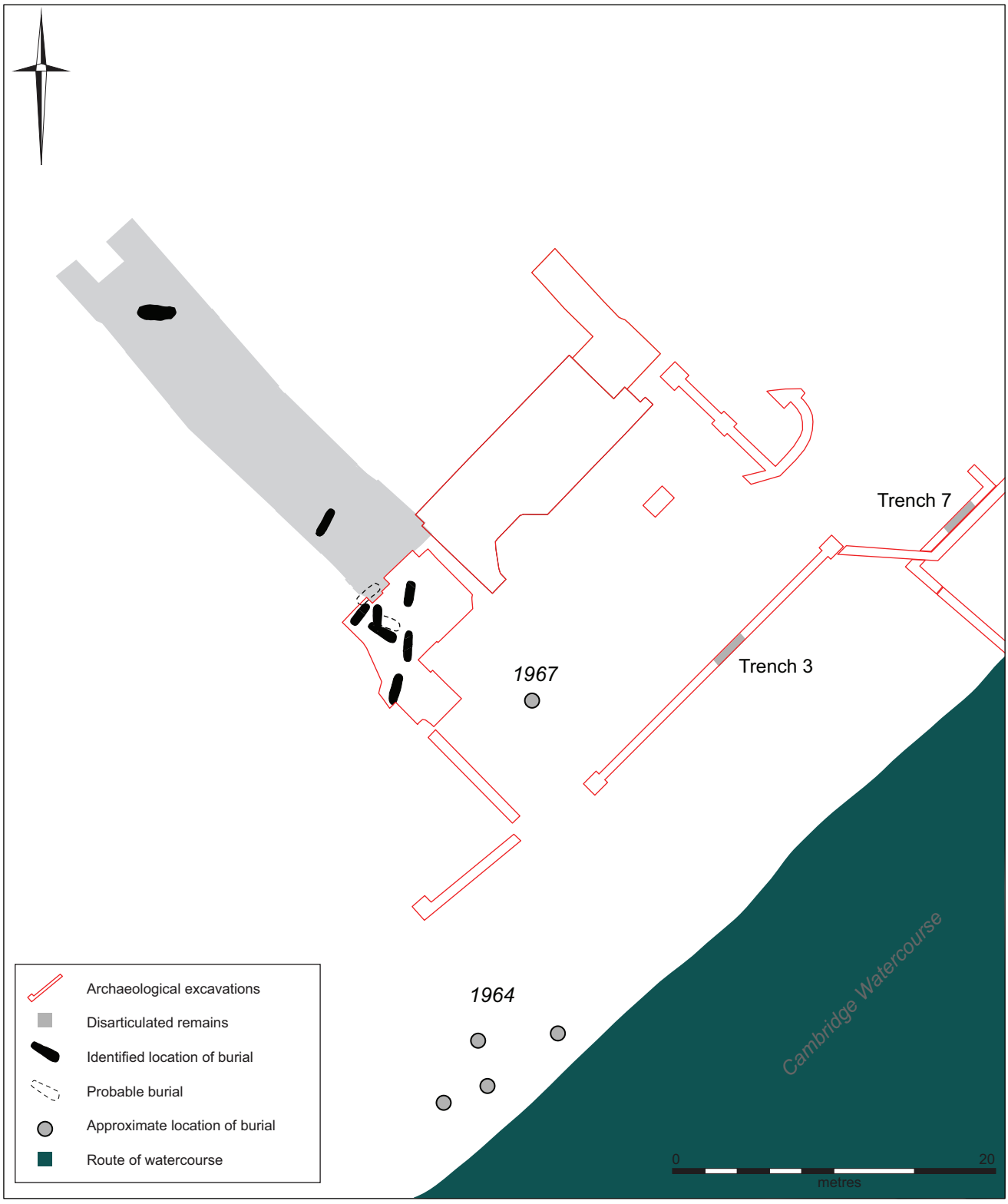


Figure 31. Locations of articulated burials and potentially contemporary disarticulated remains in relation to the palaeochannel.

Landscape context	Site	Count	Area (sqm)	Density per sqm
Suburban	Chesterton Lane Corner	1028	7	146.9
	Folk Museum	659	8	82.4
	Corfield Court (SA1, SA2 & TP1-7)	510	33.5	15.2
'Urban'	Cow & Calf*	3125	330	9.5
Suburban	School of Pythagoras (Areas 1, 2 & 3)	1187	135	8.8
	4-5 Castle Street	136	17.5	7.8
'Urban'	68 Castle Street	675	155	4.3
Suburban	Westminster College	108	40	2.7
	Old Divinity School	625	272	2.3
Rural	North West Cambridge (RB1 & RB2 only)	20907	60900	0.3
	Vicar's Farm	12886	60000	0.2
	Trinity Hall Playing Fields	214	1980	0.1

Table 28: Density of ceramic assemblages from Roman Cambridge (* = principally residual).

Upon inspecting Table 28, it is immediately apparent that a very wide disparity is present between the densities of material that were recovered. Yet these apparently sharp distinctions are in part an illusion, created via differences in methodology and preservation between the various excavations that impacted upon both the quantity and quality of the evidence recovered. These differences primarily result from the locations in which the investigations took place. Rural excavations, for example, are typically undertaken on a much larger scale than is possible in either urban or suburban locales, primarily as a result of their 'open' nature, whilst any residual material that may present in overlying layers is often removed prior to recording; both of these approaches serve to reduce the apparent density of the recovered assemblage. By way of contrast, non-rural sites are frequently situated in areas of intensive modern development and are therefore likely to be subject to extensive truncation caused by the introduction of cellars and other related features. In addition, urban and suburban excavations are also commonly restricted to a limited number of small, targeted trenches due to the presence of numerous standing buildings; different 'spatial zones' may thus be encountered at different sites, meaning that very different activities or depositional practices may be represented. Finally, the intensive excavation methodology required to reach the base of a deep stratigraphic sequence, which often involves 100% excavation of the majority of deposits, results in a much higher recovery rate than the sample-based methodologies that are typically employed in rural contexts.

Alongside these general, methodological distinctions are a number of localised modulating factors. The two Cambridge sites which produced the densest ceramic assemblages, for example – Chesterton Lane Corner and the Folk Museum – are both situated at the base of the pronounced slope on Castle Hill. Consequently, localised processes of solifluction and colluviation may well have exacerbated the quantity of secondary or residual material that was deposited in these locations, while

simultaneously limiting the impact of later truncation. Temporal factors may also be significant. Thus, whilst the period of occupation at Westminster College appears to have been relatively brief, that at Corfield Court was of moderate duration and the settlement at Vicar's Farm spanned almost the entire Roman period. Accordingly, a concomitant variation in the quantity of refuse material deposited at each of these sites might be anticipated. Moreover, the pattern of ceramic types in common use is also likely to have altered over time, further obfuscating any underlying trend. Nevertheless, despite the foregoing caveats, a general Cambridge-wide pattern can provisionally be identified. This consists of a higher density of material remains within urban or proto-urban areas – situated to both the north and south of the Cam – where a degree of stratigraphic accumulation occurred, as opposed to the much more dispersed pattern which predominated in rural locales. Yet, significantly, this broad two-fold distinction does not appear to have been replicated within the composition of the various assemblages. In general, both the relative proportions of coarsewares versus finewares and the percentage of foreign imports show no significant variation between the two contexts. This implies that depositional rather than use-related factors may have comprised the primary determinants of material density.

By the mid-late 3rd century the usage of the site appears to have changed once again. The preceding phase of occupational and/or industrial activity ceased and the area became instead the venue for a series of interments. Including the six burials that were encountered during the present investigation, thirteen articulated inhumations have so far been recorded in the immediate vicinity of the School of Pythagoras. All of these individuals lay within an area measuring a minimum of 80m by 60m in extent (Figure 31). Moreover, radiocarbon determinations derived from remains uncovered during the recent investigations at Merton Hall – which produced a Late Roman date (Meckseper *et al*. 2011, 13-14) – closely accord with the stratigraphic position of the most recent discoveries. It therefore appears likely that these burials, along with a proportion of the disarticulated human bone that was also recovered from the site, comprised part of a relatively extensive cemetery situated just outside the walls of the Late Roman town (Figure 3).

Significantly, the presence of these graves has not been recognised in previous discussions of Roman burials in the Cambridge area (*e.g.* Liversidge 1977). Instead, attention has predominately focused upon antiquarian discoveries situated somewhat further to the north, although – by virtue of the limited scale of their investigation – these are primarily both poorly dated and lacking a precise provenance. The closest of these interments include isolated burials situated in the area of Lady Margaret Road and St Edmund's House (see Liversidge 1977, 11-16; Browne 1974, Map 1, 17 & 23); in both instances, the graves were situated in relatively close proximity to known Roman roads (Figure 3, no.'s 5 & 6). By way of contrast, in 1986 an unusual burial of the late 4th or early 5th century found within the area of the walled Roman town itself (Figure 3, no. 7). Here, a young man was found lying almost prone, with his "right arm round a large shell-tempered jar... [A] large sherd of similar type [was] placed over the end of the long bones. When this was removed, it was found that there were no foot or ankle bones. The grave showed no evidence of being truncated and there was no room for feet in the grave" (Alexander & Pullinger 2000, 74). More recently, to the northeast of the School of Pythagoras, a Late Roman decapitated burial was identified during excavations undertaken at Chesterton Lane Corner (Cessford *et al.* 2007). This site, which was later used as a Middle Saxon execution cemetery, was

again situated in close proximity to a known Roman road (Figure 3, no. 23). But much the most comparable burials to those identified at the School of Pythagoras lay somewhat further to the east, on the opposite side of the river.

Here, in the area around Jesus Lane, two sites have been excavated that contained broadly contemporary Late Roman burials. The first of these excavations was undertaken within the basements of properties at 35-37 Jesus Lane. At this site, the earliest features to be identified consisted of a series of ditches associated with a field system or paddock network of 2nd to 3rd century date (Alexander *et al.* 2004, 67-8). During the late 3rd or early 4th century, however, these features went out of use and were succeeded by at least 32 inhumations – comprising seventeen males, nine females and two juveniles – a number of which were inserted into the ditches' upper fills (*ibid.*, 68-81). A very similar pattern was also encountered some 170m to the northwest during excavations undertaken within the basement of No. 11 Park Street (Figure 3, no. 17). Here, again, a ditch of near identical form and orientation – which also contained domestic waste of a similar 2nd/3rd century date – was succeeded by a number of burials. In this instance, the graves of two adults (one buried with a neonate), plus the disarticulated remains of a sub-adult and five further neonates, were recovered (*ibid.*, 91). These are also likely to have been of 4th century date, and it is possible that they comprised part of the same large cemetery as the Jesus Lane interments; though the two sites may equally well represent elements of two separate and much smaller burial grounds. When these results are taken in association with the School of Pythagoras evidence, it appears probable that a minimum of two (potentially quite large) cemeteries – each situated in a peripheral area, away from a major road – were present in Cambridge during the Late Roman period. One appears to have been associated with the principal, walled portion of the settlement, the other with the transpontine suburb.

Once the final, sepulchral phase of Roman activity at the site had been concluded, it is possible that the area was put to agricultural usage. Evidence for such a transition took the form of ditch **F.110**, which truncated burial **F.113**, along with potential plough damage that was noted in relation to the skull of burial **F.119**. Although no material culture of Saxon date was recovered during the excavation, the aforementioned events both post-dated the active life of the cemetery and pre-dated the construction of the School of Pythagoras. Alternatively, however, it is possible that **F.110** was created in response to a change in environmental conditions. Should the area have become wetter in post-Roman times, for example, additional drainage works may have been required. Nevertheless, in either eventuality, it is probable that only a limited degree of post-Roman activity took place in the vicinity prior to the construction of the School of Pythagoras itself.

The School of Pythagoras

Dominating the later portion of the sequence at the site, this imposing building represents a very rare example of its type. Across England, only a small number of comparable domestic structures of Saxo-Norman date are known to remain extant (RCHM(E) 1959 II, 378). Moreover, the School of Pythagoras comprises not only one of the largest, but also one of the best-preserved, examples within this group (Grenville 1997, 74; Quiney 2003, 163). The building is therefore of national importance. Consequently, the following discussion will address the issues

surrounding its origin, function and history in light of the newly acquired data. It is important to note, however, that a programme of standing building recording was conducted concurrently with the below-ground archaeological investigation. Primarily involving an in-depth photographic survey, detailed recording was also undertaken upon the constituent timbers of the north wing's roof. Because the building recording was conducted as a separate project, distinct from the excavation itself, this information has not been included here in full; where pertinent, requisite details will be discussed in summary form. Furthermore, as the structure was surveyed by the Royal Commission (RCHM(E) 1959 II, 377-9) and has also been subject to two historic building reviews (Dixon n.d.; Semmelmann 2010) only an outline summary of its salient architectural features is presented.

In its primary form, constructed *c*. 1180-1200, the School of Pythagoras principally consisted of a northeast-southwest aligned two-storey masonry range containing an undercroft with a quadripartite vault (RCHM(E) 1959 II, 377; Figure 15). In addition, attached to the main portion of this building was a secondary stone-built wing. Aligned perpendicular to the remainder of the structure, this wing has widely been assumed to have comprised a later addition of *c*. 1220-50 (Gray 1932, 33; Graham-Campbell 1968, 247; Semmelmann 2010, 4-5). Such does not appear to have been the case, however. Instead, the results of the recent excavation convincingly suggest that the footings of the entire 'L'-shaped structure were laid out as a single, cohesive entity (Figure 16). Moreover, although later additions and alterations – most notably the reconstruction of the southwest end of the principal range in *c*. 1375 – have obfuscated the relationship of the abutting walls, there are no architectural features present which contradict this conclusion. Indeed, the Royal Commission surveyor stated that "the architectural evidence, so far as it is ascertainable in the present damaged state of the stonework, shows that the N.W. return is also an original feature" (RCHM(E) 1959 II, 377). Externally, all four walls of the principal range appear to have been supported by single-stage pilaster-buttresses that extended to the height of the undercroft vault. The building's northeast and southeast corners, meanwhile – and, originally, most probably its northwest and southwest corners also – were supported by two-stage angled pilaster-buttresses that extended to the eaves.

Internally, the floor of the undercroft lay at or a little below the level of the contemporary ground surface (at 7.55m OD). Its quadripartite vault, which collapsed *c*. 1800, was subdivided into six bays. The vault itself was supported by sixteen responds and five columns, all of which had plain chamfered bases, octagonal or semi-octagonal plinths (dependent upon whether they were free-standing or attached) and circular shafts surmounted by astragals, hollow-moulded capitals and octagonal or semi-octagonal abaci. Notably, very similar mouldings were also employed elsewhere in Cambridge at this date within the contemporary eastern claustral range of the Benedictine Nunnery of St. Mary and St. Rhadegund (Evans *et al.* 1997, 114-15; Newman *et al*. 2013, 77). Somewhat unusually, however, at the School of Pythagoras the undercroft was illuminated by a number of single-light windows, four of which remain extant (Figure 16). Each surviving example consists of a rectangular chamfered loop with a segmental rerearch, although that in the northeast wall appears to have been stopped-up during the 15th century (RCHM(E) 1959 II, 378). Originally, it is possible that up to nine additional windows were present, should their distribution have encompassed the remaining free bays along all four walls; in each instance, however, these locations have subsequently been subjected to significant alteration/

truncation. Also present within the undercroft's northwest wall was a plain chamfered round-arched doorway that appears to have been accessed via a rear courtyard. It is possible that this opening was also mirrored within the southeast wall, as a round-arched opening – interpreted by Gray as a blocked doorway (Gray 1932, 31) – was recorded here by Richard West in 1735. However, an alternative interpretation of this long-vanished feature will be suggested below.

On the first floor a large and imposing open space, without apparent subdivision, was created. Measuring 62¾ft by 23¼ft (19.13m by 7.08m) in extent, this room had a continuous internal moulded string course at sill-level. Moreover, within its southeast wall were situated two substantial fireplaces, each with an external corbelled chimney. Of the latter, however, only the easternmost fireplace remains extant, minus its original hood; that to the west was almost entirely destroyed during the 14th century reconstruction of the building's southwest end. Commensurate with its increased social importance, the fenestration at first-floor level appears to have been much more ornate than that of the storey below. Two original windows survive, each with two trefoiled lights; their rerearches spring from stiff-leaved capitals that are near-identical to the decontextualised example which was recovered in 1967 (see above). Also of note on this floor is a substantial round-arched doorway with hood-mould that provided the original access into the upper storey of the north wing. Yet the form of the north wing itself appears to have been somewhat unusual. Thorough investigation at ground-floor level revealed no evidence of an original doorway, either internal – permitting access from the adjacent undercroft – or external, within any of the three remaining walls. Moreover, at this level the only extant window, situated within the northeast wall, comprised a short, narrow slit. This evidence, taken in conjunction with the robusticity of the walls and the absence of a garderobe pit, implies that it may perhaps have functioned as a secure storeroom or strongroom. The only access into this space appears to have been from the floor above. Within the upper storey of the north wing itself, no original features survive; nevertheless, the presence of a 14th century locker implies a possible residential function.

Based upon the above evidence, the School of Pythagoras can confidently be included within the somewhat heterogeneous group of surviving 12th-13th century British masonry buildings. Caution must be exercised, however, as the corpus of such structures is extremely limited; any interpretation predicated upon such a small and selective sample may well be inherently skewed. Nevertheless, up until the early 1990s structures of this type were generally interpreted in a relatively uniform manner. Viewed as complete, self-contained domestic units, the first floor was believed to have functioned as an open hall whilst the undercroft beneath provided a useful storage area; the additional wing was thought to have served as a more private space that was variously termed a *solar*, *camera* or *chamber* (see especially Wood 1965). Such wings were also believed to have comprised a predominately 13th century development, hence the prevailing assumption at the present site that this element was appended some fifty years after the completion of the principal range. In 1993, however, John Blair challenged this homogeneous interpretation. Based upon a growing body of archaeological and documentary evidence, he proposed that masonry ranges at manorial sites may often have comprised only one element amongst a much larger complex of buildings (Blair 1993, 4). Excavations at Boothby Pagnell, Lincolnshire (Impey 1999, 45-7), and Faccombe Netherton, Hampshire (Fairbrother 1990), for example, have revealed that at both these sites an additional ground-floor

timber-built hall was also present, along with a separate kitchen block and a possible chapel. Other unpublished parallels are also known (Grenville 1997, 73-7). This debate plays a significant role in any discussion of the function of the extant structural remains at the present site; should they be considered independently, or as part of a larger, as yet unidentified complex?

An important constituent of such a discussion comprises the locale in which the building was constructed. This is because in rural contexts large open spaces were often readily available, thereby permitting the establishment of an extensive complex composed of a variety of detached structures. By way of contrast, in urban contexts building plots were typically constrained by the presence of closely adjacent properties, thereby limiting the potential for a series of independent ancillary structures; this factor may have resulted in the conjoining of disparate structural elements that elsewhere would have remained separate (Pearson 2005, 45). Overall, however, the relationship between urban and rural housing during the 12th and early 13th centuries seems to have been complex, and there was little apparent standardisation in either context (see Pantin 1962-63; Wood 1965; Faulkner 1966; Harris 1994; Grenville 1997; Impey 1999; Stocker 2002; Quiney 2003; Pearson 2005; Rees Jones 2008). In the present instance, due to the School of Pythagoras's situation at some remove from the heartland of the medieval town, as well as at some distance from the nearest street frontage, it has most commonly been incorporated into discussions of rural or semi-rural manor houses as opposed to urban townhouses (*e.g.* Wood 1965, 21; Grenville 1997, 74). Yet this interpretation does not take account of two important factors; the adjacent palaeochannel, which would then have comprised one of the town's principal transport routes, and the preceding dominance of the settlement on the northern as opposed to southern bank of the Cam. In fact, it is probable that in *c*. 1180-1200 the School of Pythagoras was situated in a predominately urban rather than rural milieu. Moreover, it was physically connected to an area which, since the mid 10th century, had comprised a thriving inland port.

Although today its stands isolated and alone, disassociated from the historic colleges that form the most imposing remnants of Cambridge's medieval past, this is unlikely to have originally been the case. Given the central importance of river trade to the town's former economic prosperity, the waterfront zone stretching alongside the palaeochannel probably comprised one of the most desirable pieces of real estate in 12th century Cambridge. Even at the time of its purchase by Merton College in 1270 – as part of a larger property portfolio that included six additional houses located across Buckinghamshire (Cheddington and Ibstone), Cambridgeshire (Gamlingay), County Durham (Stillington), Oxfordshire (Cuxham) and Surrey (Thorncroft) – the building was described as "an important urban property" (Martin & Highfield 1997, 17). Thus, whilst the heterogeneity of the surviving corpus of contemporary townhouses must be taken into consideration, it is nevertheless amongst this group that the closest comparators to the present building are to be found. In particular, one structure in Lincoln stands out as a possible progenitor of many of the features that have been identified at the School of Pythagoras. This building – which, due to its alteration for civic use in the mid 13th century, is known today as St. Mary's Guildhall – was most probably constructed as an urban residence for Henry II during the Christmas festivities of 1157. It ranks amongst the largest and most architecturally elaborate dwellings of its period.

St. Mary's Guildhall was situated within the Lincoln suburb of Wigford, a long narrow riverine island defined by two parallel watercourses. Yet despite being located some 500m outside the town core, it was by no means isolated. In close proximity stood a number of contemporary high-status townhouses, including that of the first mayor of Lincoln (Stocker 1991, 4). Further paralleling the School of Pythagoras, during the Roman period this area had also comprised the focus of intensive suburban occupation; indeed, the remains of two substantial 3rd century houses were discovered beneath the extant Saxo-Norman structure (*ibid*., 15). The 12th century townhouse itself was 'L'-shaped in form, with its primary façade facing directly onto the High Street. Architecturally, the building consisted of two conjoined two-storey ranges, each with a groin-vaulted undercroft. Of these, the western range was the most elaborate. Arranged symmetrically around a central gatehall with a magnificent round-arched entrance, two further chambers at ground-floor level could also be accessed independently via the street. In the northeast corner of the structure, a spiral staircase was present; a second, matching example may also originally have existed (*ibid*., 17). Significantly, the two reused fragmentary treads or winders that were recovered during the present investigation suggest that a similar feature may initially have been present at the School of Pythagoras. Given that the southwest end of the building was entirely reconstructed during the 14th century, all *in situ* trace of such a staircase could well have been lost. Moreover, were a spiral staircase to have been present, its impact upon the structural integrity of this portion of the undercroft might well have contributed to its subsequent failure. A further consequence of this evidence is that the external staircase recorded during the Late Medieval period may perhaps have comprised a later addition to the structure.

Again mirroring the School of Pythagoras, at first-storey level the west range of St. Mary's Guildhall comprised an imposing open space without apparent subdivision. Here, a series of two-light round-arched windows were present, each with an in-built seat, whilst externally at first-floor level was set a remarkable floreate string course (Stocker 1991, 20-23). Indeed, based upon the elaborate and skilfully-executed nature of its decoration, it has been stated that "there can be absolutely no doubt that the structure was intended as a first floor hall" (Grenville 1997, 178). Also consonant with such an interpretation was the provision of two grand fireplaces, which – by virtue of a double flue arrangement – were replicated in less ornate form within the two ground-floor chambers. Yet again, this pattern appears to have been broadly followed within the School of Pythagoras. Although in the latter instance only one first-floor fireplace remains extant, the remains of a second are nevertheless identifiable. Moreover, during the course of external renovation work conducted in 1967, it was noted that the corbelled-out chimney "contains a second flue which indicates that the missing bay once contained a fireplace for the undercroft" (Graham-Campbell 1968, 248). This evidence also accords with the round-arched recess recorded by West in 1735, as this closely resembles the surviving remnant – minus hood – of the first-floor fireplace above. It thus appears highly likely that a similar arrangement of four fireplaces distributed over two floors originally existed at the School of Pythagoras.

Overall, therefore, it is clear that a number of striking similarities can be observed between the School of Pythagoras and St. Mary's Guildhall. Despite having been constructed some twenty to forty years apart, it appears that several significant architectural features were common to both buildings. Prime amongst these were a

contemporary lateral wing that was connected to a large, open first-storey room, beneath which lay a well-heated and illuminated undercroft. Nevertheless, a number of important differences must also be noted. Firstly, the principal façade of St. Mary's Guildhall was oriented parallel to a street as opposed to a river channel. This implies a substantial difference in the way that the building was approached, and perhaps also in the way that it was used on a day-to-day basis. Secondly, the imposing gatehall at the Lincoln residence was not replicated at Cambridge. Indeed, although grand, the scale and elaboration of the decoration at the School of Pythagoras in no way matched that at St. Mary's Guildhall, where the design had perhaps more in common with the halls of the great castles of the period (Stocker 1991, 38).

	Principal range			Lateral wing		
Site	**Length (m)**	**Width (m)**	**Area (sqm)**	**Length (m)**	**Width (m)**	**Area (sqm)**
School of Pythagoras	19.13	7.08	135.44	5.67	2.92	16.56
St. Mary's Guildhall	19.75	6.25	123.44	15.8	7.2	113.76

Table 29: Internal dimensions of the School of Pythagoras and St. Mary's Guildhall.

Finally, whilst the size of the principal ranges in the two buildings was closely comparable, that of their lateral wings was not (Table 29). Expressed as a ratio, for example, the relationship between the principal range and lateral wing at St. Mary's Guildhall was broadly equal, at 1:0.92, whilst at the School of Pythagoras it was markedly uneven, at 1:0.12. This disparity may have resulted from a number of factors. On the one hand, differences in the social status of their respective occupants may have impacted upon the size of their retinues, thereby affecting the amount of space that was required to house them. Further compounding this issue, differences in function between a royal residence and merchant's townhouse may also have necessitated particular architectural responses (such as the incorporation of a possible strongroom into the School of Pythagoras).

At a more local level, the School of Pythagoras comprised only one of a number of masonry properties that are known to have once been present in medieval Cambridge (Cam 1959, 122). Although no other examples now remain extant, two principal geographical concentrations can nevertheless be identified via the surviving historical sources. The first of these was centred upon the Bridge Street area, within the town's *Vicus Judeorum*. Here, from *c*. 1144 until their expulsion in 1270, Jews and gentiles lived side-by-side in a prosperous mercantile quarter (see Dobson 1992). Overall, a number of contemporary masonry dwellings are known to have been present in this area (Newman 2008b, 79-86). The most substantial, which had formerly comprised the residence of the wealthiest member of the Jewish community, was converted into the town gaol in 1224 (Cooper 1842, 39-40; Ellis & Salzman 1948, 276); it subsequently became the home of a Franciscan Friary (Little 1951). Elsewhere in the town, a second concentration of stone-built structures appears to have been waterfront-related. Medieval townhouses in this locale are primarily known via their later collegiate associations, as Cambridge's Late Medieval waterfront zone subsequently became the heartland of college-related expansion (see further Willis & Clark 1886). Indeed, in several important instances private dwellings of this type were initially converted for collegiate occupation prior to the construction of separate,

purpose-built accommodation. Exemplars of this pattern include Michaelhouse (which was founded in 1324: Loewe 2010) and King's Hall (which was raised to the status of a college in 1336: Cobban 1969; Trevelyan 1972, 3). The former institution is known to have taken possession of an imposing masonry townhouse in the form of "an L-shaped building, [with] wings running north and west" (Stamp 1924, 16); to the rear, this structure possessed its own private landing stage (Willis & Clark 1886 II, 394). In addition, a later example of a waterfront mansion comprises Harleston Place, which during the latter half of the 14th century was occupied by the then mayor of the town (Cam 1959, 123).

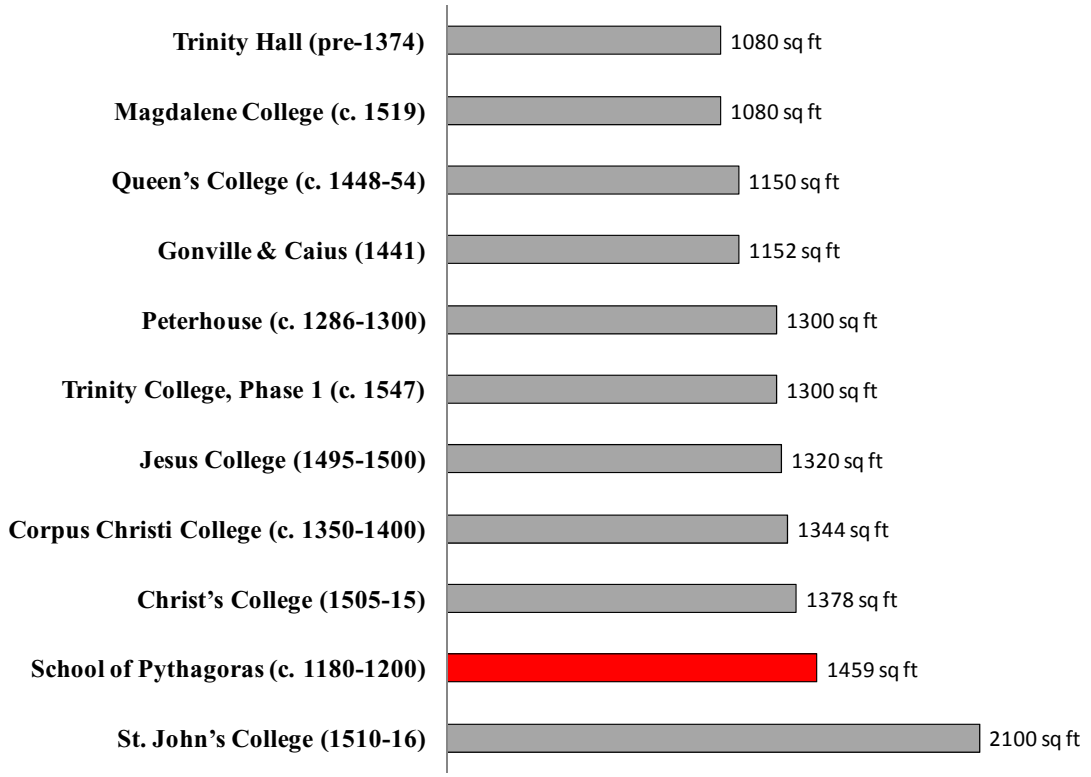


Chart 2: The area of the upper storey of the School of Pythagoras compared to the size of halls – excluding butteries and pantries – within Cambridge's medieval colleges (data from Willis & Clark 1886; RCHM(E) 1959).

Yet prestigious masonry structures were not solely restricted to these two particular contexts. In 1914, for example, a large stone-built vault was discovered in the marketplace area (Stokes 1918, 89). Initially interpreted as the fragmentary remnants of a synagogue, this vault is instead much more likely to have comprised the undercroft of a commercial and/or residential structure. More recently, the footings of a sizable masonry building have also been identified during an excavation conducted immediately to the south of the town, within the former Trumpington Gate suburb (Whittaker 2002). In common with all of the aforementioned medieval buildings, however, few details of the original form or dimensions of these structures can now be determined. Nevertheless, it is unlikely that any of these buildings – even that which was subsequently converted into the town gaol – would have been as substantial as the School of Pythagoras. The latter's exceptional scale can be demonstrated very clearly via an examination of its closest extant comparators; the halls of Cambridge's medieval colleges. As Chart 2 reveals, the upper storey of the present structure was not eclipsed in size until the early 16th century. This is particularly notable because of the increasing number of fellows present within the university as the medieval period

progressed (see further Leader 1988; Lee 2005). Thus, whilst a direct comparison is perforce unreliable given the relative institutional versus domestic character of these buildings, the data is nonetheless strongly indicative: at the time of its construction, the School of Pythagoras comprised one of the most substantial, and also one of the most prestigious, domestic buildings anywhere in the town.

- CONCLUSION -

Although relatively small in scale, this excavation has nevertheless produced three significant results. Firstly, the positive identification of a substantial palaeochannel in this location – confirming earlier, unsubstantiated suppositions – provides an important insight into the topography of Roman, Saxon and early medieval Cambridge. Secondly, the discovery of a long-lived and moderately-intensive Roman sequence, including two phases of sepulchral activity, makes a substantive contribution to the broader understanding of the contemporary small town. And thirdly, this work has provided a number of important insights into both the original design, and subsequent development of, the School of Pythagoras itself. Now reclassified as an important medieval townhouse, this building represents one of the finest examples of domestic architecture of its period anywhere in the country. Overall, therefore, these excavations have successfully illuminated several important aspects of this intriguing site. In particular, the Roman and medieval portions of its sequence warrant further research and publication (at a regional and national level respectively).

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APPENDIX 1: HISTORICAL SUMMARY

Date	Activity
c. 1180-1200	The School of Pythagoras was constructed
c. 1207	Hervey Dunning, resident of the 'Stone House', became the first recorded mayor of Cambridge
1257-64	Eustace Dunning, son of Hervey, fell increasingly into debt and mortgaged the property heavily
1264-70	Richard Dunning, son of Eustace, occupied the Stone House
1270	The property was purchased by Walter de Merton, possibly as an alternative location for his newly established college in Oxford; Richard Dunning was not successfully evicted until 1271
1279	Merton College acquired the mortgaged land appertaining to the property; they also appropriated a portion of the public waterway
1284-85	Repair work was undertaken by a master mason, a mason, a carpenter, a whitewasher and boys, for six days
1299-1300	Repair work was undertaken, costing 16s 2½d
1338-39	Repair work was undertaken by a stonecutter and three masons, for three days
1351	Repair work was undertaken on two occasions
1375	The masonry building was described as ruinous; the west wall and part of the south wall were taken down to their foundations and rebuilt with strengthening buttresses. The undercroft vault was also broken and the majority of the windows required renovation; the external staircase was (re)built. The total cost of this work was £38 13s 4d
1446	The property was acquired on behalf of Henry VI for King's College
1463	The property was returned into the ownership of Merton College; it appears to have remained a tenanted farm throughout
1486	The buildings are recorded as being 'in a poor state'
1489	The property was vacant, and repairs were again conducted at a cost of £3 13s 4d
Late15th/16th century	The northern timber-framed annexe, Merton Hall, was constructed
1502	The tenant was bound to refrain from keeping pigs in the undercroft
1503	The masonry building was described as a 'barn'
1504/06	The roof of the *aula* was recorded as being in 'poor repair'
1508	The tenant, William Cappe, 'dug under the walls of the house and tore away the stones and half removed the dovehouse'
1574	First recorded reference to the 'School of Pythagoras'
Mid 17th century	Merton hall was altered and extended
1730	An engraving by Daniel and Nathaniel Buck shows the roof of the School to be partly thatched
1753	Robert Masters described the upper floor windows of the School of Pythagoras as 'now pretty much decayed and for the most part stopt up, for the preservation of corn for which it is at present a repository'
1790	Joseph Kilner noted that the undercroft was 'applied to the keeping of cyder, and looked not very much perverted in being so'
c. 1800	The undercroft vault of the School of Pythagoras collapsed (reportedly under the weight of stored grain)
1808-11	Merton Hall was used as the 'Merton Hall Academy' by Newton Bosworth; the School of Pythagoras appears to have remained in use as a granary
1841	The buildings are recorded as being put to 'miscellaneous uses'
1872-74	Merton Hall became the temporary residence of the society that was soon to become Newnham College
1946-59	Merton Hall and the School of Pythagoras were tenanted by Lord Rothschild
1959	The buildings were purchased by St John's College
1967-68	The School of Pythagoras was refurbished for use as a theatre
2012-13	The School of Pythagoras was refurbished for use as an archive centre

APPENDIX 2: FEATURE CONCORDANCE TABLE

The following table provides detailed information on each individual feature that was investigated during both the excavation and watching brief phases at the School of Pythagoras site. A key to the categories of phasing used is also provided.

Key to Phasing	
II	Certain date, based upon material culture, stratigraphy, *etc.*
II	Probable date, based upon association, fill type, *etc*.
II	Likely date, based upon spatial pattern, location, *etc*.

Feature Number	Context Numbers	Type	Form	Length (m)	Width (m)	Depth (m)	Spotdate	Phase	Area
100	1081 = 1083 = 2140 = 2081	Layer	Rectangular	6.20+	2.00+	0.19	Roman	**I**	
101	1002-03	Posthole	Sub-rectangular	0.33	0.28	0.32+		II	
102	1007-08, 1011-13, 1024-27	Soakaway (stone-built)	Rectangular	3.15	1.72	1.07	19th century (backfill)	**III**	
103	1009, 1010, 1016-17, 1020-21, 1051-2, 1059-60	Layers and services	Rectangular	9.00+	3.40+	0.43+	18th century	**IV**	
104	1028-29, 1031-32	Structural (foundation)	Linear, NW-SE	5.06+	0.62+	0.36+	Roman (residual)	*IV*	
105	1037-39	Soakaway (brick-built)	Sub-square	0.52	0.49	0.40+	18th-19th century	**III**	
106	1040-41	Pit	Sub-oval/sub-circular	0.40+	0.15+	0.09+	16th century	III	
107	1042-43	Ditch	Linear, NE-SW	2.20+	1.20+	0.52+	2nd-3rd century	I	
108	1044-46	Structural (foundation)	Rectangular	1.00+	1.30	0.30+		II	
109	1047-49	Pit	Sub-Rectangular	1.66	1.20	0.40	Roman (residual)	II	
110 = 230	1055-58	Ditch	Linear, SW-NE	1.25+	1.00	0.51	2nd-4th century	**I**	1
111	1061-62	Pit	Sub-square/sub-rectangular	1.58+	1.20+	0.24		IV	
112	1063-64	Pit	Heavily truncated	0.47	0.24+	0.19		IV	
113	1065-67	Burial	Rectangular	1.70	0.42+	0.20+	2nd-4th century	I	
114	1068-70	Pit	Oval	2.66	1.12+	0.37		I	
115	1071-73	Burial	Sub-rectangular	2.28	0.64+	0.50+	2nd-4th century	I	
116 = 231	1074-76	Pit	Sub-oval	0.88+	0.94	0.29+	Roman	**I**	
117	1077-78	Pit	Oval	0.80+	0.66+	0.18	Roman (residual)	III	
118	1005-06, 1081	Burial	Rectangular	1.84	0.53	0.25+	Roman	I	
120	1057, 1084	Ditch	Linear, SW-NE	0.38+	1.04	0.51+		I	
121	1085-86	Burial?	Sub-rectangular	0.34+	0.32+	0.31	Roman	I	

Feature Number	Context Numbers	Type	Form	Length (m)	Width (m)	Depth (m)	Spotdate	Phase	Area
122	1087-88	Structural (foundation)	Rectangular	0.70+	0.33+	0.44+		II	
123	1053	Layer	Rectangular	9.16+	3.00+	0.1		IV	
124	1000	Layer	Rectangular	9.00+	3.40+	0.21	19th century	**IV**	
125	1001 = 1036 = 1050	Layer	Rectangular	7.92+	1.89+	0.27	16th-17th century	**III**	
126	1004 = 1033 = 1034 = 2080	Layer	Rectangular	9.00+	1.89+	0.21+	Roman	**I**	1
127	1054	Metalled trackway	Linear, NW-SE	5.90+	2.00+	0.06	2nd-3rd century	**I**	
128	1018-19	Services	Linear, N-S	4.4+	1.08	0.45		IV	
129	1014-15	Services	Linear, NNW-SSE	1.85+	0.32	0.37		IV	
130	1022-23	Services	Linear, NW-SE	3.17	1.95+	0.58		IV	
200	2010-11	Posthole	Rectangular	0.22	0.14	0.12		III	
201	2012-13	Posthole	Sub-rectangular	0.49	0.24	0.04+		III	
202	2014-15	Posthole	Circular	0.13	0.13	0.14+		III	
203	2007-08, 2016	Hearth	Rectangular	2.92+	1.10	0.12	16th century	**III**	
204	2021-22	Posthole	Circular	0.12	0.12	0.18+		III	
205	2023-24	Posthole	Circular	0.07	0.07	0.28+		III	
206	2025-26	Posthole	Circular	0.04	0.04	0.19+		III	
207	2027-28	Posthole	Circular	0.05	0.05	0.09+		III	
208	2029-30	Posthole	Circular	0.05	0.05	0.30+		III	
209	2031, 2017	Hearth	Sub-rectangular	1.52+	1.12+	0.07		III	2
210	2032-33	Services	Linear, SW-NE	1.50+	0.70+	0.23+		IV	
211	2034-36	Hearth	Rectangular	0.71	0.56+	0.22		III	
214	2039, 2041	Pit	Oval	0.82	0.63	0.18	16th century	**III**	
215	2005, 2042-44, 2070	Structural (wall)	Rectangular	3.56+	0.90	0.56+	Roman (residual)	II	
216	2048-49	Posthole	Circular	0.08	0.08	0.30+		III	
217	2050-51	Posthole	Circular	0.07	0.07	0.30+		III	
218	2052-53	Posthole	Circular	0.07	0.07	0.30+		III	
219	2000, 2055-56	Structural (wall)	Rectangular	5.54+	0.80+	0.55+	19th century	**IV**	
220	2057-60	Structural (wall)	Sub-square	5.22	5.24	0.21		IV	

Feature Number	Context Numbers	Type	Form	Length (m)	Width (m)	Depth (m)	Spotdate	Phase	Area
221	2002-4	Services	Linear, SW-NE	6.00+	0.62	0.21+		IV	
222	2061-62, 2064	Structural (demolition)	Rectangular	5.23	0.95+	2.70+	Roman (residual)	IV	
223	2001, 2063	Structural (foundation)	Rectangular	5.00+	2.97	0.44	19th century	**IV**	
224	2065-66	Hearth	Rectangular	1.08+	1.02+	0.26+		III	
225	2067-68	Pit	Rectangular	0.64+	0.74	0.19		III	
226	2072-73	Pit	Oval?	0.78+	0.49+	-		III	
227 = 257	2074-75 = 2150-2151	Pit	Rectangular	1.40+	1.21	0.32+		III	
228 = 229	2076-77 = 2078-79	Structural (foundation)	Linear, NW-SE	5.10+	0.74	0.12	16th century	**III**	
230 = 110	2082-84	Ditch	Linear, SW-NE	1.25+	1.00	0.51	2nd-4th century	**I**	
231 = 116	2085-87	Ditch	Linear, SW-NE	4.00+	0.94	0.42+	Roman	**I**	
232	2088	Structural (foundation)	Linear, NE-SW	3.88+	0.64+	0.48		IV	
233	2089-90	Structural (demolition)	Linear, NE-SW	3.88+	0.64+	0.25		IV	
234	2094-98	Structural (wall)	Linear, NW-SE	3.78	0.65+	0.36+	Roman (residual)	II	
235	2093	Hearth	Rectangular	0.74	0.42	0.36+		IV	2
236	2100-02	Hearth	Sub-circular	0.63	0.62	0.09		III	
237	2104-05	Pit	Rectangular	1.30+	0.78+	0.13+	Roman	**I**	
238	2106-07	Pit	Oval	1.80+	1.50+	0.25	1st-3rd century	**I**	
239	2108-09	Pit	Sub-circular	0.60+	0.30+	0.06+	Roman	**I**	
240	2110-11	Pit	Oval	0.94	0.70	0.18+		I	
241	2112-13	Pit	Sub-square	1.10+	0.80+	0.32+		I	
242	2114-15	Pit	Oval	0.70+	0.71	0.08+		I	
243	2116-17	Pit	Oval	0.92	0.80+	0.16+		I	
244	2118-19	Pit	Sub-circular	0.70+	0.55+	0.10+		I	
245	2120-21	Pit	Oval	1.13	0.80	0.27	Roman	**I**	
246	2122-23	Pit	Circular	0.80+	0.70+	0.22	Roman	**I**	
247	2125-26	Pit	Sub-circular	0.65+	0.15+	0.06		I	
248	2126-27	Pit	Sub-circular	0.70+	0.30+	0.11		I	

Feature Number	Context Numbers	Type	Form	Length (m)	Width (m)	Depth (m)	Spotdate	Phase	Area
249 = 266	2128-29= 2169-70	Pit	Oval	1.42	0.96	0.09	Roman	**I**	2
250	2130-31	Posthole	Circular	0.07	0.07	0.37		III	
251	2132-33	Structural (foundation)	Rectangular	0.24+	0.10+	0.14		II	
252	2045-47, 2134	Structural (foundation)	Rectangular	4.60+	2.55+	0.23	Roman (residual)	II	
253	2136-39	Burial?	Sub-rectangular	2.02	0.95	0.55	Roman	**I**	
254	2141-43	Burial	Rectangular	1.93	0.71	0.34+	2nd-4th century	**I**	
255	2146-47	Burial	Sub-rectangular	0.40+	0.30+	0.20+	Roman	**I**	
256	2148-49	Pit	Sub-rectangular	1.20	0.78	0.18+		I	
258	2152-53	Pit	Oval	1.52	0.60+	0.11+	Roman	**I**	
259	2154-55	Pit	Oval	1.32	0.88	0.17+	Roman	**I**	
260	2156-57	Pit	Sub-square	1.44+	1.42+	0.49		I	
261	2158-59	Pit	Oval	0.54+	0.40+	0.32	Roman	**I**	
262	2160-61	Posthole	Circular	0.42	0.42	0.50+	Roman (residual)	II	
263	2162-63	Posthole	Circular	0.36	0.36	0.52+		II	
264 = 119	2164-66	Burial	Sub-rectangular	0.59+	0.58	0.10+	2nd-4th century	**I**	
265	2167-68, 2173	Pit	Oval	1.52+	0.92	0.31	2nd-4th century	**I**	
267	2171-72	Pit	Circular	1.08+	0.82+	0.09+	Roman	**I**	
268	2175-76	Pit	Heavily truncated	0.23+	0.20+	0.09		I	
269	2177-78	Posthole	Circular	0.07	0.07	0.28+		III	
270	2179-2182	Structural (wall)	Linear, NW-SE	2.80+	1.08+	0.38+		II	
271	2174, 2183	Structural (foundation)	Rectangular	1.04	0.72	0.14	14th century (residual)	III	
272	2009	Structural (foundation)	Irregularly linear, NE-SW	0.67	0.21	0.05		III	
273	2019-20	Layers	Rectangular	3.06+	3.00+	0.11	16th century	**III**	
274	2040	Layer	Rectangular	2.32	1.78+	0.07		III	
275	2018	Layer	Rectangular	3.00+	1.68+	0.14	16th century	**III**	
276	2184-85	Soakaway (brick-built)	Curvilinear	1.04+	0.34+	0.07+		III	
300	3000-05, 3024,	Layers	Rectangular	6.50+	1.90+	0.20+	16th century (residual)	IV	3

Feature Number	Context Numbers	Type	Form	Length (m)	Width (m)	Depth (m)	Spotdate	Phase	Area
301	3006-08	Services	Linear, N-S	1.70+	0.3	0.45		IV	3
302	3009-11	Structural (wall)	Linear, NNW-SSE	2.00+	0.4	0.46+		IV	
303	3012-18	Layers	Sub-rectangular	4.38+	1.50+	0.68+	19th century	**IV**	
304 = 333	3019-21 = 3066-68, 3080-81, 3120-22	Pit	Sub-circular	2.80	2.20+	2.34	13th century (residual)	III	
305 = 334	3022 = 3069	Layer	Rectangular	7.60+	3.90+	0.19	17th century	**III**	
306 = 337	3023 = 3083-4	Metalled Surface	Rectangular	7.20+	3.40+	0.32		III	
307	-	Structural (wall)	Linear, NNW-SSE	2.10+	0.34	0.22+		IV	
308	-	Structural (wall)	Linear, NNW-SSE	1.70+	0.22	0.22+		IV	
309	-	Structural (wall)	Linear, WSW-ENE	1.75+	0.12	0.22+		IV	
310 = 311	-	Cobbled Surface	Heavily truncated	3.60+	1.30+	0.12		IV	
312	-	Soakaway (brick-built)	Square	0.44	0.44	0.30+		IV	
313 = 314	-	Cobbled Surface	Heavily truncated	4.10+	0.90+	0.08		IV	
315	3027, 3032, 3178	Drain	Linear, NE-SW	4.50+	0.40	0.40+	18th century	**IV**	
316	3029-31	Drain	Linear, WNW-ESE	3.00+	0.54	0.58		IV	
317	3033-34	Soakaway (brick-built)	Rectangular	1.73	1.05+	0.60+		IV	
318	3035-36	Drain	Linear, E-W	1.00+	0.42	0.22		IV	
319	3037-38	Gully	Curvilinear	2.50+	0.51	0.15	16th century (residual)	IV	
320	3039	Layer	Rectangular	2.50+	1.15	0.06	16th century	**III**	
321	3040-41	Structural (beamslot)	Linear, N-S	7.50+	0.31	0.08	16th century	**III**	
322	3025-26, 3042-44, 3076-77, 3128-31, 3134-6	Pit	Rectangular, SW-NE	4.54	3.00+	1.60+	16th-17th century	**III**	
323	3048-49	Posthole	Circular	0.23	0.23	0.03+		III	
324	3050-3051	Posthole	Circular	0.33	0.33	0.09+		III	
325	3052-53	Posthole	Circular	0.47	0.47	0.26+		III	
326	3054-55	Gully	Linear, N-S	3.60+	0.48	0.07	16th century	**III**	
327	3059-60	Pit	Linear, E-W	1.22	0.45	0.05	16th century	**III**	
328	3062-64	Pit	Oval	0.85+	1.2	0.21	15th century (residual)	III	
329	3045-46	Layer	Rectangular	7.50+	2.30+	0.12	16th century	**III**	

Feature Number	Context Numbers	Type	Form	Length (m)	Width (m)	Depth (m)	Spotdate	Phase	Area
330	3047, 3056-58	Layer	Rectangular	3.60+	2.40+	0.15	16th century	**III**	3
331	3061	Layer	Rectangular	5.50+	3.50+	0.09	16th century	**III**	
332	3065	Layer	Rectangular	6.20+	3.40+	0.05	16th century	**III**	
335	3070-71	Metalled surface	Rectangular, NE-SW	7.10+	3.40+	0.30	16th century	**III**	
336	3072-75, 3089-90, 3118-19	Pit	Sub-square	2.11	1.60+	1.85	16th century	**III**	
337	3078-79, 3082-83	Metalled surface	Heavily truncated	7.20+	3.40+	0.06	16th century	**III**	
338	3085-86	Posthole	Oval	0.65	0.34	0.33		*I*	
339	3087-88	Pit	Oval	1.30	1.00 +	0.08	Roman	**I**	
340	3093-96	Pit	Sub-rectangular	2.81	1.85	0.45	2nd-3rd century	**I**	
341	3097-98	Pit	Rectangular	0.66	0.50+	0.26	Roman	**I**	
342	3099-3100	Pit	Oval	0.83	0.72	0.35	Roman	**I**	
343	3101-03	Pit	Oval	1.60+	1.20	0.60+	Roman	**I**	
344	3104-05	Posthole	Circular	0.33	0.24+	0.32		*I*	
345	3091, 3106-7	Pit	Sub-oval	0.45	0.30+	0.20+	1st-2nd century	**I**	
346	3108-09	Pit	Sub-oval	1.30+	0.40+	0.40+		I	
347	3110-12, 3142	Structural (foundation)	Linear, NE-SW	0.80+	0.80+	0.32+	Roman (residual)	II	
348	3113-16	Pit	Oval	0.50+	0.74	0.32	Early Roman	**I**	
349	3132-33	Posthole	Circular	0.27	0.27	0.11+		I	
350	3137-38	Pit	Sub-circular	0.24+	0.51	0.14	16th-17th century	**III**	
351	3139-41	Pit	Sub-circular	0.22+	0.41	0.14		III	
352	3117	Layer	Heavily truncated	2.00+	0.95+	0.13	2nd century	**I**	
353	3144-45	Pit	Sub-oval	1.25	1.05+	0.42		*I*	
354	3146-53, 3154-55, 3159-66, 3173-77, 3180	Ditch	Linear, NW-SE	5.40+	2.35	1.16	1st-3rd century	**I**	
355	3156-58	Posthole	Oval	0.38	0.3	0.20+	Roman	**I**	
356	3167-68	Posthole	Circular	0.44	0.44	0.28		*I*	
357	3169-72	Pit	Sub-circular	1.38	1.13+	0.38	Roman	**I**	
358	3179	Layer	Rectangular	4.60+	3.40+	0.23		IV	

Feature Number	Context Numbers	Type	Form	Length (m)	Width (m)	Depth (m)	Spotdate	Phase	Area
359	-	Services	Linear, NE-SW	18.1+	0.68	1.10		IV	3
400	4004-06	Ditch	Linear, NE-SW	1.00+	0.60+	0.66+	Roman	**I**	4
401	4007-08	Ditch	Linear, NE-SW	1.10+	0.60+	0.35+		*I*	
402	4011-13	Pit	Sub-oval	2.38	0.60+	0.67	Roman	**I**	
403	4014-17	Pit	Sub-circular	1.55	0.60+	0.70+		*I*	
404	4018-20	Pit	Sub-circular	0.85+	0.60+	0.65		*I*	
405	4024-25	Structural (foundation)	Linear, N-S	1.05	0.60+	-	Roman (residual)	*II*	
406	4030, 4039	Pit	Sub-oval	0.60+	0.60+	0.34+		*I*	
407	4031, 4040	Pit	Sub-oval	0.64+	0.60+	0.26	Roman	**I**	
408	4032-3, 4041	Pit	Sub-oval	2.24+	0.60+	0.20+	1st-2nd century	**I**	
409	4035, 4042	Pit	Sub-oval	1.42	0.60+	0.14		*I*	
410	4036-7, 4043	Pit	Sub-oval	1.80+	0.60+	0.45	Roman	**I**	
411	4029, 4044	Pit	Heavily truncated	2.32+	0.60+	0.29		*III*	
412	4046	Palaeochannel	?Linear, NE-SW	N/A	20+	3.80+	Roman	N/A	
413	4049-51	Structural (foundation)	Rectangular	4.80+	2.20+	0.57		IV	
414	4052-4	Gully	Linear, NW-SE	9.45+	0.7	0.42+	1st-2nd century	**I**	
415	4055-56	Pit	Circular	0.85+	0.70+	0.35+	Roman (residual)	III	
416	4057-58	Pit	Circular	1.40+	1.20+	0.39+		III	
417	4064-65	Pit	Sub-oval	0.95	0.35+	0.17+		III	
418	4066-67	Posthole	Circular	0.35	0.35	0.09+		III	
419	4068-69	Posthole	Circular	0.15	0.15	0..08+		III	
420	4070-71	Posthole	Circular	0.30	0.30	0.11+		III	
421	4072-73	Posthole	Circular	0.35	0.35	0.11+		III	
422	4074-75	Posthole	Circular	0.25	0.25	0.11+		III	
423	-	Drain	Linear, NE-SW	0.1+	0.20+	0.57+		IV	
424	-	Drain	Linear, E-W	2.30+	0.65	-		IV	
425	-	Drain	Linear, NW-SE	2.15+	0.25+	-		IV	
426	-	Pit	Sub-circular	0.75	0.15	-		III	

Feature Number	Context Numbers	Type	Form	Length (m)	Width (m)	Depth (m)	Spotdate	Phase	Area
427	-	Posthole	Square	0.40	0.40	-		IV	4
428	-	Posthole	Circular	0.35	0.35	-		IV	
429	4023, 4027, 4084, 4085, 4086, 4087	Layers	Heavily truncated	6.8+	2.7+	0.38+		IV	
430	4077-78	Structural (foundation)	Rectangular	6.76	2.80+	0.52		IV	
431	4079	Layer	Sub-rectangular	1.20+	0.23+	0.09		*I*	
432	4080	Layer	Rectangular?	1.20+	0.26+	0.07		*II*	
433	4081-83	Pit	Circular	1.16+	0.82+	0.35		*I*	
434	4010	Layer	Heavily truncated	4.80+	0.60+	0.32		*III*	
435	4009	Layer	Heavily truncated	2.58+	0.60+	0.30		*I*	
436	4021	Layer	Heavily truncated	4.80+	0.80+	-	Roman (residual?)	*II*	
437	4022	Layer	Heavily truncated	1.80+	0.60+	-		*III*	
438	4026	Layer	Heavily truncated	0.60+	0.40	-		*II*	
439	4028	Layer	Heavily truncated	4.96+	0.60+	0.24		*III*	
440	4032	Layer	Heavily truncated	2.59+	0.60+	0.40		*II*	
428	-	Posthole	Circular	0.35	0.35	-		IV	

OASIS FORM

OASIS ID: cambridg3-167089	
Project Details	
Project name	The School of Pythagoras, Cambridge
Short description of the project	Excavations conducted at the School of Pythagoras, Cambridge, took place within and around a standing Grade I listed medieval building. Three significant results were obtained. Firstly, a substantial palaeochannel was identified, the presence of which was established via augering. Secondly, a relatively intensive sequence of Roman activity was encountered. This could be subdivided into three sub-phases. Commencing during the 1st to 2nd centuries AD, the earliest Roman activity - as primarily represented by redeposited ceramics and a relatively substantial assemblage of disarticulated human bone - appears to have comprised a largely 'off-stage' presence. Subsequently, however, around the early to mid 2nd century a degree of domestic/industrial occupation was established; concomitant with this phase, a metalled trackway was laid down and a series of pits and ditches were created. Yet by the mid 3rd century the associated settlement appears to have contracted in size and the site became instead the venue for a series of interments. Six articulated inhumations were encountered. Finally, the third result pertained directly to the School of Pythagoras itself. Excavations conducted within the north wing of the structure revealed that this portion of the building had been constructed contemporaneously with the principal range. Moreover, in combination with a review of the extant architectural evidence, the newly derived data demonstrates that the School of Pythagoras did not originally comprise an isolated rural manor - as has been widely assumed - but was in fact more akin to a substantial urban townhouse of the period.
Project dates	Start: 04-07-2012 End: 08-04-2013
Previous/future work	Yes / Not known
Any associated project reference codes	ECB 3799 - HER event no.
Any associated project reference codes	JSP 12 - Sitecode
Type of project	Recording project
Site status	Listed Building
Current Land use	Other 2 - In use as a building
Monument type	PITS Roman
Monument type	TRACKWAY Roman
Monument type	DITCHES Roman
Monument type	BUILDING Medieval
Monument type	SURFACES Post Medieval
Significant Finds	BROOCH Roman
Significant Finds	BRACELET Roman
Significant Finds	POTTERY Roman
Investigation type	"Full excavation","Watching Brief"
Prompt	Direction from Local Planning Authority - PPS

Project Location	
Country	England
Site location	CAMBRIDGESHIRE CAMBRIDGE CAMBRIDGE The School of Pythagoras, St. John's College, Cambridge
Postcode	CB4 8PT
Study area	230.00 Square metres
Site coordinates	TL 4449 5894 52 0 52 12 33 N 000 06 53 E Point
Height OD / Depth	Min: 7.10m Max: 7.70m
Project Creators	
Name of Organisation	Cambridge Archaeological Unit
Project brief originator	Local Authority Archaeologist and/or Planning Authority/advisory body
Project design originator	Alison Dickens
Project director/manager	Alison Dickens
Project supervisor	Richard Newman
Type of sponsor/funding body	Developer
Name of sponsor/funding body	St. John's College, Cambridge
Project Archives	
Physical Archive recipient	Cambridgeshire County Archaeology Store
Physical Archive ID	JSP 12
Physical Contents	"Animal Bones","Ceramics","Environmental","Human Bones","Industrial","Metal","Worked stone/lithics"
Digital Archive recipient	Cambridgeshire County Archaeology Store
Digital Archive ID	JSP 12
Digital Contents	"Animal Bones","Ceramics","Environmental","Human Bones","Industrial","Metal","Survey","Worked stone/lithics"
Digital Media available	"Images raster / digital photography","Spreadsheets","Text"
Paper Archive recipient	Cambridgeshire County Archaeology Store
Paper Archive ID	JSP 12
Paper Contents	"Animal Bones","Ceramics","Environmental","Human Bones","Industrial","Metal","Stratigraphic","Survey","Worked stone/lithics"
Paper Media available	"Context sheet","Matrices","Photograph","Plan","Report","Section"

Project Bibliography	
Publication type	Grey literature (unpublished document/manuscript)
Title	The School of Pythagoras, St. John's College, Cambridge: an archaeological excavation
Author(s)/Editor(s)	Newman, R.
Other bibliographic details	Cambridge Archaeological Unit Report No. 1199
Date	2013
Issuer or publisher	Cambridge Archaeological Unit
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