Archaeological investigations on the western edge of the site of Fulk de Breauté's castle, Park Square, Luton

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SUMMARY

Investigations by Albion Archaeology in 2009 within the University of Bedfordshire's Park Square Campus in Luton revealed features dating to the medieval and post-medieval periods, the most prominent being part of the moat of Fulk de Breauté's early 13th-century castle. The partial footprint of a large timber-framed building, broadly dating to the 12th–13th centuries, was revealed within the moated enclosure. Other medieval features included two refuse pits located outside the moated enclosure. Though historically termed a castle, the moated site was also a manorial centre — a court house was documented on the site until the early 17th century. The moat was still at least partially open during the post-medieval period, when its fills appear largely to have been quarried away, and a well and pit, likely to have been associated with the backyards of properties fronting onto Park Street, were in use. In the late 18th century, a burial ground was established by the Society of Friends to the north-west of the moat.

INTRODUCTION

Planning permission was granted by Luton Borough Council for the construction of a new student centre at the University of Bedfordshire campus at Park Square, Luton. Given the site's location within the medieval core of Luton, a condition was attached to the planning permission requiring a programme of archaeological investigation. Albion Archaeology was commissioned by Davis Langdon LLP on behalf of The University of Bedfordshire to undertake the work. The first stage comprised trial-trench evaluation (Albion Archaeology 2009), which identified two undated human burials and a considerable depth of stratified, post-medieval deposits infilling a large pit or ditch. On the basis of its projected alignment, this feature was interpreted as the moat of Fulk de Breauté's 13th-century castle. Given the results of the evaluation, archaeological excavation of the footprint of the new building was undertaken between 26th May and 13th June 2009, in accordance with specifications issued by the Conservation and Design Team of Central Bedfordshire Council.[1]

Site Location and Description

The University of Bedfordshire's Park Square campus is located in the centre of Luton (Fig. 1). The footprint of the new building, centred on OS grid reference TL0952 2111, measures approximately 0.2ha, within a development area of approximately 0.38ha that contained a workshop and car park prior to their demolition. Topographically, the site lies within the valley of the River Lea at a height of around 105m OD.

Archaeological and Historical Background

The excavated area lies within the medieval core of Luton, close to the 12th-century parish church of St Mary (Fig. 1). The original church, clearly a minster, is reputed to have been founded in the 10th century (Albion Archaeology 2005), although not necessarily on the same site as the present building.

Luton was a royal manor at Domesday, and was held by the Crown until the early 12th century. In the civil war between Empress Matilda and King Stephen it came briefly into the hands of Robert de Waudari, who subsequently built a castle in 1139 on the strategically important south-western approach to the town (Abrams and Shotliff 2010). This castle was destroyed under the terms of the truce of 1153 but gave its name to Castle Street, recorded in a deed of 1459 (BRO CRT/130/57/1), which is held by the Bedfordshire and Luton Archives and Records Service (BRO).

By the end of the 12th century Luton manor was again in royal hands. In 1216 it was briefly held by William Marshall before being passed to Fulk de Breauté, possibly under compulsion from King John, on whose side de Breauté had fought during the civil war against the King's barons (Page 1908). By 1221 de Breauté had built a castle in the town on the south side of St Mary's church (Dyer and Dony 1975, 47–8). It was surrounded by a moat and associated bank, parts of which were still visible in the mid-19th century (Davis 1874, 30). In 1224 Fulk de Breauté fell into disgrace and was exiled. Luton manor subsequently passed through a period of division, before being mostly reunited under the Rotherham family in the late 15th century (Page 1908). It was held by the Napier family in the 17th and early 18th centuries, after which it passed through various hands. A court house is documented as standing on

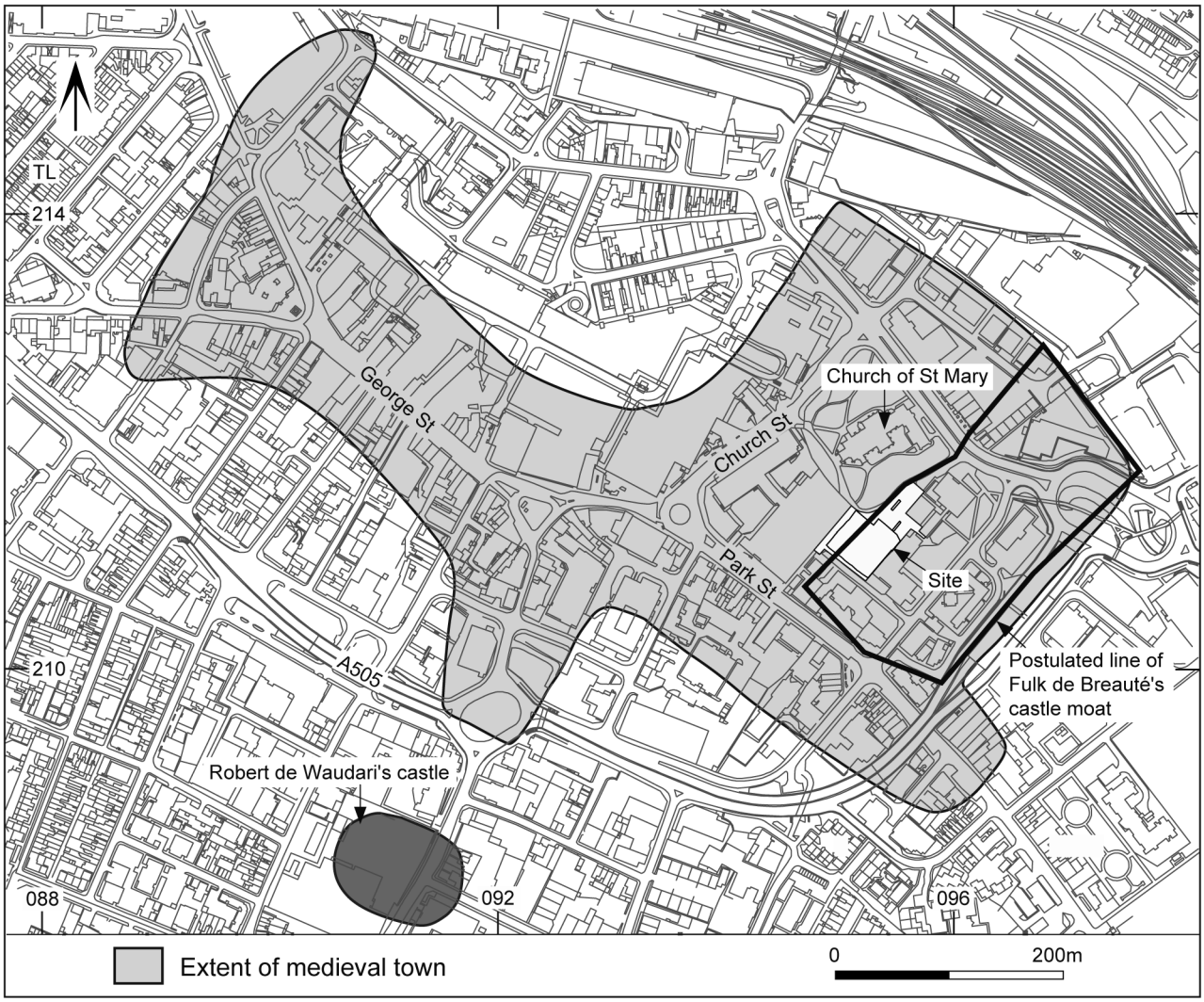


Figure 1: Location of site within Luton

the castle site up until the early 17th century (Austin 1911, 148–9).

Luton's open fields were subject to piecemeal enclosure over a period of many years, so that by the time the Luton Enclosure Act was passed in 1808, little unenclosed land remained (Albion Archaeology 2005). The 1842 tithe map (BRO MAT 30.T) and town map (BRO X214/4) (Fig. 2) show the excavated area as largely falling within an enclosed yard or garden, and partly within a large pasture field named 'Brown's Mead', both owned by Frederick and Charles Burr. The site was bounded to the west by St Ann's Lane, described as an ancient footway in an 1822 glebe terrier (Pickford 1998, 444) and a brewery (HER12376). By the early 20th century, Ordnance Survey mapping shows the area as being occupied by terraced housing fronting onto the newly built St Ann's Road, as well as the backyards of plots that fronted onto Park Street. St Ann's Road was repositioned in the later 20th century.

Little archaeological evidence for the medieval or earlier development of the town has to date been revealed. However, recent excavations *c*. 100m south-east of the site, adjacent to Vicarage Street and within the postulated extent of Fulk de Breauté's castle, have revealed ditches and pits mostly dating from 1250 to 1400 (Archaeology South-East 2010). Pottery dating from the 13th to 15th centuries was also found during building work on the site of the Technical College immediately west of the site (HER1948).

RESULTS OF THE ARCHAEOLOGICAL INVESTIGATIONS

The excavations revealed features dating to the medieval and post-medieval periods (Fig. 3), the most prominent being a large ditch interpreted as part of the moat of Fulk de Breauté's castle. Other features included a group of post-holes and gullies defining the footprint of a large building within the circuit of the moat, and a small post-medieval children's cemetery. Hints of earlier activity in the vicinity were provided by small residual amounts of abraded late Iron Age and Saxo-Norman pottery, as well as fragments of brick that are probably Roman.

The following narrative is presented in chronological order by Phase. It includes the results of both the trial-trench evaluation and the excavation, and integrates specialist finds reports. Elements within each Phase are usually referred to by a Group (G) number which represents an agglomeration of 'contexts' that are closely related both stratigraphically and interpretatively. Subgroup (S) and 'context' numbers are used where reference to specific features and deposits is necessary.

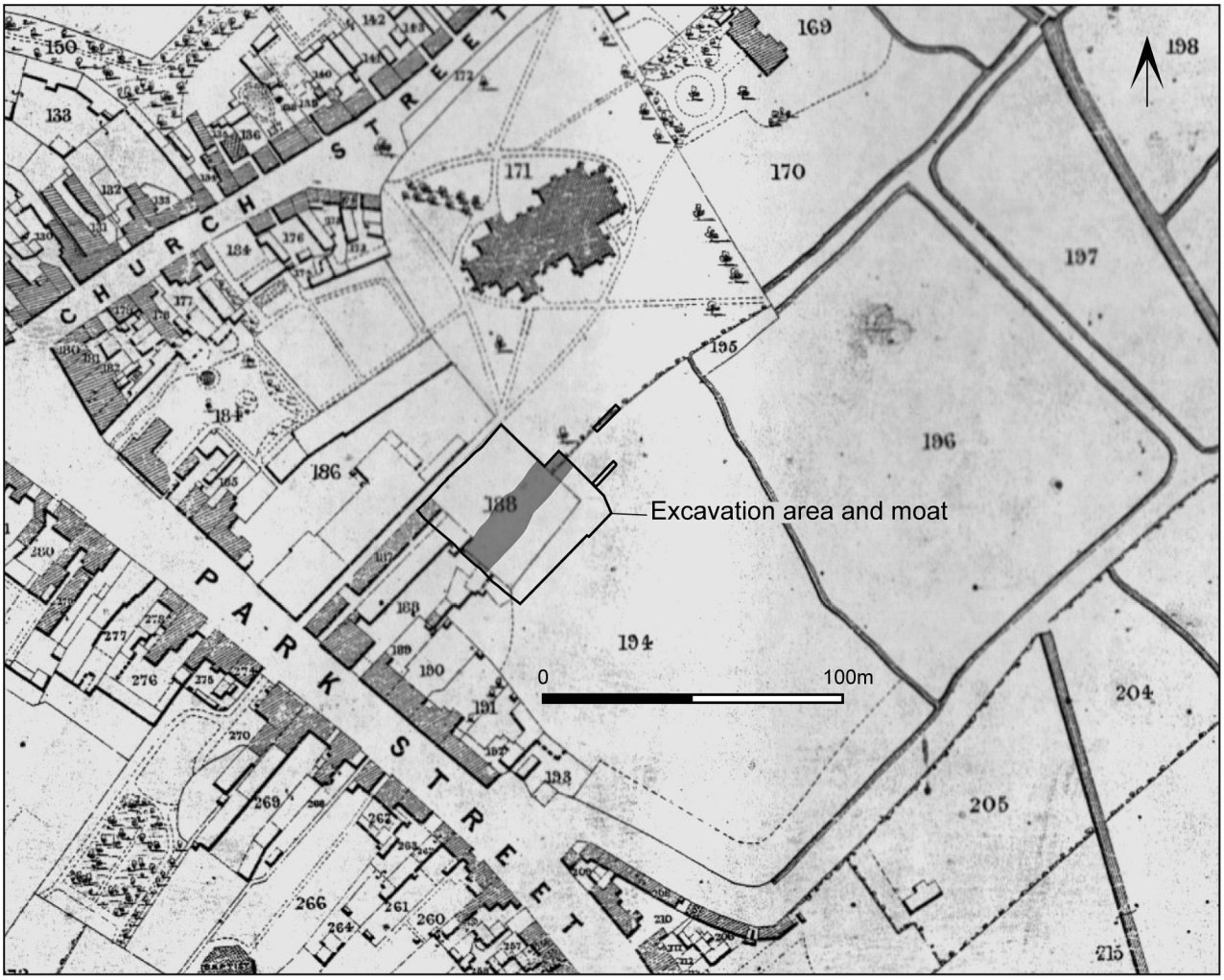


Figure 2: 1842 town map showing excavation area and moat

Phase 1: Undated Inhumations

Two inhumations G6 were partially exposed, and left *in situ*, in a trial trench at the north-east end of the site (Fig. 3). They were situated a metre apart and aligned NE–SW, with their heads to the south-west.

No dating evidence was recovered, although their disposition suggests that they are likely to have been formal Christian inhumations. Their location, well beyond the boundary of the current churchyard, suggests that they could be of some considerable age, and may support the suggestion that Luton's earliest church was not on the site of the present-day St Mary's.

Phase 2: The Medieval Castle (*c*. 1150–1500)

Evidence for medieval activity included a large ditch, believed to have been part of the moat of Fulk de Breauté's castle, and a group of post-holes and gullies defining the footprint of a building (Fig. 4). Other features comprised a ditch connected to the moat, and three pits lying beyond its circuit. The Phase 2 pottery assemblage is mainly of 12th- to late 13th-century date.

Moat

The most prominent feature revealed on the site was a large ditch G2, aligned NE–SW and measuring up to 12m wide and 3m deep (Fig. 4; Pl. 1).

Two segments of the ditch were excavated, revealing marked differences in its primary fills. To the south, they predominantly comprised stony sand and clay silts, together with a compact deposit of larger stones and sandy silt located on the south-east side of the ditch. To the north, however, a homogenous fill of compact chalky silt filled most of the base of the ditch. These deposits appeared to be the result of deliberate backfilling. They produced a small amount of pottery dated to the high medieval period, and a type of horseshoe nail thought to have been in use during the 11th to 13th centuries. Waterlogging of the deposits preserved an assemblage of plant and insect remains which indicate that the ditch held standing water, but may have been subject to periodic drying-out.

The ditch corresponds with the postulated location of the north-western arm of the moat of Fulk de Breauté's castle built in 1221 (Fig. 1). The castle site is thought to have extended from St Mary's Church to Lea Road (Dyer and Dony 1975, 47–8). Although the castle may only have survived for a few years (Albion Archaeology 2005), its moat and mound at least partly lasted into the 19th century (Davis 1874, 30). Pecked lines marked on the 1842 town map (Fig. 2) are likely to indicate the then

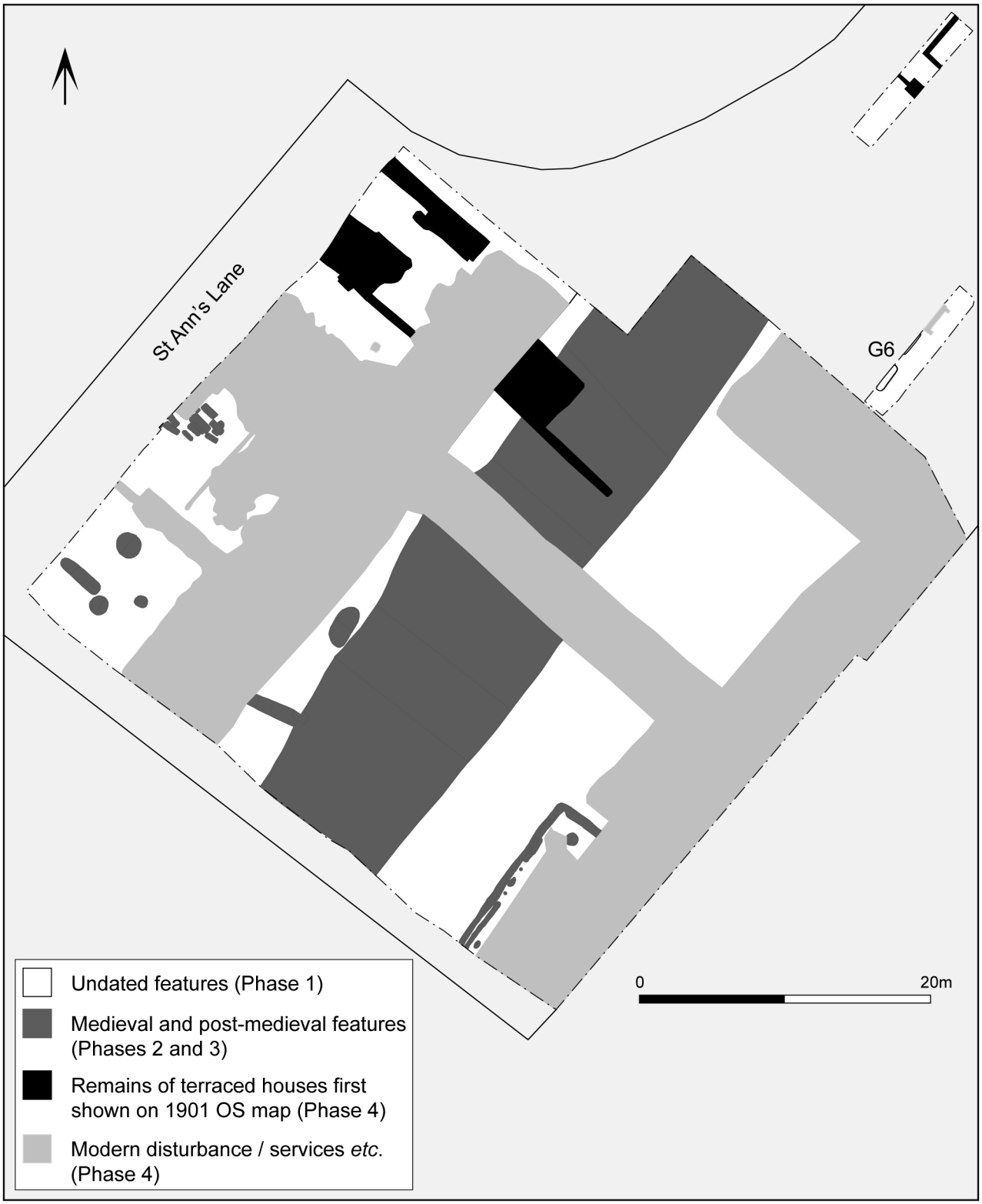


Figure 3: All-features plan

surviving parts of the southern and western corners of the castle bank or moat.

A small ditch G3, 1m wide and 0.45m deep, joined the north-western side of the moat. Its primary fill mostly comprised large, compacted flints, presumably placed to consolidate the base of the ditch, which is likely to have channelled water into the moat. A small amount of early medieval pottery was recovered from it.

Timber-framed building

The remains of a large timber-framed building G1, measuring in excess of 12m long and 3.3m wide, was partially revealed in the southern corner of the site, in what would have been the interior of the moated enclosure (Fig. 4; Pl. 2). Pottery recovered from deposits associated with the building date it broadly to the 12th–13th centuries; abraded sherds of Iron Age and Saxo-Norman pottery were also recovered.

Plate 1: Section through moat G2, looking west

Plate 2: Building G1, looking north-west

Parts of two sides of the building were visible, defined by a 0.2–0.4m deep gully that contained several post-holes of varying sizes (Fig. 4: a, c and d). The gully is likely to have held horizontal sill beams interrupted by vertical posts. However, the closer spacing of the posts near the northern corner of the building suggests the use of vertical earth-fast posts with an infill of planks or wattle in this location. Darker fills within several of the post-holes denoted the posts' erstwhile extent: the fills are likely to represent topsoil that entered the cavities left where posts had been removed.

Interior features of the building comprised two very shallow gullies with some associated post-holes and a large post-pit S2, located near the corner of the structure. The proximity of the two shallow gullies to the main wall gully suggests that they are most likely to have been associated with extra support for the wall. Measuring *c*. 0.9m in diameter and 0.52m deep, the post-pit is likely

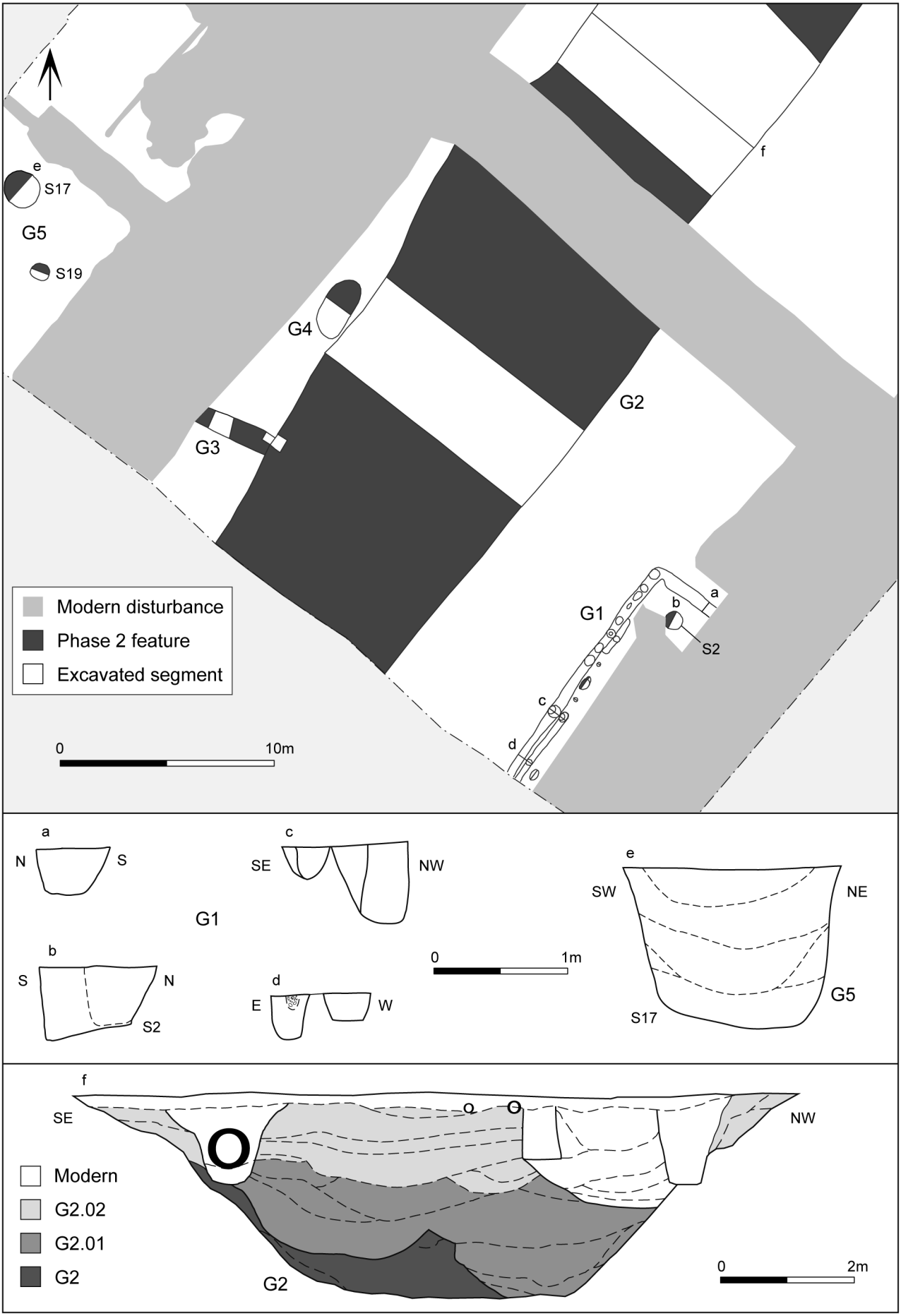


Figure 4: Medieval features (Phase 2)

to have held one of the main supporting posts for the roof, and may have been associated with an internal aisle (Fig. 4b). A darker, charcoal-rich deposit within the fill of the pit that was partly encircled by several large stones is likely to represent the location of a removed post, *c*. 0.5m in diameter. The charcoal predominantly derives from oak timber, possibly an indication of the wood used in the construction of the building. *Prunus* (cherry species) was also present, possibly derived from wood burnt on a hearth or from smaller structural elements, such as wattling.

Pits

Three pits located outside the moated enclosure were also dated to the medieval period. Two of the pits (G5) contained distinctive dark grey silty fills, which produced substantial amounts of pottery and animal bone; they are likely to have been used for the disposal of refuse. Both had nearly vertical sides and flat bases. The larger of the two, S17 (Fig. 4: e), was 1.7m in diameter and 1.2m deep; the other, S19, was 0.8m in diameter and 0.65m deep. The majority of the recovered pottery dates to the early–high medieval period, although a few later sherds within the upper fills of the larger pit indicate that it was finally backfilled during the late medieval / early post-medieval period (see below, Phase 3). A much shallower, oval pit G4 of unknown function was located adjacent to the north-west side of the moat.

The finds

Pottery

Jackie Wells

Phase 2 deposits yielded 125 sherds representing seventy-seven vessels (2.0kg), and constituting 44% (by weight) of the total assemblage. The greatest pottery concentration derived from rubbish pits G5 (1.5kg), with the other features each yielding small quantities. With the exception of three abraded late Iron Age sherds (5g) occurring as residual finds in building G1, the assemblage ranges in date from the Saxo-Norman to the high medieval periods. Although surviving in fair condition, the highly fragmented nature of the pottery is attested by a low vessel to sherd ratio of 1:1 and average sherd weight of 16g. Only one complete vessel profile and a few partial profiles are present. Appendix 1 contains a complete list of the recovered fabric types.

Saxo-Norman pottery (*c*. 850–1150) comprises twelve shell-tempered, wheel-thrown sherds (24g) in the St Neots-ware tradition and its variants. Two sherds derived from rubbish pits G5 and the remainder from deposits associated with building G1. No diagnostic elements occur, and all sherds are abraded.

The medieval assemblage totals 110 sherds, and is mainly of 12th- to late 13th-century date. Pottery occurs in a range of locally manufactured, fine to coarse, sand-tempered fabrics which are characteristic of the period. These include the long-lived South Hertfordshire-type grey wares (incorporating fine, coarse, micaceous and flint-tempered variants), which constitute the bulk of the material. The grey wares are widespread in Hertfordshire, London and much of south-east England (Turner-Rugg 1995, 48) and are well attested from sites in the south of the county, *e.g*. Chalgrave (Brine 1988), Grove Priory (Baker 2013, 103) and Stratton, Biggleswade (Shotliff and Ingham forthcoming). The range and variety of medieval pottery is comparable with that recovered from nearby excavations at Vicarage Street, where the assemblage was also dominated by South Hertfordshire-type grey wares (Archaeology South-East 2010, 18).

The medieval pottery comprises a range of both handmade and wheel-thrown, or handmade and wheel-finished, vessels, amongst which high-shouldered jars are predominant. Jars vary in diameter from 180mm to 260mm; rims are square, rectangular, everted and occasionally bevelled internally, and bases are flat. Other forms are bowls (Fig. 5: 2) and jugs of variable diameter. Decoration is rare, comprising horizontal combing and applied vertical thumbed strips on body sherds, while jug handles are thumbed and stabbed. Sooting marks on a number of sherds confirm that a proportion of these types represent cooking pots. One body sherd has been modified post-firing by the drilling of a hole, presumably to facilitate the vessel's repair. Coarse wares recovered from rubbish pits G5 were found in association with glazed sherds from a high medieval Brill-Boarstall jug (Fig. 5: 1) and a transitional Brill jug.

Ceramic building material

Jackie Wells

Three abraded, sand-tempered brick fragments (658g) of probable Roman date derived from moat construction deposits G2 and rubbish pits G5. Small quantities of Roman building material were also recovered from excavations at Vicarage Street (Archaeology South-East 2010), suggesting a Roman presence in the vicinity.

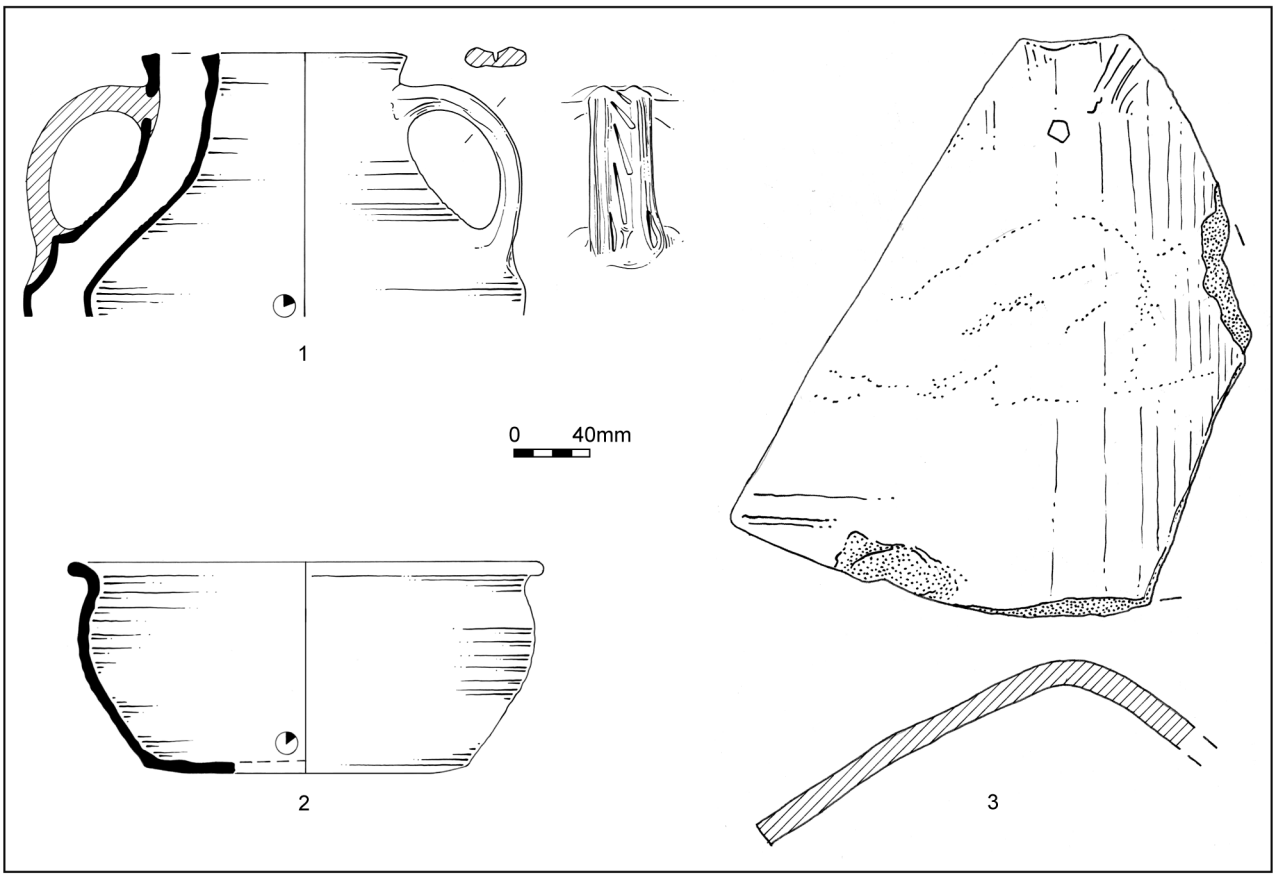
Other artefacts

Holly Duncan

The non-ceramic assemblage from Phase 2 deposits is limited in quantity and is not closely dated. A selected catalogue is contained in Appendix 2.

The upper portion of a worn 'fiddle key' shoeing nail derived from the fill of moat G2. These were used in conjunction with horseshoes of Clark's types 2 and 3 (1995, 85–7). Fiddle key shoeing nails have been found in deposits dating to the 11th century (Clark 1995, 93–4) and continued to be used throughout the 12th and 13th centuries.

The fills of refuse pit S17 (G5), located outside the moated enclosure, produced a fragment of what is probably a lace tag and a fragment from a limestone mortar. Lace tags or *points* served to protect the ends of laces, either leather or textile, and facilitated threading them through garments' eyelets. They are certainly known from the 14th century, and there are indications that they may have been in use as early as the mid-13th century (Egan and Pritchard 1991, 281). Unfortunately, the tag from pit S17 does not survive in a complete enough condition to determine its method of manufacture. The mortar fragment, which may originate from the Isle of Purbeck, comprises a wall sherd, on which working lines (vertical facets) are clearly visible on the smoothly worn interior surface. The exterior is gently faceted; a hint of herringbone tooling survives. The fragment has patches of soot on both exterior and interior surfaces. It is generally accepted that mortars are a 13th-century introduction which superseded the use of the rotary quern for grinding foodstuffs (Biddle and Smith 1990, 891). How long they remained in use is less clear, due to their durability and frequent reuse in later contexts as packing or building material.



1 Brill-Boarstall-ware jug: fabric C09 (G5)
2 Sand-tempered bowl: fabric C04 (G5)
3 Hipped ridge tile, sand-tempered (G2.01)

Figure 5: Selected pottery and tile, shown at 1:4

Animal bone
Mark Maltby

The animal bone assemblage is very small, predominantly comprising the food waste from cattle, sheep/goat and pig. Eighty-four fragments were recovered from Phase 2 deposits, primarily from the two refuse pits G5 outside the moated enclosure.

Of the forty-nine elements identified, twenty-eight belong to pig and include three associated bone groups from contexts in pit S17 (G5). The first group comprises thirteen bones consisting of six ribs, a thoracic vertebra and six bones of the left forelimb (Table 1). All bones are slightly porous, and all epiphyses, including early fusion points such as the scapula and proximal radius, are unfused. The pig was probably, therefore, significantly younger than six months old. The second group comprises five bones from the lower right hind limb, including the unfused distal epiphysis of the tibia, astragalus and calcaneus. The porosity of these bones suggests that they also belonged to a juvenile pig, conceivably from the same animal found in the adjacent context. Similarly, the right femur, tibia and fibula comprising the third group are at a similar stage of development. No butchery marks were noted on any of these bones, and it seems probable that the fairly substantial remains of a carcass were deposited in the pit. No evidence of pathology was noted on any of the bones. A thoracic and a lumbar vertebra of older, although not fully mature, pigs from the same pit bear chop marks associated with the removal of the ribs and flanks of the animal.

Eleven elements are from cattle, and these include three metatarsals of adult animals, one of which is slightly splayed at the distal end. The femur of a very young calf attests to the culling of younger cattle as well. There are nine sheep/goat elements, including the horn-core of a male goat. This horn-core, which is still attached to the skull, has been sawn through halfway up to remove the outer horn sheath. Other sheep/goat elements include a calcaneus, a metacarpal, and a humerus which has been chopped through the shaft during dismemberment. Unlike subsequent phases, no bones of horse and dog were recovered. The only bird bone is unidentified, although it bears similarities to a domestic fowl radius.

Plant macrofossils
Charlotte O'Brien

Charred plant macrofossil remains were recovered from two post-holes in building G1 and refuse pit S17 (G5). They indicate that oats, barley and wheat were the main cereals used at the site during the medieval period (Table 2). Although diagnostic chaff was absent, the large size of some of the oat grains indicates that cultivated, rather than wild, oats were present. They are probably from *Avena sativa* rather than smaller-grained cultivars such as *A. strigosa* (Bristle oats). The cereal remains were generally in poor condition but some of the barley grains could be identified as being from the hulled variety. This

Phase	2			3					4				
Species	Cattle	Sheep/goat	Pig	Cattle	Sheep/goat	Pig	Horse	Dog	Cattle	Sheep/goat	Pig	Horse	Dog
Horncore	1	1		3	9								
Skull frag	1	1		10							1		
Mandible				2	1			1	1		1		3
Loose Teeth	1		1		1	1					3	1	
Scapula		1	1					2		3			2
Humerus		1	2	5	2	2			1	2	1		4
Radius		1	2	2			1	1	1	1	2		4
Ulna			1					1					3
Pelvis	1	1	1	2			1		1		1		
Femur	2		1	1			1	1	3	3			3
Tibia	1		2	1	1	1			1	6	1	2	3
Fibula			1										1
Carpals										1			
Astragalus	1												
Calcaneus	1	1											
Metacarpal		1	1	1		1		1				4	
Metatarsal	3			1			1			2		4	1
Metapodial							1					2	
Axis		1											
Peripheral Mp	2												
Phalanx 1	1								1				
Phalanx 2											1		
Cervical V							1						
Thoracic V			2				5					1	
Lumbar V	1		1	1			3						
Sacrum							1						
Baculum								1					
Rib			7	2		1	6	7	1	1		1	2
Total	11	9	28	31	14	6	21	15	10	19	11	15	26

Table 1: Elements of major species identified (NISP)

is unsurprising, as hulled barley had superseded naked barley during the first millennium BC (Helbaek 1952). Most of the wheat grains had the characteristically compact shape associated with *Triticum aestivo-compactum* (a variety of bread wheat); however, wheat grain morphology is variable, and this identification cannot be certain in the absence of chaff.

Charcoal recovered from the post-holes was predominantly oak timber. The presence of tyloses (produced in the heartwood of certain trees) was noted, suggesting that mature oak trees had been felled to provide the posts. *Prunus* (cherry species) charcoal was also present.

Waterlogged conditions within the basal fills of moat G2 allowed the preservation of a range of uncharred seeds, wood fragments and mosses (Table 3). Arable, ruderal and wet-ground taxa were well represented, and fruit stones from trees/shrubs such as elder and bramble were common — the latter were probably gathered for food. Aquatic plant remains were low in number, and a few seeds from cultivated plants, flax and hop, were recorded. The only charred plant remains from this fill were an oat and wheat grain.

This assemblage of waterlogged plant remains from the moat provides information about the environment of the site during the medieval period. Macrofossils of the aquatic taxa rigid hornwort and duckweed indicate the presence of standing water in the moat, although the low number of aquatic plant remains suggests that the water levels were very low at times, perhaps as the moat silted up before re-cutting. Sedges, hemlock, bur-marigold, spike-rush, gypsywort, celery-leaved buttercup and bittersweet would have favoured the shallow water and wet ground conditions at the edges of the moat. The arable weeds fool's parsley, stinking chamomile, sun spurge, black bindweed, fat-hen, fumitory and wild radish were

Group	G1	G1	G5
Subgroup	S2	S3	S17
Sample	7	8	6
Volume processed (l)	18	4	22
(a) *Agrostemma githago* (Corncockle)	–	–	3
(a) *Anthemis cotula* (Stinking chamomile)	–	10	–
(a) *Papaver* cf. *dubium* (*cf*. Long-headed Poppy)	1	1	–
(c) *Avena* spp (Oat species)	–	62	12
(c) Cerealia indeterminate	6	14	8
(c) *Hordeum* spp (Barley species)	1	22	–
(c) *Hordeum vulgare* spp (Hulled barley)	–	5	–
(c) *Triticum* cf. *aestivum* (*cf*. Bread wheat)	5	2	10
(c) *Triticum* spp (Wheat species)	2	2	–
(h) *Rumex acetosella* (Sheep's sorrel)	–	1	–
(r) *Galium aparine* (Cleavers)	–	–	1
(r) *Lapsana communis* (Nipplewort)	–	3	–
(r) *Plantago lanceolata* (Ribwort plantain)	–	3	–
(w) *Carex* spp (Sedges)	–	3	–
(x) Apiaceae undiff. (Carrot family)	–	–	8
(x) Asteraceae undiff. (Daisy family)	1	–	6
(x) Caryophyllaceae undiff. (Pink family)	–	–	41
(x) Fabaceae undiff. (Pea family)	–	2	4
(x) Poaceae undiff. <2mm (Grass family)	1	10	3
(x) Poaceae undiff. >2mm (Grass family)	–	42	6
(x) Poaceae undiff. (Grass family)	–	–	1
(x) Ranunculaceae undiff. (Buttercup family)	–	–	1
(x) *Ranunculus* subgenus *Ranunculus* (Buttercups)	–	3	–
(x) *Rumex* spp (Dock)	–	6	6
(x) *Rumex* spp (Dock)	–	1	–
(x) *Vicia* spp (Vetch)	–	8	–
	17	200	110

a = arable; c = cultivated; h = heathland; r = ruderal; w = wet ground; x = wide niche

Table 2: Phase 2 charred plant remains

present, which may reflect the proximity of arable fields, or that crop-processing waste was periodically deposited into the moat. Henbane, nipplewort, redshank, prickly sow-thistle, common chickweed and common nettle were probably growing on waste/disturbed ground in the immediate vicinity of the moat, possibly indicating that the ground around the feature had been trampled. Although most of the seeds suggest that there were relatively open conditions at the site, brambles, elder and roses were also recorded, which may have grown as opportunistic shrubs/small trees or in hedgerows and nearby scrub woodland. Taxa with broad habitat ranges, such as docks, goosefoots, buttercups, campions, woundworts and thistles, were also noted. These are generally found in arable, ruderal and grassland habitats.

Group	G2	G2.01
Subgroup	S7	S8
Sample	14	12
Volume processed (l)	40	40
(a) *Aethusa cynapium* (Fool's parsley)	1	3
(a) *Anthemis cotula* (Stinking chamomile)	1	-
(a) *Chenopodium album* (Fat-hen)	2	-
(a) *Euphorbia helioscopia* (Sun spurge)	1	1
(a) *Fallopia convolvulus* (Black bindweed)	1	-
(a) *Fumaria* spp (Fumitory)	1	1
(a) *Raphanus raphanistrum* (Wild radish)	-	1
(c) *Cannabis sativa* (Hemp)	-	1
(c) *Humulus lupulus* (Hop)	1	-
(c) *Linum usitatissimum* (Flax)	2	-
(c) *Triticum* spp (Wheat species)	-	1
(g) *Aphanes* spp (Parsley-pierts)	-	1
(q) *Ceratophyllum demersum* (Rigid hornwort)	1	-
(q) *Lemna* spp (Duckweed)	1	-
(q) *Potamogeton* spp (Pondweed)	-	2
(r) *Bryonia dioica* (Black bryony)	-	1
(r) *Euphorbia lathyris* (Caper spurge)	-	1
(r) *Galeopsis* spp (Hemp-nettle)	-	2
(r) *Hyoscyamus niger* (Henbane)	1	-
(r) *Lapsana communis* (Nipplewort)	1	-
(r) *Persicaria maculosa* (Redshank)	1	-
(r) *Sonchus asper* (Prickly sow-thistle)	2	2
(r) *Sonchus* spp (Sow-thistles)	-	1
(r) *Stellaria media* (Common chickweed)	2	1
(r) *Urtica dioica* (Common nettle)	3	5
(t) *Acer campestre* (Field maple)	-	4
(t) *Cornus sanguinea* (Dogwood)	-	1
(t) *Corylus avellana* (Hazel)	-	3
(t) *Crataegus monogyna* (Hawthorn)	-	2
(t) *Ficus carica* (Fig)	-	1
(t) *Morus* spp (Mulberries)	-	2
(t) *Prunus domestica* (Plum)	-	4
(t) *Prunus spinosa* (Sloe)	-	2
(t) *Rubus fruticosus* agg. (Bramble)	2	3
(t) *Sambucus nigra* (Elder)	4	5
(t) Rosaceae undiff. (Rose family)	1	-
(w) *Bidens* spp (Bur-marigold)	1	-
(w) *Carex* spp (Sedges)	1	3
(w) *Conium maculatum* (Hemlock)	2	3
(w) *Eleocharis* spp (Spike-rush)	1	-
(w) *Lycopus europaeus* (Gypsywort)	2	5
(w) *Persicaria lapathifolia* (Pale persicaria)	-	1
(w) *Ranunculus sardous* (Hairy buttercup)	-	2
(w) *Ranunculus sceleratus* (Celery-leaved buttercup)	4	5
(w) *Solanum dulcamara* (Bittersweet)	2	2
(x) *Chenopodium* spp (Goosefoot)	2	2
(x) *Cirsium / Carduus* spp (Thistles)	2	2
(x) Lamiaceae undiff. (Mint family)	-	1
(x) *Ranunculus* subgenus *Ranunculus* (Buttercups)	2	3
(x) *Rumex* spp (Dock)	1	1
(x) *Silene* spp (Campions)	2	-
(x) *Stachys* spp (Woundwort)	2	1
(x) *Viola* spp (Violet)	-	1
Total	53	83

a = arable; c = cultivated; g = grassland; q = aquatic; r = ruderal; t = tree/shrub; w = wet ground; x = wide niche.
Waterlogged remains are scored from 1 to 5: 1 = 1–2; 2 = 3–10; 3 = 11–40; 4 = 41–200; 5 = >200

Table 3: Waterlogged plant remains from moat G2

Insects
Steve Davis

A very small insect assemblage was recovered from the waterlogged deposits in the base of the moat G2. It comprised six individuals, one each from six separate taxa. Included was the slow water taxon *Hydrobius fuscipes* and the chrysomelid *Plateumaris sericea*, which can be found on a range of water plants (*cf*. Atty 1983; Koch 1992), suggesting some standing water with emergent vegetation. Also recovered was the weevil *Phyllobius pomaceus* (formerly known as *P. urticae*), which lives primarily on stinging nettles, *Urtica dioica* (Koch 1992), a well known nitrophile.

Molluscs
John Carrott

A small collection of predominantly freshwater snails was recovered from the waterlogged basal deposits in moat G2. The suggestion that the moat may have been subject to drying out at this time is corroborated by the presence of *Planorbis planorbis*, which is often found in such conditions, and *Lymnaea truncatula*, which is more often found on mud at the waterside than in the water itself.

Phase 3: Post-Medieval Disuse of the Moat, and Children's Cemetery (*c*. 1500–1800)

The moat was still at least partly open in the post-medieval period, during which time its fills appear to have been partially quarried out. Subsequently, the moat gradually filled up through a mixture of natural silting and waste disposal. By the end of this period a children's cemetery G8 had been established outside the moated enclosure, adjacent to St Ann's Lane, along with a well and pit (G7) that are likely to have been associated with properties that fronted onto Park Street (Fig. 6).

Quarrying of the moat fills and subsequent infilling

Two adjacent cuts were clearly visible within the moat, the shape of which (Fig. 4: f) suggests that they are more likely to represent the deliberate quarrying of material from the moat rather than attempts to maintain its original form. They were filled by distinctive waterlogged deposits G2.01, generally consisting of dark brown clay-silts, up to 1.6m thick. These deposits appear to have formed over a relatively long period of time and contained a mixture of aquatic and terrestrial plant and insect remains, which indicate that the moat contained standing water but was also subject to episodic drying out.

Substantial quantities of artefacts were recovered from these deposits, ranging in date from the 12th to 18th centuries. These include leather shoe fragments of probable

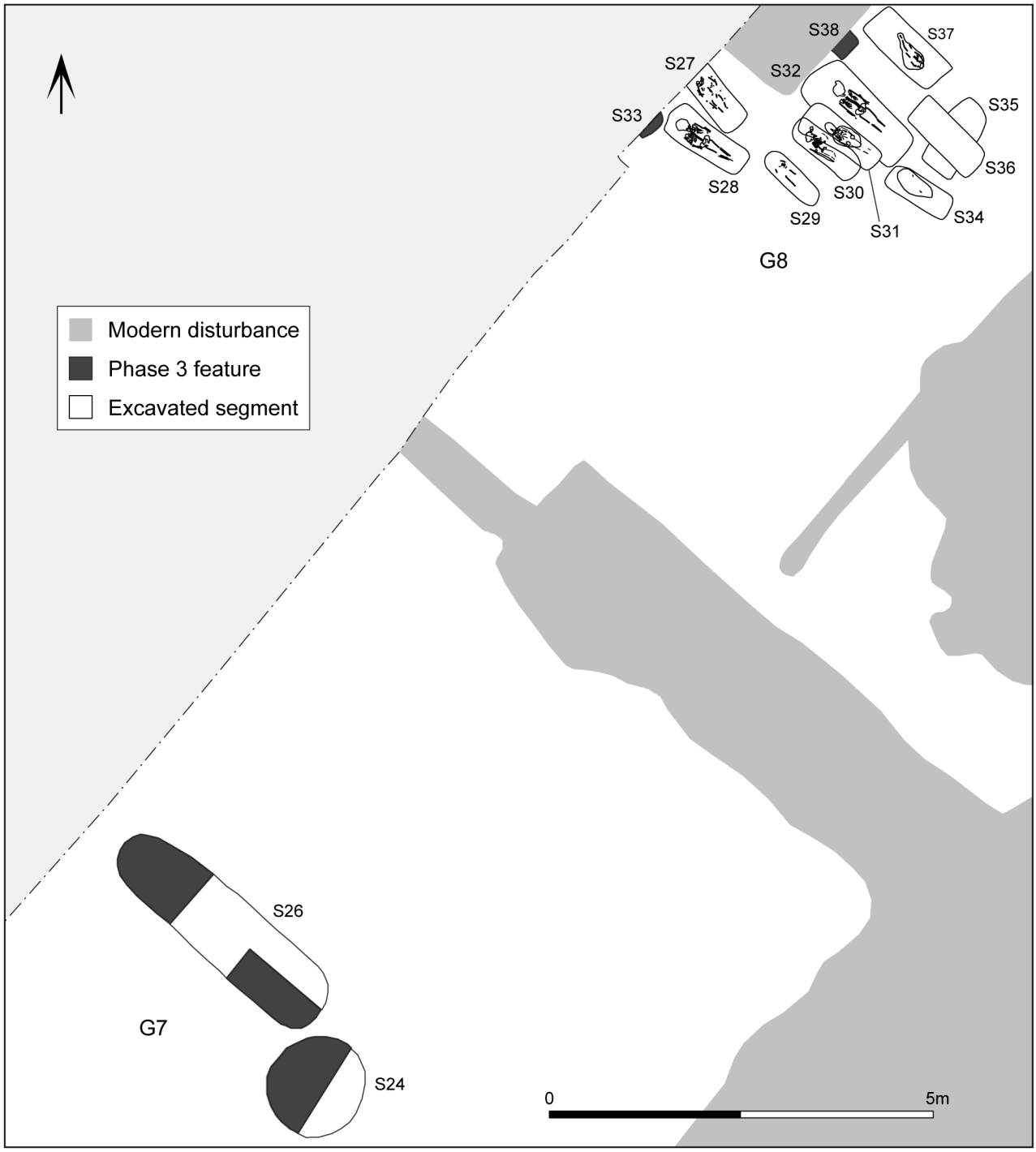


Figure 6: Post-medieval features (Phase 3)

14th- or 15th-century date; pieces of hipped ridged tiles, known as 'granny bonnets', that may date to the 16th or 17th centuries; and fragments of 18th-century bottle glass found towards the base of the cuts. There was also an abundance of animal bone, derived from a mixture of food waste from cattle, sheep/goat and pig, as well as waste from more specialist processes such as horn-working. The carcasss of non-food animals also appear to have been dumped within the moat, including a robust horse femur reminiscent of a carthorse.

Children's cemetery

A group of twelve graves (G8) was identified in a small area to the west of the moat, against the north-western edge of the excavated area (Fig. 6). One grave was aligned NE–SW, but the rest were aligned NW–SE. Two of the graves could not be excavated, since they lay largely beneath the concrete foundations of the wall defining the western boundary of the site. The remains of eight individuals were recovered, aged up to four years old. In two of the graves the bone had effectively disappeared, presumably due to the adverse soil conditions. Coffin nails, mineralised wood and copper-alloy pins were found in many of the graves, indicating that the bodies had been wrapped in shrouds or winding sheets and placed within wooden coffins, which may also have been covered in fabric. A group of copper-alloy tacks was also found overlying the upper torso of one of the inhumations (Plate 3); they may have been used to decorate and/or hold in place fabric covering the coffin.

Documentary research has identified that these graves formed part of a burial ground established by the Society of Friends (Quakers) in the late 18th century (Roger Sear pers. comm.). The burial ground lay adjacent to St Ann's Lane, within the area of a garden marked on the 1842 town map as plot 188 (Fig. 2), which was owned by Frederick and Charles Burr. This garden had previously been owned by John Brown, a member of the Society of Friends. In 1776, a Grave Order was issued for Sarah Brown — daughter of Daniel Brown of Luton, a baker — who had died on 6th August aged two months old. The grave was made in John Brown's garden at Luton (BRO FR2/9/11/1). In 1780, a Grave Order was issued for Han Pryor, aged 7 months, also to be buried in John Brown's garden (BRO FR2/9/11/7). Han was the daughter of Christopher and Mary Pryor, who were Quakers; a member of the Brown family had married an Ann Pryor, so there is likely to have been a family connection. It is possible that other members of the Brown family, recorded in a Brown family tree (BRO X551/1), arranged for their children who died at a young age to be buried in John Brown's garden at this time. These include John Brown's brother, Joseph, who lost his son William in 1751 (aged 1 year and 8 months); Richard, another brother, who lost two sons, William in 1758 (aged 1 year 3 months) and Daniel in 1766 (aged 5 years); and Joseph Brown junior, who lost his first daughter, Mary, in 1785 (aged 4 months) and his second daughter, Maria, in the following year (aged 1 month old).

The infants' causes of death cannot be confirmed, but they may simply have succumbed to one of the common diseases of that era. One of the skeletons showed signs of suffering from congenital syphilis, which is thought to have been a significant problem during the post-medieval period (Roberts and Cox 2003). Other epidemics at that time included plague, typhoid and typhus, influenza, diphtheria, and whooping cough, while smallpox, scarlet fever, cholera, tuberculosis and syphilis were also prevalent at that time (Dobson 1997).

Other features

Fragments of a tile and a possible skillet rim were recovered from the upper fill of Phase 2 rubbish pit S17 (G5), which became fully infilled by the late medieval / early post-medieval period. A backfilled, brick-lined well and linear pit G7 were located to the south-west of the graves (Fig. 6). Both produced pottery, brick and tile dating to the 17th and 18th centuries; the pit contained a particularly large amount of roof tile. These features are likely to have been associated with properties that fronted onto Park Street: their backyards are shown extending into the area of the site on the 1842 town map.

The finds

Pottery

Jackie Wells

Phase 3 deposits yielded sixty-five sherds, representing forty-seven vessels (1.3kg) and constituting 30% (by weight) of the total assemblage. The greatest pottery concentration derived from moat deposits G2.01 (1.1kg); the remaining features each yielded negligible quantities. Sherds survive in a similar condition to those of Phase 2, although, with an average weight of 21g, they are slightly larger. Residual medieval coarse wares occur in a similar range of sand-tempered fabrics to the Phase 2 assemblage, and are again dominated by the South Hertfordshire-type grey-ware cooking pots. High medieval table wares are represented by single glazed-jug body sherds of Brill-Boarstall ware, Surrey white ware and Hedingham ware; and four abraded London-ware sherds, the majority deriving from moat deposits G2.01. Pottery of 14th–15th-century date comprises seven undiagnostic, sand-tempered sherds in the south-east Midlands late medieval reduced ware tradition, and four contemporary oxidised sherds.

The twelve post-medieval sherds mainly comprise 17th-century, hard-fired, fine-glazed earthenwares (large shallow bowls and a single cup), with smaller quantities of 17th–early 18th-century tin-glazed earthenware and single sherds of black ware and a Staffordshire butter pot.

Ceramic building material

Jackie Wells

Ninety-five brick and tile fragments (17.8kg) were recovered, the majority from moat deposits G2.01 (11.6kg) and brick-lined well and pit G7 (5.6kg) (Table 4). The material survives in good condition, although it is fairly fragmented, with an average piece weighing 188g. The entire assemblage occurs in a hard fired, oxidised, sand-tempered fabric, likely to be of local origin.

Most of the building material comprises unglazed fragments of late medieval / early post-medieval peg tiles. These have circular holes for attachment using wooden pegs, and range in thickness from 15mm to 17mm. One example has a width of 180mm. Four unglazed ridge tiles occur, including a virtually complete hipped ridge tile (Fig. 5: 3). Mortar on the lower parts of these tiles indicates that they overlapped to give a 'granny bonnet' appearance to the ridges. Their dating is uncertain, although at nearby Grove Priory, an early post-medieval date (16th or 17th century) has been suggested for similar examples (Slowikowski 2013a).

Three pieces of plain floor tile or paviour (603g) were recovered from moat deposits G2.01. They measure 22–25mm thick and have a thin clear glaze coating their sides. None exhibit nail holes or keying. Seven moulded brick fragments were collected, including two complete examples; dimensions of the latter are 233 x 110 x 70mm and 220 x 100 x 60mm. They are thought to be contemporary with the peg tile.

Other artefacts

Holly Duncan and Quita Mould (leather shoe parts)

The majority of the non-ceramic assemblage derived from Phase 3 deposits. A selected catalogue is contained in Appendix 2.

The Phase 3 fills of the moat yielded a flint end scraper, a fragment of an undiagnostic iron strip, and glass from up to five wine bottles. At least three of the wine bottles

	Form					Total	
Group	Peg tile	Ridge tile	Floor tile	Brick	Unid	Frag. no.	Wgt (g)
2.01	48	4	3	5		60	11,680
5.01	1					1	217
7	20			2	1	23	5,602
8	9				2	11	338
Total	78	4	3	7	3	95	17,837

Table 4: Phase 3 CBM quantification

have cylindrical walls, indicative of a date in the second quarter of the 18th century or later (Noel Hume 1961, figs 4 and 6). There are also parts of leather shoes, including a turnshoe sole and remains of at least two forepart clump repairs. A piece of secondary leather waste (cattle hide), comprising an intersectional cutting piece from the cutting-out of shoe soles, was also recovered.

All the shoe parts from Phase 3 can be securely dated to the medieval period. The turnshoe sole is of adult size and for the right foot. It has an oval toe and a relatively wide, though distinct, waist and a wide seat. It is heavily worn and has stitching from the attachment of repairs to the tread and seat. Moss was associated with the shoe parts and is likely to have been used to stuff the toe of the shoe upper. As no shoe uppers are present, the shoe parts cannot be closely dated. However, the shape of the sole suggests a date in the high medieval period (1250–1400) and the associated moss stuffing is characteristic of the later 14th to later 15th century; taken together, a later 14th-century date is perhaps most likely.

The final fill of rubbish pit S17 (G5) yielded a rim fragment from a cast copper-alloy vessel. Although the most commonly recovered medieval metal vessel forms are cauldrons, skillets, ewers and jugs (Egan 1998, 161), confident identification of excavated fragments to particular forms is rarely possible, and this is the case in this instance. The sherd has been flattened, distorting its shape, and is sooted on both internal and external surfaces. It has a thickened, flat-topped rim, the rim wall almost vertical before turning sharply outwards. It has been tentatively identified as a skillet, which could suggest a 14th-century date (Dunning 1962, 98–100).

Cemetery G8 comprised twelve burials, eight of which contained non-ceramic artefacts (Table 5). Six burials yielded nails, suggesting these inhumations were contained within coffins. In several cases, traces of mineralised wood adhered to the nail fragments. The nails survived in poor condition, but x-radiography indicated that some small, tack-like nails were present in addition to larger examples (the longest nail, missing its tip, measured 49mm).

Burial S29, although not producing any nails, did yield a rectangular coffin handle and backing plate. The latter has a decorative outline of roughly triangular shape, with two triangular cut-outs. A similar motif was found on a backing plate from Wharram Percy (Harvey 1987, fig. 167: 18) but this is not closely dated beyond pre-1850. Backing plates with decorative outlines found at Norwich

Grave	Object	Quantity
S27	Iron nails	18
	Copper alloy pins	22
S28	Iron nails	5
	Copper alloy pins	1
	Copper alloy tacks	36
S29	Iron coffin handle	1
S30	Iron nails	2
	Copper alloy pin	2
S32	Copper alloy pins	3
S34	Iron nails	9
	Copper alloy pins	17
S36	Iron nails	19
	Copper alloy pins	8
S37	Iron nails	10
	Glass bead	1

Table 5: Non-ceramic artefacts from G8 burials

Plate 3: Skeleton S28 (G8) showing copper-alloy tacks

are thought to date to the 18th–19th centuries (Goodall 1993a, 82).

Grave S28 produced a total of thirty-six copper-alloy, circular, dome-headed tacks (head diameters 10mm and lengths about 13.5mm). They were found overlying the upper torso of the inhumation in two main groups — one group was situated over the chest in a rectangular pattern; the second group overlay the upper right arm, forming either a small oval or perhaps an 'S'-shape (Pl. 3). The use of brass or copper-alloy studs on coffins for decorative purposes can be traced back as far as the early 17th century (Harvey 1987, fiche chapter VIG). They were sometimes tacked directly on the wood for decorative purposes, either in the form of abstract designs or initials, but their usual purpose was to hold in place the fabric which sometimes covered the coffin. The practice of covering the outer shell of a coffin with material ranges in date from the late 16th century to the middle of the 19th century (Crowfoot and Litten 1987, fiche chapter VIE). A small quantity of undiagnostic ferrous slag (15.2g) and a secondary flint flake within this burial fill are assumed to be inadvertent inclusions.

Copper-alloy pins were found in six burials. All the pins had drawn-wire shanks and wire-wound heads, with the heads formed into a globular or spherical shape, possibly by means of a drop stamp (a piece of machinery operated by the foot). This method of manufacture was certainly known by the 14th century and remained in use essentially unchanged until the early 19th century (Biddle and Barclay 1990, 560–4), making close dating of these objects problematic. Pins from burials S27, S30 and S34 all retained traces of white metal plating. Analysis of some pins from Chelmsford which were also coated revealed that this is an alloy of tin and lead, and that such pins were present in deposits of the 16th century onwards (Caple 1985, 48). Caution in attributing significance to this trait is advisable, however, as survival of traces of this coating can be due to variable corrosion conditions.

Pins had a variety of uses. They were used until the 17th century by the poor to fasten clothes *in lieu* of buttons, but also by people of higher status to fasten head

veils and shawls; by the later 19th century they were used in dressmaking. That these pins were used within the funerary rite is also attested. An illumination of 1450 shows a body wrapped in a winding sheet, which was either pinned or sewn along the centre (Litten 1991, 59). Some of the burials of 1730–1860 at Christchurch, Spitalfields had a lined coffin and two rectangular sheets; once the body had been placed in the coffin, these sheets were folded over the remains and either pinned together or roughly sewn into place (Litten 1991, 79).

Grave S37 was the only one to produce an item of a more personal nature, in the form of a small, bun-shaped bead of 'black' glass. Beads were used in items of jewellery in the 19th century, in decorative embroidery on clothing and also in the craft of lace-making (Biddle and Creasey 1990, 660–1). Litten comments that it was rare for corpses to be committed to the grave wearing day-clothes, items of personal jewellery or any other keepsake, although by the second quarter of the 18th to the mid-19th centuries a change in attitude was taking place, and items such as wedding rings were being included (Litten 1991, 72–3).

Human bone

Harriet Jacklin

The remains of eight non-adult inhumations were recovered from cemetery G8. All were found lying in a supine position and aligned NW–SE (head to foot).

Bone preservation of skeleton S27 was 'fair', with 75–100% of the skeleton available for analysis; it has been classed as an infant aged between 1 and 1.5 years. The age estimation was based on dental eruption, epiphyseal fusion and long-bone measurements. A slight green staining was found affecting the anterior manubrium and sternum (breast-plate).

Detailed pathological analysis revealed that S27 may have suffered from congenital syphilis, which is passed from an infected mother to her unborn child. Some infants with congenital syphilis have symptoms at birth, but most develop symptoms later. If the symptoms of syphilis are untreated, late-stage syphilis can develop, which can affect the skeleton. The left and right humerus, ulna, radius, femur, tibia, ribs and scapula were all affected by thickening/swelling, and a change in the make-up of the cortex and medullary cavity. There was also an increase in the width of the frontal and occipital bones of the skull, and all the long bones were osteopenic. Associated bone destruction with no remodelling was found to affect the left and right femur (posterior diaphysis, especially at proximal metaphysis) and humerus (posterior diaphysis). Secondary periostitis was also found to affect both tibiae (entire diaphysis). A number of destructive lesions (with lytic foci) were found affecting the left humerus (two affecting the posterior diaphysis and another developing), the right humerus (one affecting posterior diaphysis but also affected by taphonomic damage) and the left femur (posterior proximal diaphysis).

The dental health of infant S27 was fair, although a band of discolouration was observed affecting the upper teeth, and dental hypoplastic pitting was found affecting a lower tooth, both of which are found in individuals with congenital syphilis. No 'Hutchinson' or 'Mulberry' molars were found, which would have also indicated the presence of congenital syphilis.

Bone preservation of skeleton S28 was 'good', with 75–100% of the skeleton available for analysis. Based on dental eruption, epiphyseal fusion and long-bone measurements, the skeleton has been classed as an infant aged between 1 year and 4 months to 2 years. The dentition was found to be in good condition, with no caries or periodontal disease. Slight green staining was found affecting the anterior lower thoracic vertebrae (mid chest), the anterior mid-diaphysis of the right humerus (upper right arm) and the anterior portion of the left scapula (left shoulder). The right maxilla (upper jaw) and the posterior part of the frontal bone (top of head) were also affected. No pathological signs of ill-health were present on the surviving skeletal material; there was no evidence of pathology or trauma, metabolic or endocrine disorders and no congenital/developmental variants.

Bone preservation of skeleton S29 was 'fair', with 25–50% of the skeleton available for analysis; it has been classed as an infant aged between 2 and 6 months. The age estimation was based on epiphyseal fusion and long-bone measurements. No pathological signs of ill-health were present on the surviving skeletal material.

Bone preservation of skeleton S30 was 'fair', with 75–100% of the skeleton available for analysis; it has been classed as an infant aged between birth and 2 months. The age estimation was based on dental eruption, epiphyseal fusion and long-bone measurements. The dentition was found to be in good condition, with no caries or periodontal disease. Slight green staining was found affecting the anterior upper cervical vertebrae (neck) and the occipital bone (back of head). No pathological signs of ill-health were present on the surviving skeletal material.

Bone preservation of skeleton S31 was 'fair', with 75–100% of the skeleton available for analysis; it has been classed as an infant aged between 1.5 and 2 years. The age estimation was based on dental eruption, epiphyseal fusion and long-bone measurements. The dentition was found to be in good condition, with no caries or periodontal disease. No pathological signs of ill-health were present on the surviving skeletal material. There was no evidence of pathology or trauma, metabolic or endocrine disorders and no congenital/developmental variants, although it was noted that the age estimate based on long-bone measurements was slightly behind that based on dental eruption and dental morphology.

Bone preservation of skeleton S32 was 'good', with 75–100% of the skeleton available for analysis; it has been classed as an infant/child aged between 3 and 4 years. The age estimation has been based on dental eruption, epiphyseal fusion and long-bone measurements. Slight green staining was found affecting the posterior portion of the frontal bone (top of head).

Six deciduous teeth from S32 showed signs of severe dental caries which affected the occlusal and the interproximal surfaces. The caries were recorded using Buikstra and Ubelaker (1994, 55). Dental caries is defined by Pindborg (1970) as an infectious and transmissible disease initiated by microbial activity on the tooth surface, leading to progressive destruction of the tooth structure, crown or root. Dental caries are often the most common dental pathologies found within archaeological human-bone assemblages and are associated with the consumption of sugar/carbohydrate-rich foodstuffs and poor dental hygiene. There was no evidence of pathology or trauma, metabolic or endocrine disorders and no congenital/developmental variants, although it was noted that the age based on long-bone measurements was slightly behind that based on dental eruption.

Bone preservation of skeleton S36 was 'poor', with less than 25% of the skeleton available for analysis; it has been classed as a possible stillborn aged between 8.5 months *in utero* to 1 month old. The age estimation was based on dental eruption and long-bone measurements. No pathological signs of ill-health were present on the surviving skeletal material.

Bone preservation of skeleton S37 was 'poor', with 50–75% of the skeleton available for analysis; it has been classed as an infant aged between birth and 2 months. The age estimation was based on dental eruption, epiphyseal fusion and long-bone measurements. The dentition was found to be in good condition, with no caries or periodontal disease. Pathological analysis revealed active periostitis affecting the right humerus and right ulna. This condition showed itself as plaque-like, grey, new-bone formation with microporosity. It is possible that the rest of the skeleton may have showed signs of this condition, if it had not been for the adverse taphonomic processes which resulted in its poor preservation. Periostitis is an inflammation of the bone membrane (periosteum). The condition can form part of a localised event (*e.g.* as a result of trauma) or as a secondary condition indicative of an underlying condition (as a bi-product of another disease/infection or metabolic disorder). In the case of S37, it is likely that the periostitis was secondary and was active at the time of death. No other pathological signs of ill-health were present on the surviving skeletal material; there was no evidence of pathology or trauma, metabolic or endocrine disorders and no congenital/ developmental variants.

Animal bone

Mark Maltby

Of the 108 animal bone fragments assigned to this phase, all but ten were found in the moat fills G2.01.

Cattle accounted for thirty-one of the eighty-nine identified elements. Skull fragments were the most common element (Table 1), three of which have the base of the horn-core still attached. Three horn-cores, two of which are complete, were recovered from areas adjacent to the skull fragments, suggesting that this area of the moat was sometimes used for the disposal of horn-working waste. This is supported by the presence of nine substantial portions of goat horn-cores, two of which remain attached to the same skull. Two of the horn-cores bore evidence that the sheath had been removed, in one case near the base and on the other near the tip of the core. Other cattle elements include five humeri fragments from at least three bones. Three of these bear chop marks on various parts of the bone, all associated with dismemberment. Chop marks were also observed on a lumbar vertebra and the shaft of a radius, which had been completely severed by the blow. Fully adult cattle are represented by at least three limb bones and the horn-cores. Younger animals are indicated by a mandible showing only two of the three molars in wear, and the porous nature of a vertebra and one of the skull fragments.

Nine sheep/goat horn-cores were found, six of which were measurable. The medial diameters of the bases ranged from 30.7mm to 40.4mm (mean 33.7mm), placing them comfortably in the male size category. The other three were of similar dimensions, although not measurable. The larger male horns were preferentially collected for working. Apart from the horn-cores, sheep/goat are represented by only five other elements. These include a mandible of an old adult, with heavy wear on all three molars (Grant wear stage 47) and the partial *ante-mortem* loss of the first molar with compensatory abnormal wear on the adjacent fourth premolar. This animal may have been over ten years old.

Only six pig bones were recovered from Phase 3 deposits, including two humeri. On the other hand, equid bones, most probably horse, were the second most commonly identified category. The twenty-one bones, all from the moat, include thirteen from a small adult animal. This group consists of part of the pelvis, a lumbar and five vertebrae, and six ribs. All the vertebral epiphyses have fused, and two of the thoracic vertebrae have exostoses on the dorsal spine. The cause of such condition is varied but is more likely to develop in older animals. This group may have been part of a larger group of bones deposited in the moat. The anterior part of the sacrum and the sixth and seventh lumbar vertebrae represent a second associated group of horse bones. A complete femur belonged to a much larger horse. It has a greatest length of 480mm, which converts to an estimated withers height of 151.6cm. The bone is also very robust, reminiscent of a large carthorse of about 15 hands high. A complete radius with a lateral length of 320mm (greatest length 350mm) has an estimated withers height of 138.9cm, representing a smaller, yet still relatively large, animal standing at about 14 hands. Two metapodials are also from quite large horses.

The fifteen dog bones also came from the moat. Eleven of them are probably from the same adult male. Although the bones in this group (six ribs, baculum, mandible, scapula, radius, metacarpal) are not articulated, it is likely that they formed part of an associated group, possibly of a fairly complete animal that was deposited in the moat. The mandible has evidence of a blade mark on the lateral surface beneath the molars. This may be a rather heavy-handed skinning mark that removed some of the flesh as well from around the jaws. The length of the radius measures 175mm, providing a withers height estimate (Harcourt 1974) of 57.6cm. This is quite a large animal, similar in size to a pointer (but not necessarily the same breed). An ulna (greatest length 204mm) from another context belonged to a dog of very similar size (57.3cm) and could even be from the same skeleton. A femur belonged to a larger dog standing at about 62.8cm (greatest length 204mm).

A single bone was each identified to domestic fowl and goose. The former consisted of a tibiotarsus with a clear deposit of medullary bone within its shaft indicating it belonged to a laying hen. The goose carpometacarpus was from quite a small individual. Sieving produced part of an unidentified fish jaw.

Plant macrofossils

Charlotte O'Brien

Waterlogged plant remains were abundant from moat fill G2.01 (Table 3) and were dominated by plant macrofossils of trees and shrubs, including dogwood, field maple, hazel, plum, sloe, elder, bramble, hawthorn, fig and mulberry. Some of the remains, particularly the plum stones, had the characteristic nibble holes of small mammals. Arable, ruderal, grassland, wet-ground and aquatic taxa were also recorded. Waterlogged remains of cultivated plants comprised a hemp seed and a wheat grain. A few charred barley, wheat and indeterminate cereal grains were also present. Wood fragments were abundant,

and identification of a small selection of roundwood and stemwood fragments indicate that oak and ash were present. Vivianite, a blue mineral which indicates the former presence of organic material in wet or waterlogged conditions (McGowan and Prangnell 2006), was noted in this deposit.

Insects
Steve Davis
A moderately diverse insect assemblage was preserved (sixty-eight individuals from fifty-six taxa). No single faunal element was particularly dominant. However, the assemblage included a number of obligate woodland taxa, in particular three members of the Scolytidae (bark beetles): *Hylesinus oleiperda*, *H. crenatus* and *Leperisinus fraxini*. While all three are known from a variety of deciduous tree species, including oak, hazel, birch and hornbeam, their most common host plant is ash (from which *L. fraxini* gains its specific epithet). *L. fraxini* and *H. oleiperda* are both taxa of small-diameter wood (*c*. 1–2 cm), often branches or twigs, usually derived from living or recently deceased ash (Lekander *et al*. 1977; Koch 1989; Alexander 2002). *H. crenatus* is one of the largest bark beetles found in the UK and is most frequently taken from under bark on larger-diameter timbers, generally on weakened or diseased ash or in prepared timber which has retained its bark (Palm 1959; Lekander *et al*. 1977). Other woodland specialists included the distinctive staphylinid *Siagonium quadricorne*, which dwells beneath the bark of deciduous trees, most frequently that of elm or elder (Atty 1983); the elaterid *Melanotus erythropus*, characteristic of very well rotted wood (Duff 1993); and the generalist woodland weevils *Phyllobius argentatus* and *Otiorhynchus fuscipes*, both of which may be found on a variety of deciduous tree taxa.

A number of insects characteristic of both foul, rotting material and dung were also identified. These included three species of *Aphodius* dung beetle: the common and ubiquitous *A. sphacelatus*; the somewhat more specific *A. luridus* (usually confined to cow or sheep dung in exposed habitats (Jessop 1986)); and the non-specific but now extremely rare (RDB1) *A. subterraneus* (*cf*. Shirt 1987). Several typical staphylinids of foul environments were also recovered, including the oxtellines *Anotylus sculpturatus*, *A. rugosus* and *Platystethus arenarius*, although none of these was recorded as more than a single individual. *A. sculpturatus* is common in dung, vegetable refuse and carrion (Koch 1989), while *P. arenarius* is predominantly a dung taxon (Hammond 1971) and *A. rugosus* is extremely catholic in habit.

Several grassland specialists were also recovered, including the elaterids ('click beetles') *Agrypnus murina* and *Agriotes lineatus*, the former particularly characteristic of drier habitats (Koch 1989). Several grassland weevils were also noted, including a number of taxa characteristic of dry, often calcareous grassland, and sometimes cliff habitats. These included the Notable B (Nationally Scarce Category B (Shirt 1987)) taxa *Brachysomus echinatus*, *Otiorhynchus raucus* and *Barypeithes sulcifrons* (*cf*. Hyman 1992; Morris 1997). Of particular interest was the distinctive weevil *Gronops lunatus* (another Notable B taxon), which is often coastal in distribution and is associated with *Spergula spp*. or *Spergularia spp* and possibly other members of the Caryophyllaceae (Hyman 1992).

Synanthropic (*i.e*. human-related) insects were sparse but comprised two individuals of the obligate synanthrope Grain Weevil, *Sitophilus granarius*. *S. granarius* is a flightless taxon intimately associated with stored grain and strongly related to this environment. Given the low numbers, it is possible that these represent previously consumed individuals deposited in faeces (*cf*. Osborne 1983), a distinct possibility given the indications of dung, rather than providing evidence of local grain storage *per se*.

Molluscs
John Carrott
A small collection of predominantly terrestrial snails, as opposed to the predominance of freshwater snails in G2, was recovered. The relative dearth of aquatic taxa may suggest that this re-cut of the moat was more damp than water-filled at the time of the formation of this deposit; *Discus rotundatus* and *Cochlicopa* species suggest damp and shaded ground conditions.

Phase 4: Modern Development of the Site

The majority of the medieval and post-medieval features were truncated by remains associated with the 19th- and 20th-century development of the site. The moat probably underwent its final backfilling and was levelled during this period. Its upper deposits G2.02 were 1.4–1.6m thick and contained a mixture of medieval, post-medieval and modern pottery and building material.

The footings of terraced houses, first depicted on the 1901 Ordnance Survey map, were also revealed at the northern end of the site. These fronted onto the former location of St Ann's Road, which was repositioned further to the south during redevelopment of the area in the late 20th century.

The finds

Pottery
Jackie Wells
Phase 4 deposits yielded seventy-five sherds representing sixty-six vessels (1.2kg), and constituting 26% (by weight) of the total assemblage. The majority were associated with the upper moat deposits G2.02. Sherds are highly fragmented, with an average weight of 15g and a low vessel to sherd ratio of 1:1, and survive in a similar condition to those of the preceding phase. Residual medieval coarse wares occur in a similar range of sand-tempered fabrics to the Phase 3 assemblage, but are no longer dominated by the South Hertfordshire-type grey wares. High medieval fine wares are represented by single glazed body sherds from jugs in Brill-Boarstall ware and London ware. A single sherd of south-east Midlands reduced ware and eight contemporary oxidised sherds comprise the late medieval assemblage. Diagnostic forms are jugs with wide-slashed strap handles, square-rim jars and a cistern.

Seventeenth-century hard-fired, fine, glazed earthenwares (large shallow bowls and lid-seated jars) comprise the majority of the post-medieval assemblage (seventeen sherds), with smaller quantities of 17th- to early 18th-century tin-glazed earthenware. There are also single sherds of Cistercian ware and a black-ware tyg, respectively of 16th- and 17th- century date.

Mass-produced late 18th- to19th-century domestic wares are represented by seven sherds of cream ware,

	Form			Total	
Group	Peg tile	Ridge tile	Brick	Frag. no.	Wgt (g)
2.02	107	4	10	121	11,502
9			1	1	16
Total	107	4	11	122	11,518

Table 6: Phase 4 CBM quantification

pearl ware, transfer-printed earthenware and Staffordshire white salt-glazed stoneware.

Ceramic building material
Jackie Wells
Phase 4 deposits produced 122 fragments of brick and tile, weighing 11.5kg, with the majority coming from the upper moat deposits G2.02 (Table 6). The material survives in good condition, although it is more fragmented than examples from the preceding phase, with an average fragment weight of only 94g. Most of the assemblage occurs in a hard-fired, oxidised, sand-tempered fabric. Two pieces of brick in a smooth, buff, gault fabric were also recovered, a type that is known to originate in the gault clay area running through east and south-west Bedfordshire, and neighbouring counties.

The majority of the building material comprises unglazed fragments of peg tile, likely to be of similar date to those of the preceding phase. Four unglazed ridge tiles (410g) and a piece of late medieval glazed roof tile (41g) were recovered. Bricks are represented by nine moulded, post-medieval fragments (1.4kg) and two pieces of modern engineering brick (19g). An abraded, sand-tempered Roman brick fragment (529g) derived from upper moat deposits G2.2.

Other artefacts
Holly Duncan
With the exception of a single flint flake from the topsoil, the entire assemblage was recovered from the final, deliberate infilling of moat G2. A selected catalogue is contained in Appendix 2.

An assemblage of vessel glass, in the main comprising wine bottle fragments, was recovered. Two bottle types could be identified, one of Noel Hume's type 16 (1750–1765) and one of type 21 (1770–1800). Part of a foot-ring from a stemmed drinking vessel was also found, but this could not be closely dated. Also suggestive of 'domestic' activity was the bolster-tang knife, a form of hafting which is thought to have been introduced about the middle of the 16th century; by the 17th century it was in widespread use (Goodall 1993b, 130).

A rectangular iron staple, a small quantity of wall plaster (44.8g) and an off-cut of lead sheet could be associated with a building and its fittings, while the find of a 'hot' chisel indicates at least a degree of metalworking. None of these items can be closely dated nor, due to the nature of the deposits, is it clear whether they relate to activity within the investigation area or come from 'imported' soil used to level the ground.

Animal bone
Mark Maltby
Deposits associated with the deliberate backfilling and levelling of the moat produced 129 animal bones, of which eighty-eight were identified to species.

Ten cattle bones include three femora fragments (Table 1). The limited ageing evidence again indicates that the assemblage includes bones of young calves, older but still immature animals, and adult cattle. Cleaver marks were observed on a femur, humerus and pelvis.

Sheep/goat are slightly better represented than cattle; in contrast to the previous phase, no horn-cores nor indeed any other cranial elements were recovered. Nearly all the sheep/goat assemblage consists of limb bones, including six tibiae from at least three different bones. The bias towards good meat bones indicates that the bones largely represent secondary or tertiary butchery (cooking or table) waste. Butchery marks were observed on the shafts of two femora. One had been chopped through; the second, a very large specimen from an improved breed, had been sawn through. This is one of several bones of large sheep, whose presence confirms the late post-medieval/modern origin of this assemblage. Several of the limb bones have fused, indicating the presence mainly of adult animals and suggesting that mutton rather than lamb tended to be consumed, although the sample is very small.

Eleven pig bones include the maxilla of an immature sow and the canine of a domestic boar. Horse continues to be commonly found: ten of the fifteen bones consist of metapodials, with at least four different metatarsals and three metacarpals present. Most of the bones are from quite large, adult animals. No butchery marks were observed, but the uneven nature of the anatomical representation suggests that their carcasses were dismembered.

Dog was the most commonly identified species (twenty-six bones), partly because of the recovery of eleven bones from a single deposit, which were probably from the same adult animal. Based on the length of the tibia (127mm), it had a shoulder height of about 38cm. Four different dogs are represented by humeri, and three by radii and femora. Another complete tibia has an estimated shoulder height of 42.7cm and a radius one of 48.7cm. All the dog bones found in this phase are from adults.

Six cat bones (humerus, ulna, two femora, tibia and metacarpal) were recovered, with both immature and adult animals represented. The only bird bone consists of a complete tarsometatarsus from a domestic fowl; the absence of a spur indicates it belonged to a hen.

DISCUSSION

Location and Nature of the Castle
Paul Courtney and Wesley Keir

The large ditch revealed during excavation corresponds with the location of the north-western arm of the moat of Fulk de Breauté's castle, which is alluded to in various historical documents. In 1221, the chronicle of Dunstable noted that Fulk had built castles in Luton and Eaton Bray, to the detriment of Dunstable and its vicinity (Luard 1864–9, iii, 66). By this time he was considered to be one of the most powerful men in England, being the keeper of numerous castles, the lord of various estates and the sheriff of six counties (Austin 1928). However, he was also one of the most despised, due in part to various misdemeanours against the Church. One such deed, alluding to the location of the castle, is related by Mathew Paris around 1221: he noted that de Breauté had built a pond at Luton whose outlet flooded the abbot's corn and damaged

a barn (Luard 1872–4, iii, 120). It seems de Breauté had dammed the river between the vicarage and the castle, presumably to aid the retention of water within the moat (Austin 1928, 101). The Church lands were flooded as a result, for which de Breauté is recorded as being completely unrepentant, to the extent that he wished that the corn had been completely destroyed.

Later documents and authors provide further evidence for the location of the castle and its moat. Glebe terriers of 1634 and 1635 describe the vicarage garden or orchard as being enclosed by a moat which extended along the garden's east side (BRO Fac35/16). The glebe terrier of 1707 describes the orchard as 'fenced in by a mote of water' and the churchyard as 'fenced by water part an … (damaged)' (BRO P85/2/1/1).

Richard Gough (1783, 43 and 53) described the land on the south side of St. Mary's Church as 'Court Close' and suggested that it was the former site of de Breauté's castle. In the mid-19th century, the site of a square 'moated mansion' appears to have been clearly visible in the meadow to the south-east side of the churchyard (Davis 1855, 8). Davis further notes that the meadow was surrounded by 'a very high bank of earth and deep ditch'. The area of the castle as described above is likely to correspond with plots 194 and 196 on the 1842 town map (Fig. 2), an area in which Austin (1928, 101) states that people could still remember there being 'a raised mound of considerable extent, surrounded by a large ditch'. Pecked lines marked within plot 194 on the town map are likely to represent surviving parts of the bank.

In 1223, King Henry ordered the surrender of all royal castles (Austin 1928, 98). By 1224, de Breauté had surrendered his castle to the King and was exiled. Davis (1855) and Austin (1928) suggest that the castle was subsequently destroyed, prior to the construction of a 'courthouse' on the site. It is certainly possible that the backfilled deposits G2, recorded within the base of the moat, were associated with redevelopment of the area during the 13th century. It is also possible that the courthouse would have formed part of the 13th-century 'castle' buildings. This is perhaps hinted at by Leland in 1540 when, referring to the courthouse, he states 'part of the old place standeth yet' (Austin 1928, 102).

It is likely that the site of de Breauté's castle was also the site of the royal manor of Luton, with a history extending back into the Saxon period. The abraded sherds of Saxo-Norman pottery found in deposits associated with building G1 are certainly testimony to activity that predates the castle. Whether de Breauté's work is worthy of the term 'castle' is unclear. It was only described contemporaneously as a castle by the monks of Dunstable, possibly as a result of monastic paranoia (Cathcart King 1988, 8–9 and fn. 16). Certainly, Eaton Bray (built by William Cantilupe), which is also described as a new castle by the same monastic reference, has long been regarded as a moated homestead rather than a castle. It had a wall, moat and two drawbridges documented in 1273 (Cathcart King 1988, 8; Dyer 1963, 8–9). In addition, one might note that it was Waudari's short-lived, early 12th-century castle which gave its name to Castle Street. These things aside, it seems likely that de Breauté made some effort to strengthen the manor/castle's defences, as with the bank and ditch, although these were also both common features on rural manorial sites.

Other than the courthouse, there are no historical references to specific buildings on the castle site, but by the 13th century it probably possessed a range of agricultural processing and storage buildings in addition to a chamber block, hall and stables. It is likely to have served as an occasional residence for the King or great lords, as an agricultural centre, and the hall would have served as the manorial court, collecting rents and fines from its tenants. Being only partially revealed, the function of timber building G1 is uncertain. However, building remains of a similar size and nature have been interpreted as halls, dwellings or even weaving sheds at Goltho medieval manor near Lincoln (Beresford 1987).

The Local Medieval Environment
Charlotte O'Brien

The plant macrofossil analysis indicates that the site lay within a predominantly open, agrarian landscape. Oats, hulled barley and *cf.* bread wheat were the main cereals being used in the vicinity; all were commonly cultivated during the medieval period in Britain. Archaeobotanical evidence from other sites in eastern England indicates that they were also the main field crops in this region: for example, bread wheat was the predominant crop identified from deposits at Ipswich, with rye, hulled barley and oats also common (Murphy 1987). Bread wheat and oats were also used at the medieval moated enclosure in Tempsford Park, Bedfordshire (Maull and Chapman 2005), while medieval deposits from Leicester Abbey yielded charred remains of bread wheat, oats and barley, in addition to peas and beans (Monkton 2004).

Other economic plant remains include a few flax and hop seeds. Flax is a versatile crop, which in addition to producing fibre for clothing, ropes or sacking, may have been used to make linseed oil for food, preservative or medicinal uses. The by-products of oil and fibre production could also have been used as fodder or fuel (Bond and Hunter 1987). Flax has frequently been recorded on medieval sites from eastern England, such as in the 11th-century latrine pits at St Martin-at-Palace Plain, Norwich (Murphy 1988). If flax was being cultivated for fibre production, there would have been an area for retting, *i.e.* soaking the plant stems in water to aid removal of the bast fibres for linen production (Geraghty 1996), and the moat may have been used for this purpose. Large numbers of seeds would not necessarily be present in residues where retting had taken place, as seed capsules were traditionally removed from the stems prior to retting, in a process called rippling. However, retting is a very polluting process, and for this reason it was usually undertaken away from the area of settlement (Gearey *et al.* 2005). The flax seeds may, therefore, have been deposited in the moat with a dump of domestic waste.

The hops may have been cultivated locally for the flavouring of beer, the production and sale of which was of increasing economic importance during the medieval and post-medieval periods. By 1474, Luton probably had as many as sixty malt-kilns (Dyer and Dony 1975, 83).

The presence of frequent grass seeds reflects the likely proximity of meadow or pasture, whilst the presence of charred sedge nutlets may indicate some cultivation of damp, heavy soils, and/or burnt peat, dung or hay. The waterlogged remains of the arable weeds fool's parsley, stinking chamomile, sun spurge, black bindweed, fat-hen, fumitory and wild radish found in the moat may

reflect the proximity of arable fields, or alternatively that crop-processing waste was periodically deposited in the moat.

Later Medieval and Post-Medieval Activity
Wesley Keir, Paul Courtney and Charlotte O'Brien

The later history of the manor/castle site is unclear. No features were identified that were conclusively in use during the later medieval period, although the larger of the two refuse pits in G5 may still have been open, and several late medieval pottery sherds and non-ceramic artefacts, including leather shoe parts, were found within the waterlogged fills of the moat G2.01. However, some evidence of later medieval activity on the castle site, in the form of two ditches and pits, was identified during excavation adjacent to Vicarage Street, 100m to the east (Archaeology South-East 2010). A late medieval / early post-medieval plough-soil was also present at the same site.

By the late 14th century it is likely that the manor/castle site's lands were farmed out and it lost its agricultural function. On many such sites the last function to survive was the holding of manorial courts, as suggested by the survival of the courthouse as a building into the early 17th century. However, any juridical function presumably ended with its sale in 1618, if not before.

The medieval moat fills within the excavated sections appear to have been largely removed during the post-medieval period. This can possibly be correlated with a reference in the particulars of the sale of the 'castle' land to Francis and Thomas Crawley in 1611 — Francis had the right to cast up mud out of the ditches belonging to the premises upon the adjoining waste grounds and carry 'the same away' (BRO Crawley C153; Austin 1911, 148–9). These quarry cuts subsequently infilled gradually through a mixture of natural silting and waste disposal.

Much of the castle site appears to have been used for meadow and pasture, at least during the later post-medieval period, as reflected by the presence of insects specific to grassland habitats found within the moat fills. The continued use of barley and *cf*. bread wheat was also evident. However, the most striking characteristic was the abundance of the remains of trees and shrubs, and plants which could be considered 'garden' plants (*cf*. Murphy and Scaife 1991). The remains included those of fruit trees, introduced species such as mulberry and fig, and herbaceous plants which may have been grown for ornamental or medicinal purposes. It is likely that many of these remains are associated with the garden depicted on the tithe map and town map within which most of the excavation site lies. An orchard associated with the vicarage is also referred to by the glebe terriers of 1634 and 1635 (BRO Fac35/16).

Documentary research has identified that the children's graves form part of a burial ground established by the Society of Friends in John Brown's garden in the late 18th century (Roger Sear pers. comm.). It appears only to have been used for young children of the Brown family, who probably first settled in Luton *c*. 1700. A building located in the yard of 16 Park Street, owned by Daniel Brown, was used as the Meeting House during the 18th century. This did not have an attached burial ground, which is likely to provide at least a partial explanation of why the children were buried in John Brown's garden. Believing that all ground should be considered as 'holy', it was not an uncommon practice for Friends' family burial plots to be located within land owned by the family.

The presence of the two undated inhumations G6 revealed within the trial trench is more puzzling. Their location some distance away from the seemingly confined area of the Society of Friends burial ground suggests they are unlikely to have been associated with it. One possibility is that the churchyard shrank in size; its south-eastern boundary does appear to have shifted slightly to the north-west from the position depicted on the 1842 town map (Fig. 2). Alternatively, the site of the church may have moved. This latter explanation provides support for the theory that the existing church was rebuilt at a different, but nearby, location to the original 10th-century church. A similar possible shift has been postulated for the local minster church at nearby Flitton (Wardill forthcoming).

The well and pit (G7) to the south-west of the children's cemetery are likely to have been associated with the backyards of properties that fronted onto Park Street, which during the medieval and post-medieval periods was Luton's principal thoroughfare.

By the late 19th century the area of the castle had been levelled and the moat completely backfilled, making way for the terraced housing marked on the 1901 OS map.

ACKNOWLEDGEMENTS

The project was commissioned by Davis Langdon LLP on behalf of the University of Bedfordshire. The works were monitored on behalf of the Local Planning Authority by Martin Oake, Archaeological Officer for Central Bedfordshire Council.

Wesley Keir was the Project Officer during all phases of the project. Excavation and recording was carried out by Wesley Keir, Christiane Meckseper, Mark Phillips, Kathy Pilkinton, Ian Turner and Adam Williams.

Assessment and analysis work was undertaken by the following specialists: Jackie Wells (ceramic artefacts), Holly Duncan (non-ceramic artefacts), Mark Maltby (animal bone), Harriet Jacklin (human bone), Charlotte O'Brien and Lorne Elliott (plant macrofossils), Steve Davis (insects), John Carrott (molluscs) and Quita Mould (leather). Documentary research was largely undertaken by Paul Courtney, though the research into the nature of the children's cemetery was provided by Roger Sear with the assistance of the Bedfordshire and Luton Archives and Records Service. The figures were produced by David Ingham and Cecily Marshall.

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APPENDIX 1: POTTERY TYPE SERIES

Pottery fabrics, based on surface appearance and major inclusion types, are summarised in Table 7 by chronological period, using type codes and common names in accordance with the Bedfordshire Ceramic Type Series. This is currently held by Albion Archaeology, from whom detailed fabric descriptions are available. Full fabric descriptions are given only for those types not previously published.

Fabric type (no. sherds)	Common Name	Reference
Late Iron Age		
F06B (1)	Medium grog	Slowikowski 2000
F39 (2)	Grog and mica	Wells 2010a
Saxo-Norman		
B01 (4)	St Neots-type ware	Baker and Hassall 1979
B01A (6)	St Neots-type ware (orange)	Wells 2010b
B01B (1)	St Neots-type ware (fine)	Denham 1985
B01C (1)	St Neots-type ware (mixed)	Wells 2010b
Early-high medieval		
C03 (2)	Fine sand	Wells 2009
C04 (20)	Coarse sand	Wells 2009
C53 (1)	Sand (pasty)	Wells 2009
C57 (5)	London type	Pearce et al. 1985
C59A (28)	Harsh sand	Brine 1988
C59B (1)	Sand	Brine 1988
C61 (2)	Calcareous inclusions	Wells 2009
C63 (4)	Flint	Brine 1988
C67 (16)	Mixed inclusions	Fairly coarse, hard-fired fabric. Grey-brown, slightly micaceous surfaces, with occasional patches of oxidisation and a light grey core. Inclusions are moderate, ill-sorted, rounded calcareous (limestone?) grains, 0.2–1.0mm; frequent moderately sorted, sub-rounded–sub-angular quartz , 0.3–0.7mm; and occasional voids where organic matter has burnt out.
C71 (7)	Sand (buff-grey cored)	Wells 2009
C76 (2)	Sand	Slowikowski 2013b
C60 (88)	Hertfordshire-type grey ware	Brine 1988
C09 (6)	Brill-Boarstall ware (fine)	Ivens 1982
C16 (2)	Surrey white ware	Pearce and Vince 1988
C17 (1)	Hedingham ware	Walker 2012
C65 (5)	Gritty red ware	Slowikowski 2013b
C (3)	Non-specific medieval	Described in site archive
Late medieval		
E01 (8)	Reduced sand	Slowikowski 2011
E02 (10)	Oxidised sand	Wells 1996
Late medieval/early post-medieval		
C66 (1)	Late transitional Brill	Mynard 1992
E03 (2)	Smooth oxidised sand	Wells 1996
P12 (1)	Cistercian ware	Baker and Hassall 1979
Post-medieval		
P01 (20)	Glazed red earthenware (fine)	Baker and Hassall 1979
P03 (2)	Black-glazed earthenware	Baker and Hassall 1979
P14 (2)	Blackware	Brears 1967
P33 (4)	Tin-glazed ware	Jenning 1981
Modern		
P37 (3)	White salt-glazed earthenware	Standardised, mass-produced 19th–20th-century wares are well known and widely published. Specific references are not provided.
P38 (1)	Cream ware	
P43 (2)	Pearl ware	
P45 (1)	Transfer-printed ware	

Table 7: Pottery type series

APPENDIX 2: SELECTIVE CATALOGUE OF NON-CERAMIC ARTEFACTS

Each catalogue entry is formatted as follows:

Object identification; material; description and dimensions. RA (registered artefact no.), if applicable; context; feature; Sub-group no. (S); Group no. (G); Phase; illustration reference

PHASE 2

Shoeing nail. Iron. Worn fiddle key shoeing nail, approaching T-shape. Only upper shank survives. Length 20.5mm. (526); feature 501; S7; G2; Phase 2; not illustrated

Lace tag. Copper alloy. Part of a lace tag, incomplete and split lengthwise. Length 12.3mm; breadth 4mm; thickness sheet 0.3mm. RA48; (347); feature 333; S17; G5; Phase 2; not illustrated

Mortar. Limestone (Purbeck marble?). Wall fragment of mixing mortar, exterior gently faceted with a hint of herringbone tooling surviving. Interior surface worn smooth, working lines (vertical facets) clearly visible. Wall thickness varies from 33.5mm to 23.1mm. Soot patches on both internal and external surfaces. Height of surviving wall 68.7mm; internal diameter 160mm. RA 30; (350); feature 333; S17; G5; Phase 2; not illustrated

PHASE 3

Footware. Leather (cattle hide). Turnshoe sole, right foot, adult size and forepart clump repair, adult size. Oval toe, medium tread worn through and now torn into two pieces, medium/wide waist and seat, seat worn through along the outer edge. Edge/flesh seam stitch length 5–6mm. Worn stitching on the grain side from repairs to the tread and seat. Almost complete. Thickness 3.72mm; length 251+mm; width tread 88mm; waist 52mm, seat 70mm. Estimated adult size 5 (38). Also forepart clump repair: lower edge of forepart clump repair upper part torn away, likely to join to RA38 (533). Tunnel stitching on flesh side along the surviving edges. Thickness 2.62mm; length 54+mm; width 100mm. RA36; (509); feature 529; S8; G2.01; Phase 3; not illustrated

Footware. Leather (cattle hide). Forepart clump repair, adult size. Oval-toed clump repair worn away along the right side, broken away down the left side. Tunnel stitching around the surviving edge on the flesh side. Almost complete. Thickness 4.9mm; length 128mm; width estimated 90mm. RA35; (509); feature 529; S8; G2.01; Phase 3; not illustrated

Footware. Leather (cattle hide). Forepart clump repair, adult size. Oval/round toe area of clump torn away across the tread, lower part missing. Tunnel stitching around the surviving edge on the flesh side. Incomplete. May join to the bottom of clump RA36 (509). Thickness 2.85mm; length 99+mm; width 103mm. RA38; (533) Feature 529; S8; G2.01; Phase 3; not illustrated

Secondary waste. Leather (cattle hide). Intersectional cutting piece from the cutting-out of shoe soles, with one corner torn off. Thickness 4.5mm; length 42+mm; width 45mm. RA 37; (531); feature 529; S41; G2.01; Phase 3; not illustrated

Vessel. Copper alloy. Cast rim, thickened, flat rim top, the rim wall almost vertical before turning sharply outwards (skillet?). Just below the rim and near a break are three sides of a square perforation, suggesting a vessel repair. The sherd is slightly flattened, distorting rim diameter measurements. Sooting both on exterior and interior surfaces. Thickness rim 3.6mm; body 1.4mm. RA28; (334); feature 333; S18; G5.01; Phase 3; not. illustrated

Coffin handle and backing plate. Iron. Rectangular drop-handle attached to backing plate by remains of two staples. The backing plate has a decorative outline (roughly triangular) and two triangular openwork motifs on the body. Incomplete, one end damaged; in corner of opposing end x-ray revealed a small circular perforation *c*. 1mm diameter. Mineralised wood(?) adhering to back of backing plate. Backing plate length 73.1mm; height 28mm; thickness 2.4mm; drop-handle length 62.6mm; height 16mm. RA29; (340); feature 339; S29; G8; Phase 3; not illustrated

Tacks (36). Copper alloy. Circular, slightly domed tacks with short tapering square-sectioned shanks. A few tacks retain mineralised wood *in situ* along the short shanks. Complete examples measure *c*. 13.5mm in length. Tack head 10mm diameter. RA2; (338); feature 337; S28; G8; Phase 3; Plate 3.

Pins. Copper alloy with white metal plating. Eight pins retaining wire-wound heads moulded into spherical shape and fourteen portions of drawn-wire shanks representing in total probably eight pins. One nearly complete pin length 24.5mm; diameter wire 0.7mm. RA4; (358); feature 357; S34; G8; Phase 3; not illustrated

Bead. Glass: 'black'. Small bun-shaped bead. 4mm diameter; height 2.4mm; diameter of central hole *c*. 1.2mm. RA47; (373); feature 372; S37; G8; Phase 3; not illustrated

PHASE 4

Knife. Iron. Bolster tang knife. Incomplete rectangular tang leading to narrow circular-sectioned bolster (visible on x-ray). Blade triangular-sectioned, incomplete, missing tip. Blade back damaged but appears straight to break point. Blade edge also straight to break. Length 127mm; blade width 21mm. RA33; (402); feature 537; S6; G2.02; Phase 4; not illustrated

Chisel? Iron. Head flat, but slightly burred. Body of rectangular section, tapering in width and thickness to wedge-shaped tip. Possible hot chisel. Length 94.3mm; width 17.3mm; thickness 9.5mm. RA34; (402); feature 537; S6; G2.02; Phase 4; not illustrated