Proc. Hampshire Field Club Archaeol. Soc. **72**, *2017, 61–128 (Hampshire Studies 2017)*
https://doi.org/10.24202/hs2017001

EXCAVATIONS IN AND AROUND THE PRIVY GARDEN, CARISBROOKE CASTLE, ISLE OF WIGHT, 2006 AND 2008–9

By Michael Russell
with contributions by Gemma Ayton, Duncan H Brown, Gill Campbell, Greg Campbell, Christopher Bronk Ramsey, John Meadows, Judith Dobie, Kayt Marter Brown, David A Higgins, Michael Lewis, Peter Marshall, Rebecca Nicholson, Nicola Russell, John Vallender, Mariangela Vitolo *and* David Williams

ABSTRACT

Archaeological evaluations in advance of the installation of a new garden in the area previously known as the Privy Garden, now the Princess Beatrice garden, at Carisbrooke Castle revealed the first prehistoric feature from the site and established a northern continuation of a Conquest-period ringwork ditch. The main discovery, a 12th century high status, masonry, cellared structure, probably a chamber block of two-storeys, is identified as the 'chamber next the chapel' mentioned in a 13th century account. Further structures added in the 13th–15th century are discussed. The demolition of these buildings in the late 16th century and the re-ordering of the site are seen in the context of major works by Sir George Carey.

Environmental sampling, particularly of yard surfaces and a midden developed to the east and south of the chamber block, has greatly enhanced understanding of the medieval and early post-medieval diet and economy at the castle.

INTRODUCTION

In response to a proposal to redevelop and re-present the Privy Garden at Carisbrooke Castle, a team of English Heritage (now Historic England) archaeologists was asked to undertake research into the archaeological potential of the area in advance of any ground works. The work was required to inform the tender and design brief for the new garden, contribute to any mitigation of potential damage to sensitive archaeological remains and provide information for new interpretive schemes. A desk based assessment (Russell 2006a) highlighted that while the history and architectural development (Stone 1891) as well as the archaeology of the castle (Young 2000) were well understood, virtually nothing was known about the Privy Garden beyond its possible use as a cemetery connected with the chapel of St. Nicholas and a kitchen garden in the 19th century and a pleasure garden more recently.

In 2006, various strands of investigation were carried out, including geophysical survey (Martin 2007), documentary research (Pattison 2007) and archaeological evaluation. Further archaeological evaluation occurred in 2008–9 responding to the requirements of the garden installation project.

This report discusses the results of these archaeological evaluations, focusing on the first five phases of activity identified, i.e. up to the 18th century AD. Details of the later phases, a list of all contexts, Harris matrices and full finds, conservation and environmental assessments are available in the Archive Report (Russell 2017).

Historical and archaeological background

Occupying a steep-sided hill separated by the valleys of the River Medina and Lukely Brook from a prominent chalk ridge which runs east-west across the island, Carisbrooke Castle is located in the heart of the county, less than 2 km south-west of Newport, centred on NGR SZ 4866 8778 (Fig. 1).

The hill-top was the focus of activity in prehistory as evinced by the discovery of flint debitage (this paper) and sherds of pottery (Mepham 2000, 99; Russell this paper), and was used as an early Saxon high status cemetery (Young 2000, 52; Morris & Dickinson *et al.*, 86–97).

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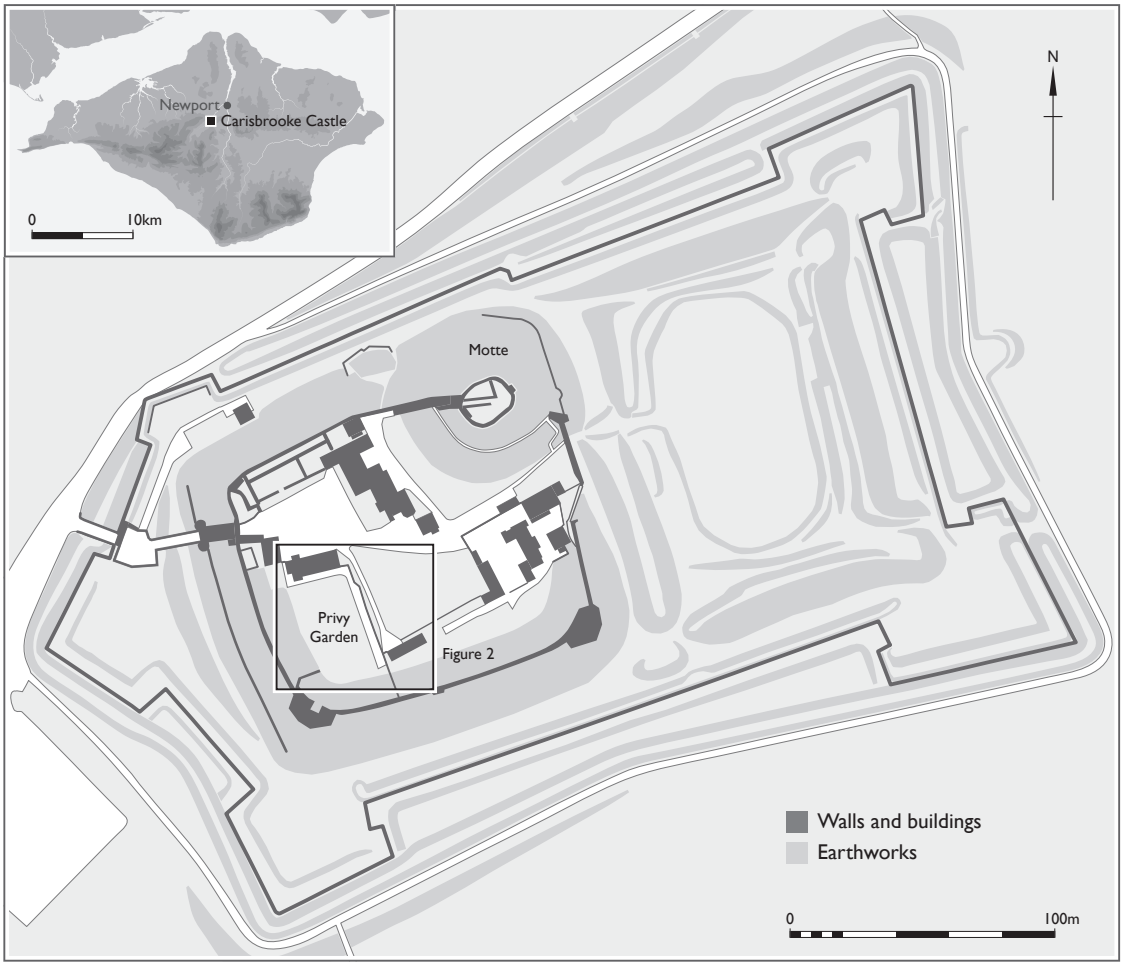

Fig. 1 Location plan showing the principal structures and study area

Richard de Redvers c. 1100, replacing an earlier ringwork, probably the castle mentioned in Domesday Book, Carisbrooke Castle is a fine example of a motte-and-bailey which, by 1136 and probably the work of Richard's son, Baldwin, had a stone curtain wall with angle towers at its south-west and south-east corners, an interval tower in between them and a shell keep to the north-east. Its massive ramparts and motte were built over a sub-rectangular, stone-revetted, late Saxon burh-type fortification, termed the Lower Enclosure on its discovery in the 1920s, and for long considered to be Roman. Archaeological evidence indicates that in the late 11th century AD the north-east corner of the burh was cut off by two deep, curving, apparently parallel ditches and possibly a dump rampart to form a ringwork which Young convincingly argues is the castle of Domesday Book (Young 2000, 55–9, 194).

Little is known of the arrangement of the domestic buildings of the 12th century castle apart from what has been inferred from excavation (Young 2000, 41–46, 59–67, and below). It had a chapel dedicated to St. Nicholas which, in 1140, Baldwin de Redvers gave to the newly founded Quarr Abbey under which it served a large external parish. There is little doubt that this chapel stood on the site of the present chapel of St. Nicholas.

After inheriting the castle in 1260, and over the course of some 23 years, Countess Isabella de Fortibus, the last of the de Redvers line and final hereditary feudal lord of the site, transformed it into her principal residence and administrative centre for her estates both on the Isle of Wight and mainland. These works, documented in remarkable detail in her accounts (Stone 1891), largely established the layout of the medieval castle as seen today. By the time of her death in 1293, when she sold her rights to the Isle of Wight and castle to the Crown, there were on the north side of the bailey domestic apartments, a great hall, a private chapel to St. Peter, and kitchen and services; a gatehouse to the north-west; and the chapel of St. Nicholas to the west.

In the gift of the Crown from the 14th century, the castle was maintained as a fortification against the threat of French invasion. Improvements were made principally to the defences, particularly the gatehouse, with drum towers added in 1335–6 and heightened in the 1380s, but also to the domestic buildings, including the construction in 1397 of a three-floor chamber block (constable's lodgings) to the south-east of the hall and, probably in the 14th century, an L-plan building in the south-east of the bailey.

From the 16th century the appointees to the castle were captains then governors of the Isle of Wight. By the mid-16th century, its diminished military role combined with reduced expenditure on repairs had left the castle without suitable accommodation for the captain. Accordingly, on his appointment as captain of the island in 1582, Sir George Carey built a substantial three-storey mansion on the site of the medieval kitchens and made changes to the hall, chapel of St. Peter and constable's lodgings so that he lived in style and comfort as befitting his status. He also strengthened the defences in 1587 by constructing stone-revetted bastions – 'knights' – around the Norman angle towers, ravelins to the north, south and east of the castle, a guard house to the north-west of St. Nicholas' Chapel and, probably at this time, a substantial barbican to the east of the medieval castle. The most significant work to the defences in the post-medieval period occurred between 1597 and 1602. In response to the threat of Spanish invasion and under the direction of Italian military engineer Federigo Giambelli, the whole of the medieval castle and east barbican was surrounded by an essentially rectangular bastioned trace artillery fort with flanker batteries in the north-east, south-east, and south-west bastions.

The castle was held by the parliamentarian forces during the Civil War and served as a royal prison; Charles I was imprisoned there after his defeat in 1646 when the barbican was converted to a bowling green for his recreation. By the early 18th century a number of buildings, including Carey's mansion, had been demolished and parts of the site landscaped. In 1738, the chapel of St. Nicholas was demolished to foundation level, and a brick and stone Georgian replacement erected.

The castle was taken into the care of the Office of Works in 1856. In 1896, Princess Beatrice became governor of the Isle of Wight. Under her patronage, the architect and antiquarian Percy Stone carried out extensive programmes of conservation and restoration including, in 1904–5, the design and rebuilding of the chapel of St. Nicholas on the footings of its medieval predecessor. Since her death in 1944, the castle has been managed as a Scheduled Ancient Monument (Asset number 1013870) open to the public and latterly as part of the National Collection in the care of the English Heritage Trust.

The Privy Garden

The area which became known as the Privy Garden probably from the early 20th century (Pattison 2007, 1, 9–10) is situated in the south-west quadrant of the inner bailey of the medieval castle (Fig. 1). It is a rectangular enclosure defined by the chapel of St. Nicholas and the gable end of the Guard House to the north, a substantial but previously undated stone wall of several phases to the east, and the rampart bank surmounted by the curtain wall of the inner bailey to the west and south. At the base of the rampart a low masonry wall separates the bank from a relatively level area of grass lawn with gravel paths and flower borders along the east and north sides (Fig. 2). Two flights of masonry steps ascend the west rampart. The

Fig. 2 The Privy Garden, looking north to the chapel of St. Nicholas, Great Hall and the Constable's Tower, prior to the evaluation

earlier, shown on a plan of 1723, gave access to the south-west bastion but was modified in the 19th century to link with a garden walk on the crest of the rampart and, later, a terrace walk lower down. The other flight provides access to an early 20th century garden terrace walk cut mid-way up the rampart. A further flight of steps, probably 19th century, provides access to a viewing platform and garden walk on the south rampart. Midway along the east wall, a decorative niche occupies the position of the original 19th century entrance to the space. Further south, another entrance crudely punched through the east wall probably in the early 20th century provides access to a garden created in the late 18th century along the foot of the south rampart.

There are few historical references certainly relating to the area of the Privy Garden. The earliest, perhaps, is in the accounts of Countess Isabella de Fortibus for c. 1287–88 noting a herbary 'next the chapel' which Stone (1891, 100) reasonably took to be St. Nicholas', the principal chapel of the site. Sir Richard Worsley (1781, 42) mentions an enclosed cemetery associated with the chapel of St. Nicholas but provides no further details or sources. A plan dated 1723 identifies the area as 'now a garden' which it has remained ever since.

Previous archaeological work

There has been no previous archaeological excavation in the Privy Garden. Only two finds have been reported: an unretouched flint flake found in 1983 and a fragment of a medieval glazed ridge roof tile found in a flower border in 1993 (both recorded under SMR1286).

Of some 27 archaeological interventions at the castle, the most directly relevant to these evaluations is an area excavation, trench Y5, just to the east of the Privy Garden, dug by Young in the late 1970s-early 1980s (Young 2000). It produced evidence of a 6th century AD inhu-

mation cemetery, substantial post-holes from timber structures associated with the occupation of the burh around the 10th–11th century AD and two massive ditches from a Conquest period ringwork. Also present were three 12th century AD buildings associated with yard surfaces littered with refuse suggesting food preparation. These buildings were demolished by the early 15th century when the south part of the bailey was levelled with extensive dumps of sandy earth and the principal domestic functions transferred to the north side of the bailey.

Programme of work (Fig. 3)

The main aim of the evaluations was to characterise the archaeological development of the area addressing research questions raised in the Conservation Statement (Gibbs, 2004, 35–40) and by Young's work in trench Y5, namely to determine whether the early Saxon

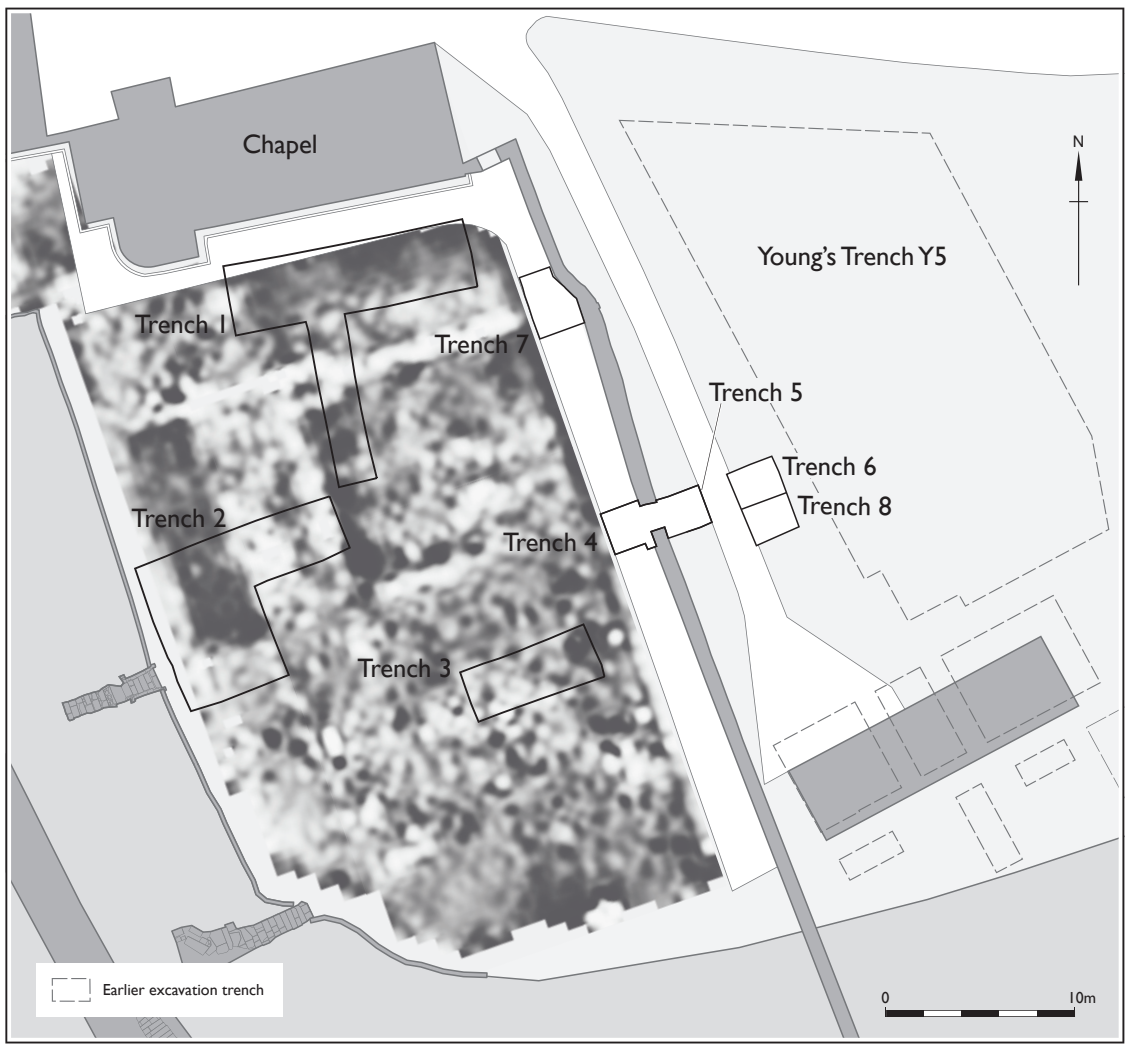

Fig. 3 Trench location plan in relation to features identified in the geophysical survey. Young's trench Y5 and others further south are also shown

cemetery extended westwards; confirm the course of the Conquest-period ringwork ditch which was projected to continue into the Privy Garden; establish whether there was a medieval 'herbary' near the chapel; investigate the possibility of further medieval structures; confirm whether the area was used as a medieval or post-medieval cemetery; and provide a date and context for the east garden wall.

The evaluations were undertaken in three stages, each responding to specific requirements of the garden re-design project. The first, in autumn 2006, focussed on the Privy Garden. Three trenches (trenches 1–3) were opened at points across the lawned area based on the results of geophysical surveys and to provide representative coverage, though the total area examined was relatively small. Trench 1 was opened immediately south of the chapel of St. Nicholas to examine the possibility of a cemetery, 'herbary' and a variety of geophysical anomalies including a possible path. Trench 2 was located over the terminals of two backfilled rectangular flower-beds along the west side of the lawned area at the foot of the rampart. The tops of the flower-beds were revealed but owing to extensive animal disturbance this part of the trench was not excavated further. The eastern leg, however, was taken down to a series of deposits at between 63.49 m and 63.69 m AOD, then a 5.8 m long × 0.5 m wide sondage was dug against the south section to examine the character of the medieval sequence. Trench 3 was opened towards the south end of the Privy Garden over positive magnetic anomalies identified in the geophysical survey and to characterise the southern part of the area. For safety reasons, at a maximum depth of 63.15 m AOD (just over one metre from the current turf line) the trench was stepped in by one metre on all sides and taken down to bedrock.

The second investigation was in mitigation of the re-opening of the blocked-up 19th century gateway in the east enclosure wall, reinstating it as the principal entrance to the new garden with ramped access through the gateway. This latter was necessitated owing to a difference in ground level on either side of the wall, the west (Privy Garden) side being almost 0.5 m lower than the east. Recording of the structure and fabric of the gateway and parts of the east wall was undertaken in autumn 2008 prior to and during the removal of the blocking. This was followed by an archaeological evaluation of the access route required in advance of groundworks. Three contiguous trenches (trenches 4–6) separated respectively by the threshold of the gateway in the garden wall and the path to the public lavatories, were excavated in October 2008. Excavation in trench 4 stopped at a layer of compressed chalk which at the time of digging was thought to be modified natural but in post-excavation was recognised as the fill of a substantial ditch projected to pass through the trench.

Following the unexpected discovery of a 12th century AD building, it was agreed that before landscaping commenced the opportunity should be taken to establish the northern extent of the building (trench 7), examine the possibility of a further structure to the south (trench 8) and re-open the northern half of trench 4, cutting back the north section, to confirm the existence of the expected ditch and clarify other stratigraphic detail. This work was conducted in spring 2009.

The project archive will be deposited with the Isle of Wight Museum Service. Site photographs and digitised versions of the drawings are available in the Historic England archive.

RESULTS

The phasing presented here reflects the sequence directly inferred from these evaluations and does not attempt to incorporate the full developmental history of the site known from previous work. Accordingly, it differs from that used by Young (2000); a concordance is shown in Table 1. Some of the phases are necessarily broad reflecting issues of residuality, the type and nature of contexts encountered, and the lack of closely dateable finds.

Phase 1 – Natural

Chalk bedrock overlain by a variable layer (0.1 m – 0.2 m deep) of small lumps of chalk and occasional thermally fractured flints in an orange-brown clay loam interpreted as the

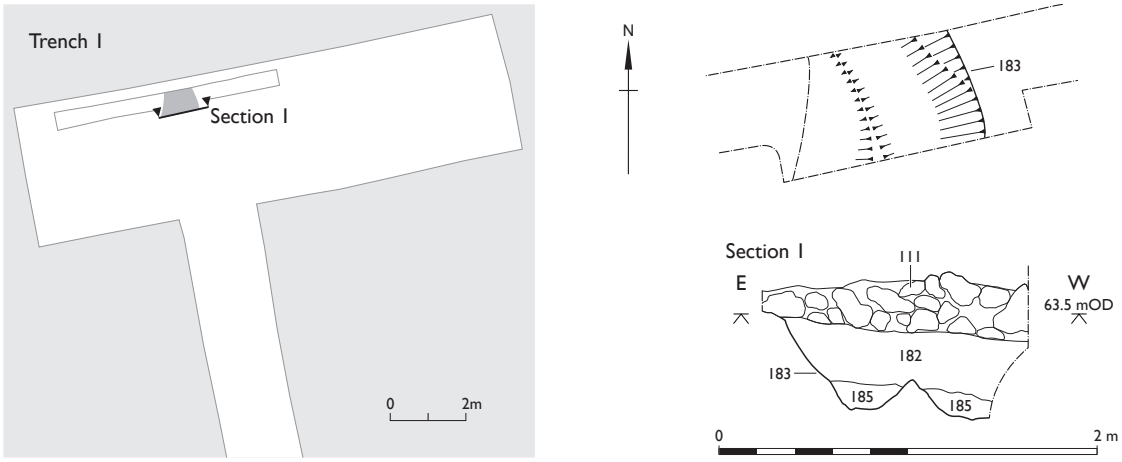

Fig. 4 Trench 1 location plan of prehistoric feature within sondage; detail plan of prehistoric feature and section of south face

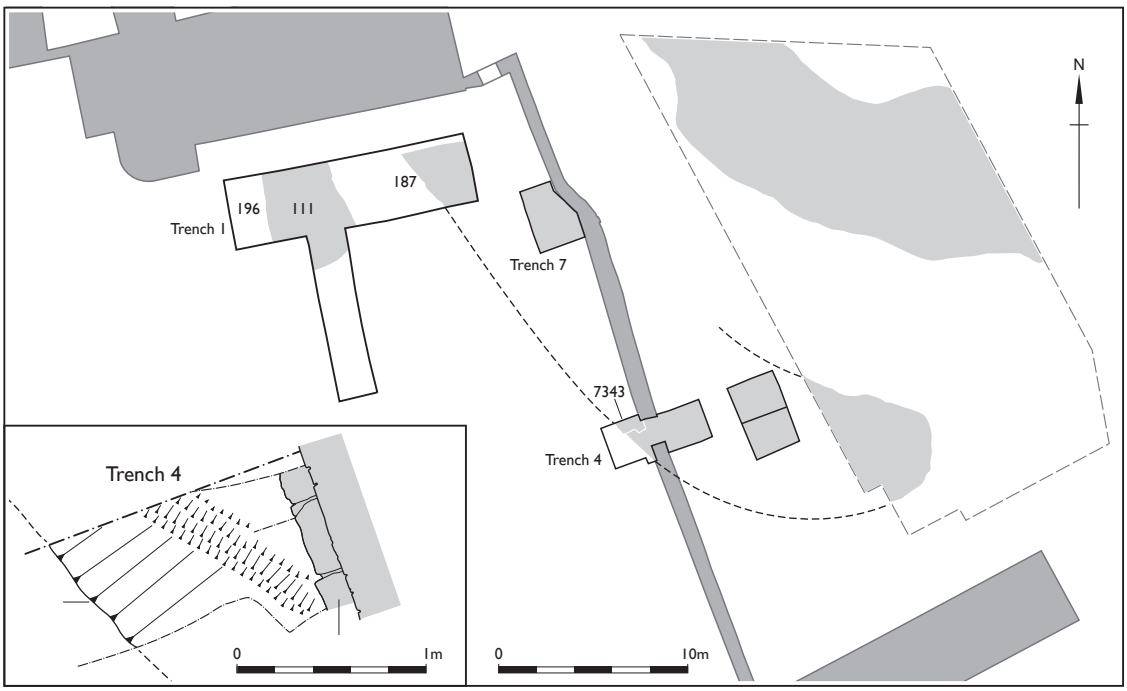

Fig. 5 Plan of Phase 3 features in relation to trench Y5

weathered top of the chalk was reached in trenches 1, 3 and 4. The weathered natural sloped downwards from north to south, recorded at around 63.7 m AOD in trench 1 [134] where it was only identified with certainty to the north of the trench between features [183] and [187], at 63.58 m AOD in trench 4 [7351] and 62.25 m AOD in trench 3 [345].

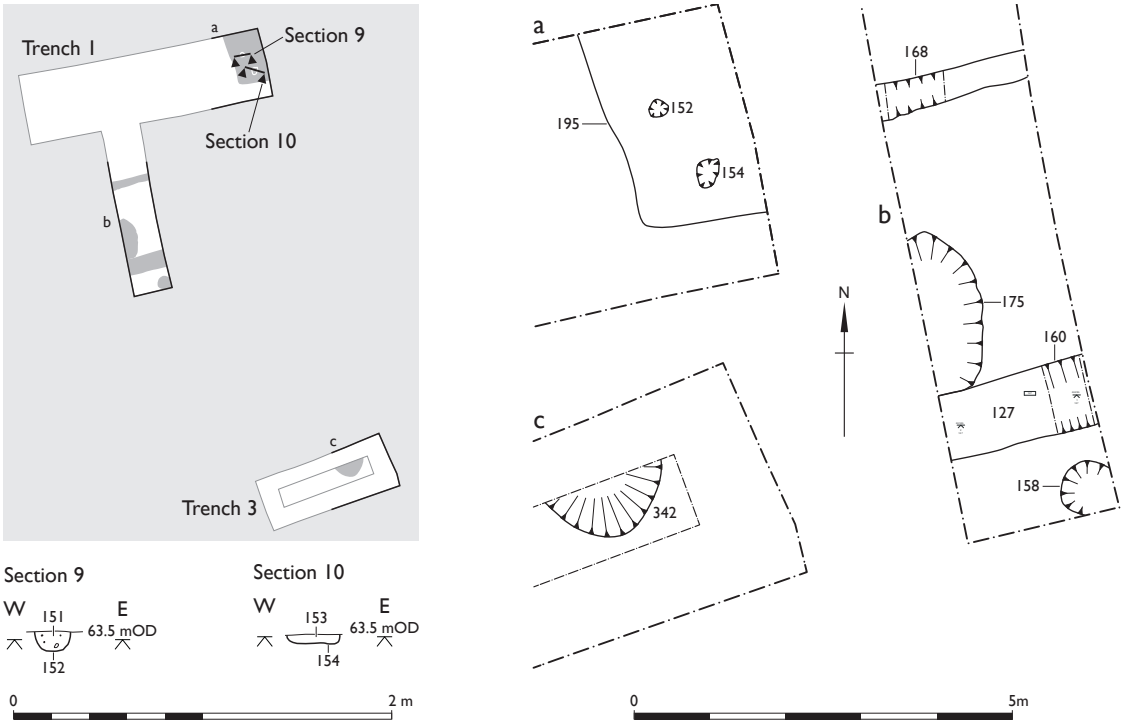

Fig. 6 Plan of Phase 4 features in trenches 1 and 3; sections of post-holes 152 and 154

Table 1 Concordance of Young's (2000) and the 2006/2008–9 phases

Young's phases		*2006 and 2008–9 phases*	
–	–	**1**	Natural
1	Prehistoric	**2**	Prehistoric
2	Romano-British	–	–
3	Early Saxon	–	–
4	Saxo-Norman (11th century)	**3**	11th century
5	Early medieval (late 11th–13th century)	**4, 4a,**	12th century
6	Late medieval (13th–14th century)	**4, 4b**	13th–15th century
7	Early post-medieval (15th century)	**5**	16th–18th century
8	Later post-medieval (16th–18th century)	**6**	Early 19th century
9	Modern	**7**	Late 19th century
		8	20th century

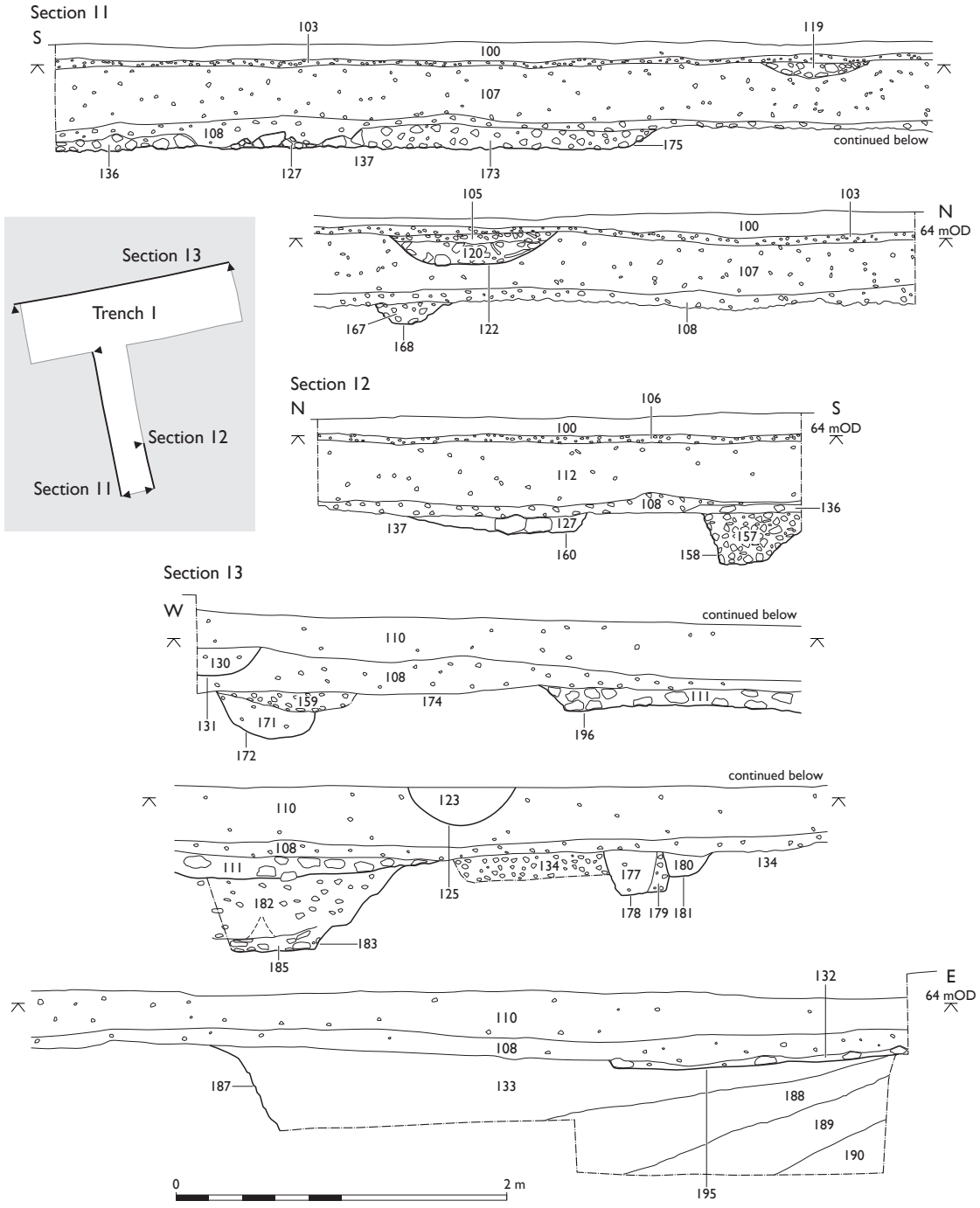

Fig. 7 Sections of trench 1: west and part east face of the southern leg, sections 11 and 12 respectively; north face, section 13

Phase 2 – Prehistoric

A small section of a prehistoric feature of uncertain form and function [183] was revealed in a narrow sondage cut along the north side of trench 1 (Fig. 4; Fig. 7 section 13). Only the east side was seen. It was 0.45 m deep with a steep, stepped rock-cut face. A low wedge-shaped north-south ridge of chalk bedrock along the base suggests that it may have been re-cut, but there was no evidence of this in either of the predominantly chalk and occasional flint rubble fills [182 and 185]. The character of the upper fill [182] changed with depth, comprising larger pieces of chalk nearer the interface with [185]; this is likely to reflect more than one depositional episode within context [182].

Several small, weathered and abraded probably Bronze Age and Iron Age sherds, including an unweathered Iron Age base angle, and some poorly preserved weed seeds and grains of naked barley (*Hordeum vulgare* var *nudum*) and hulled barley (*Hordeum vulgare* var *vulgare*) were recovered from sample <1001> from context [182]. Two of the hulled barley grains and a single grain of naked barley were submitted for radiocarbon dating, returning a Middle Bronze Age date for one of the hulled grains and the naked grain, and a late medieval date for the other hulled grain, the latter almost certainly intrusive. These dates, taken together with the pottery, suggest that a Bronze Age feature was possibly recut or disturbed in the Iron Age: it is the first prehistoric feature from the site.

Phase 3 – Conquest period

Two sections of the outer (Young's feature 1602) of two roughly concentric ringwork ditches first identified in trench Y5 were recorded in trenches 1 [187] and 4 [7343] Fig. 5. In both only the west face was seen, which was cut steeply into the chalk bedrock. For safety reasons they could only be explored to a depth of c. 0.75–0.8 m without reaching their base. The west edge of the ditch curved slightly in trench 1, trending north-north-west to south-south-east, and in trench 4 ran diagonally across the trench under the east garden wall.

The ditch was filled with layers of angular chalk rubble tipped from the north-east, possibly derived from a dump rampart, recorded as contexts [133, 188, 189 and 190] in trench 1 (Fig. 7 section 13) and contexts [7370/7371 and 7344] in trench 4 (Fig. 10 section 7). Further chalk fills of the ditch included unexcavated contexts [7366] in trench 5 (Fig. 10 section 7) [7359 and 8025] in trenches 6 and 8 (Fig. 11 sections 2–4) and [7381] in trench 7 (Fig. 10 section 6). Fill [7344] was darker and earthier than the others and likely to represent later levelling or topping up possibly towards the end of the 11th or beginning of the 12th century.

Apart from a few small fragments of animal bone, two residual flint flakes and an iron object, probably a nail, there were no dateable finds from the ditch in trench 1. The only finds were from the uppermost fill [7344] in trench 4. As this was removed with a Phase 4a context (see below) the finds must be considered as mixed and their value for dating the layer reduced.

Some 3.5 m to the west of and on a roughly similar alignment to the ditch in Trench 1 was one end of a sub-rectangular (4 m × 5.2 m) spread of extremely compacted large flint nodules in a dark greyish brown silty clay matrix [111]. The feature had a well-defined, relatively straight, eastern edge but more amorphous boundaries south and particularly west; the northern end ran under the trench edge (Fig. 5). Its upper surface was exposed but not excavated apart from a narrow sondage along the north edge of the trench. This established that it lay within a shallow cut [196] which rose gently to the west with a sharp, steep break of slope to the east. The date of the feature is uncertain. Although no finds were recovered from the sondage, eight stem fragments of 18th century clay tobacco pipes and two nails attributed to the layer must relate to its surface cleaning and therefore derive from [108] which overlay it. Accepting that context [111] could be as late as Phase 5, its co-alignment with ditch [187], which differs from the orientation of buildings of the 12th century and later, suggests that it might be contemporary with the ditch and possibly the floor of a structure in the outer bailey of the ringwork.

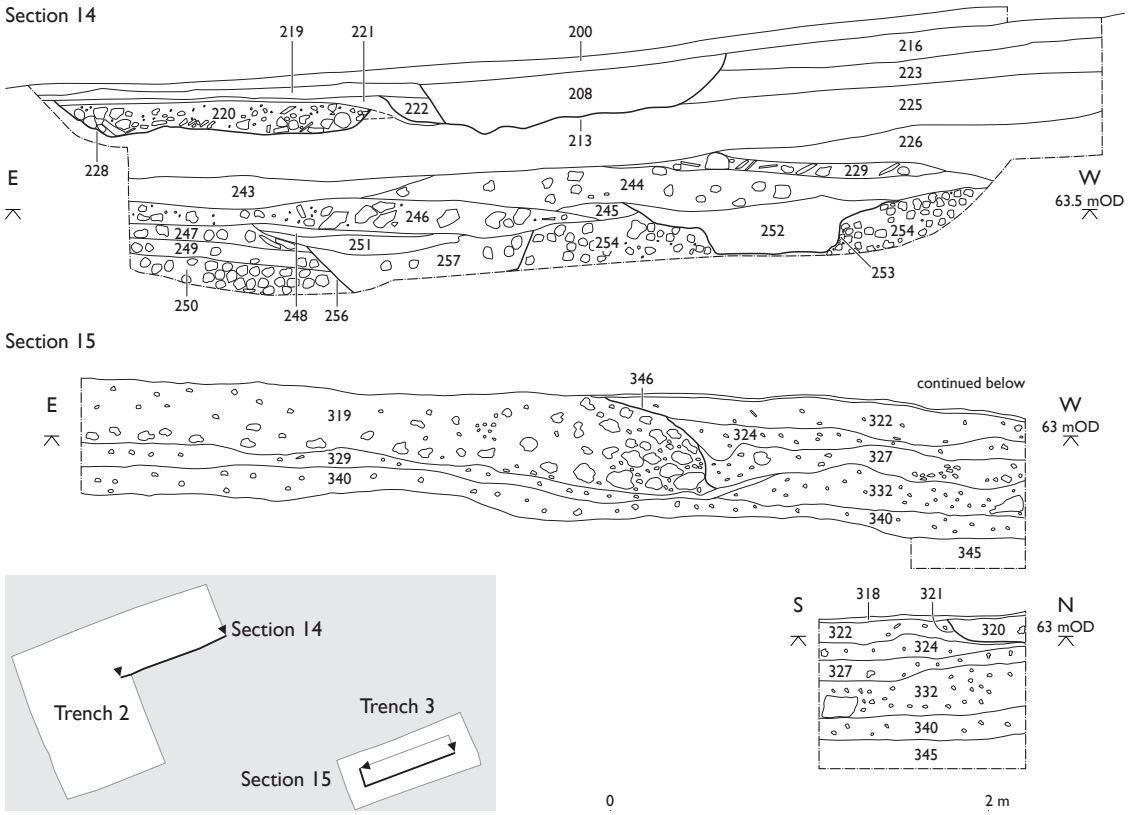

Fig. 8 Sections of trenches 2 and 3: south face of the east leg of trench 2, section 14; lower half of trench 3 south and west faces, section 15

Its close proximity to the chapel would appear to make it an unlikely medieval or post-medieval feature unless it is a temporary structure connected with the demolition of the chapel in the early 18th century.

Phase 4 – 12th–15th century AD

It was possible only to assign a general Phase 4 attribution to the medieval sequence in the Privy Garden. This was due to truncation in trench 1 resulting from horticultural activities or landscaping in the 18th century which had removed virtually all earlier stratification down to the natural and left most cut features as shallow depressions with few direct relationships, and dumps of redeposited material in trenches 2 and 3 mainly seen in narrow sondages. This contrasts with the deposits to the east of the garden wall, in trenches 5, 6 and 8, where *in situ* surfaces and middens associated with a structural sequence permitted sub-division of the phase. For these reasons the evidence from trenches 1–3 is considered first; that from trenches 4 and 7, although within the Privy Garden, is for clarity considered with the sequence from trenches east of the garden wall.

Dumps of chalk rubble on which excavation ceased in the southern leg of trench 1 [137] Fig. 7 sections 11 and 12, and examined to a depth of about 0.40 m in trench 2 without reaching their base or producing any finds [247, 249, 250/254] Fig. 8 section 14, formed a surface sloping gradually downwards from north to south which, along with the natural to the north, was cut by a variety of medieval features. These dumps appear to represent

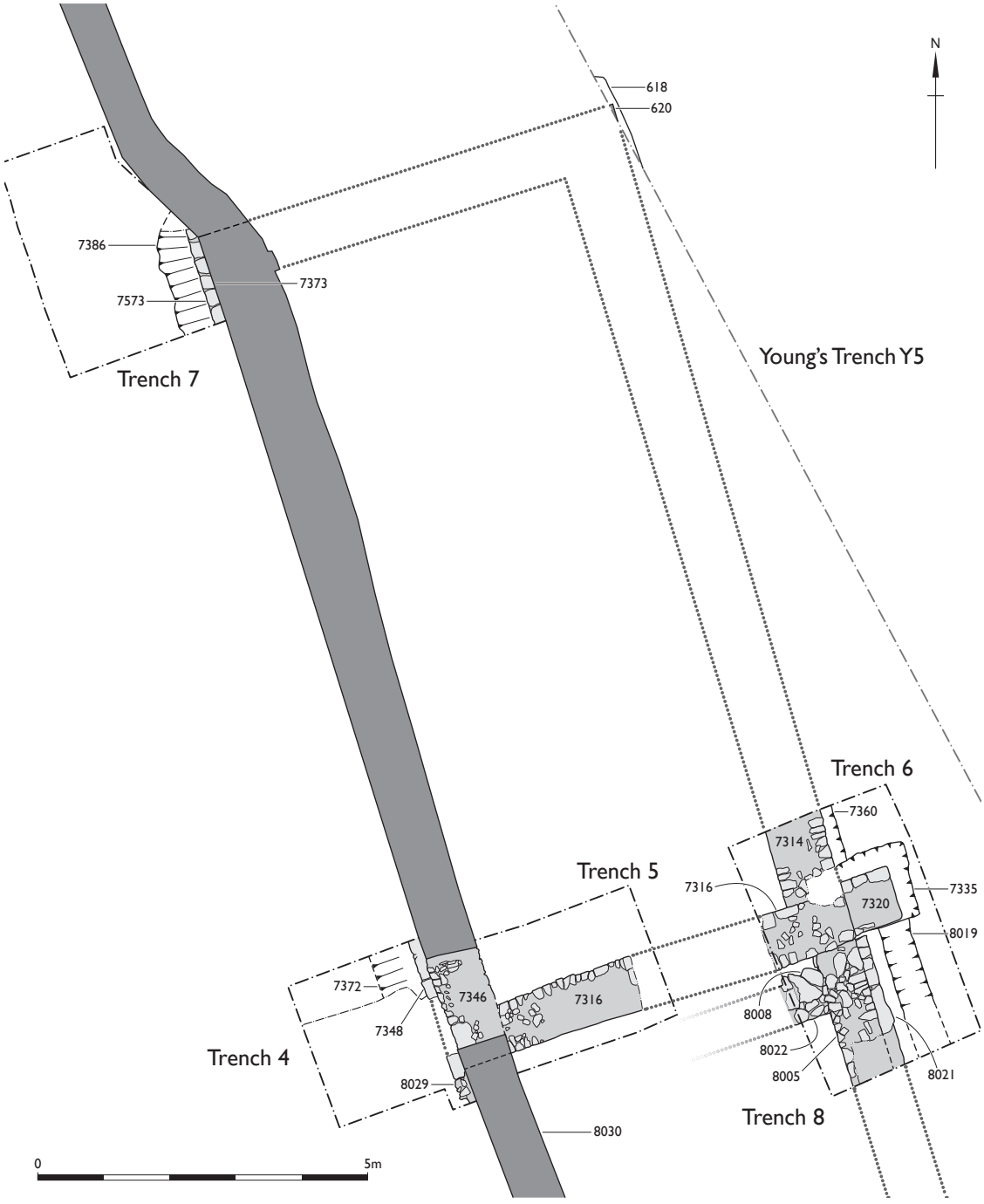

Fig. 9 Plan of Phase 4a and 4b features in trenches 4–8. Structure 620 in trench Y5 is also shown

'early' levelling of the western side of the area and suggest that the hilltop originally sloped away to the west as well as south.

The area immediately south of the chapel was largely devoid of medieval features apart from two post-holes [152, fill 151 and 154, fill 153] (Fig. 6 plan a and sections 9 and 10) truncated by a shallow (0.05 m deep) rectilinear, flat-based cut [195], the west and south sides of which formed a right-angled corner; the rest of the feature lay outside the trench. The cut contained a layer of compacted chalk and some flint [132] interpreted as the surface of a presumably timber-framed structure (Fig. 6 plan a, Fig. 7 section 13); there were no finds. A single sherd of Saxo-Norman pottery was recovered from post-hole fill [153].

Further south in Trench 1 (Fig. 6b), an east-west U-shaped gully 0.46 m wide and 0.14 m deep [168, fill 167] (Fig. 7 section 11) may have bounded a 'reserved' area beyond which, to the south, were several features including a post-hole [158, fill 157], a pit [175, fill 173], a masonry foundation [127] and in Trench 2 a pit [256, fill 257] and a possible robber trench [253, fill 252] (Fig 8 section 14; not shown on plan).

Pit [175] was 0.21 m deep (Fig. 6 plan b, Fig. 7 section 11) and contained several sherds of 12th–13th century pottery along with fragmentary animal bone; grains of wheat and barley were recovered from sample <1000>. The south side of the pit was cut by a U-shaped, 0.95 m wide, 0.16 m deep, flat-based construction trench [160] for an east-west masonry foundation or cill wall [127]. The foundation was 0.76 m wide constructed of a single course of greensand rubble, some roughly squared, lumps of chalk and occasional flints bonded in a soft, degraded, orange sandy lime mortar with flecks of chalk (Fig. 6 plan b, Fig. 7 section 12). An unexcavated patch of darker earth on its south side might represent a post-hole or a void where stones had been displaced. The structure is either part of a building presumably of single-storey because of the narrowness and slightness of its foundation or cill wall, or a low masonry enclosure wall possibly replacing gully [168] as the boundary to a 'reserved' area south of the chapel. A date in the 13th century or later is indicated.

A 1.1 m wide, 0.22 m deep, flat-based pit [256, fill 257], of which only a small section was seen in the sondage in trench 2 (Fig. 8 section 14), produced two sherds of 12th-mid 13th century pottery, including a handle of a Normandy gritty ware jug. Its fill [257] was overlain by an area of *in situ* burning over 1 m wide [241 and 248] which had heavily scorched the layer below, recorded as context [251]. Above the burning were levelling or make-up layers of slate, chalk rubble and greensand [246] and a thin layer of chalk and degraded greensand [245/231].

Layer [245] was cut by a 1.4 m wide, 0.26 m deep, flat-based, north-south trench, the lower half of which had near-vertical faces which gave way to more gently sloping upper sides, the east one slightly shelved [253]. Its soft yellow-brown sandy fill contained some large flints and lumps of chalk [252] but no finds (Fig. 8 section 14). As so little of the feature was seen interpretation is uncertain, though it may be a robber trench for a building along the foot of the west rampart. The lack of weathering and silting combined with its general form, particularly flat-base and lower vertical sides, probably rules out a ditch.

Feature [253] had gone out of use by the 15th century when dumps of chalk rubble [226, 231, 232, 233/243 and 235/244], roof slate with some chalk [229] and large flints and fragments of greensand [234] were deposited across the eastern leg of trench 2 Fig. 8 section 14. They were exposed at the level from which the sondage was cut but most remained unexcavated; some of their relationships were not certainly established. Layer [234], which was confined to the north of trench 2, is probably the equivalent of [136] in trench 1 where it was bounded by wall [127] and related to its demolition (Fig. 7 sections 11 and 12).

The sequence in trench 3 was the deepest encountered in the Privy Garden. The south and west sections of the lower half of the trench where it was stepped in for safety reasons are shown in Fig. 8 section 15. The lowest deposit, a thin layer of yellow-brown sandy loam with frequent flecks of chalk [340] is interpreted as a disturbed old land surface. It was cut by a 0.40 m deep pit [342, fill 341] of which the southern half was recovered (Fig. 6c). The pit contained mainly Anglo-Norman pottery

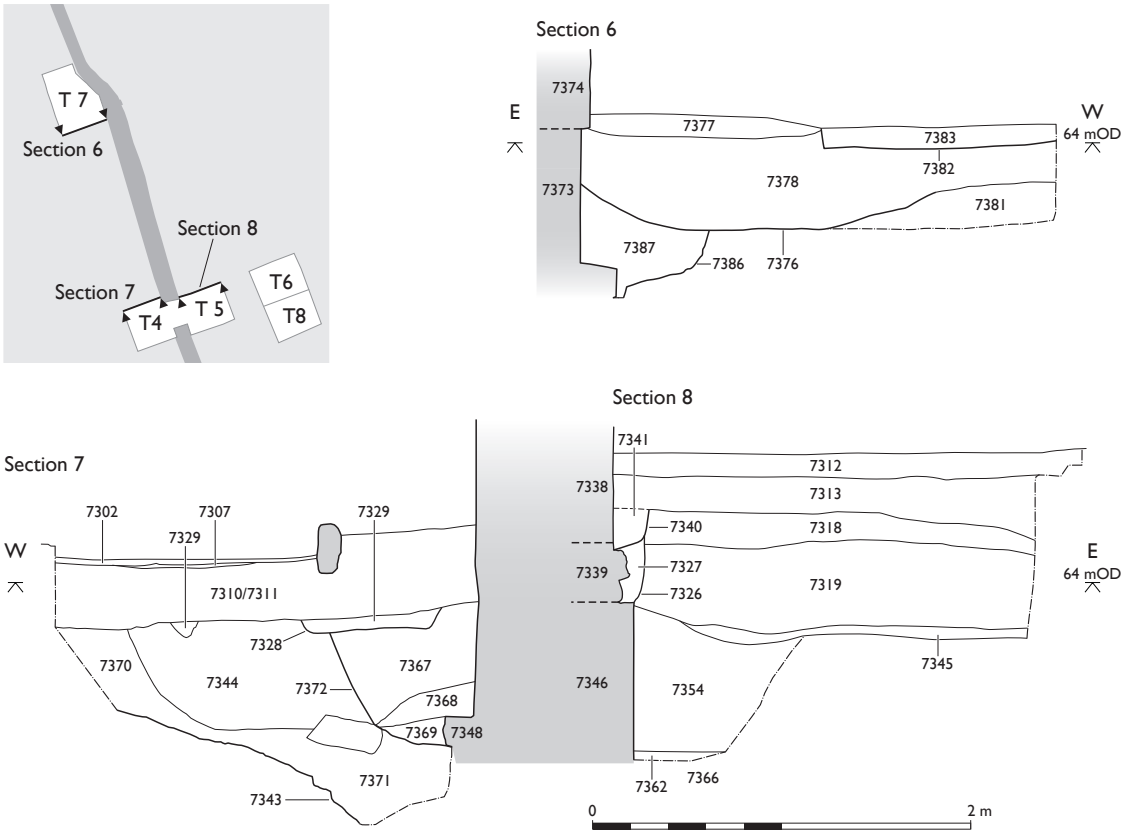

Fig. 10 South face of trench 7, section 6; north face of trenches 4 and 5, sections 7 and 8

including a sherd of a rouletted pitcher, a few animal bones, oyster shells, some charcoal/cinder, grains of wheat and unidentified cereal grains. A layer of chalk rubble [332] of similar date is possibly upcast from digging the pit or dumping and levelling to the west. Pit [342] and dump [332] were overlain by a thin midden-like layer [329] which produced domestic refuse including 12th–13th century pottery, animal bone, oyster shells and several iron nails. Environmental sample <3003> produced some poorly preserved grains of wheat, oats and charred organic material.

The midden was sealed by a thick dump of chalk rubble [317/319], the western edge of which appeared to have been cut back [346] (Fig. 8 section 15) and possibly maintained as a bank before the deposition of layers of redeposited midden material [327, 324 and 322] to the west. There was evidence of animal disturbance, one collapsed burrow following the junction of [319] and [327] and probable contamination of layer [317] during machining; a tiny sherd of Chinese porcelain from [324] is intrusive. These dumps contained 12th-mid 14th century pottery, including sherds of Saxo-Norman lamps and Anglo-Norman tripod pitchers, some animal bones and oyster shells. In addition to wheat, pea and unidentified cereal grains recovered from environmental samples from [319, 322 and 324], oats were also present in [322 and 324] and barley in [324].

The probable date of deposition of these dumps is provided by sherds of South Hampshire redware, Laverstock-type ware and Dorset whiteware which suggest a *terminus post*

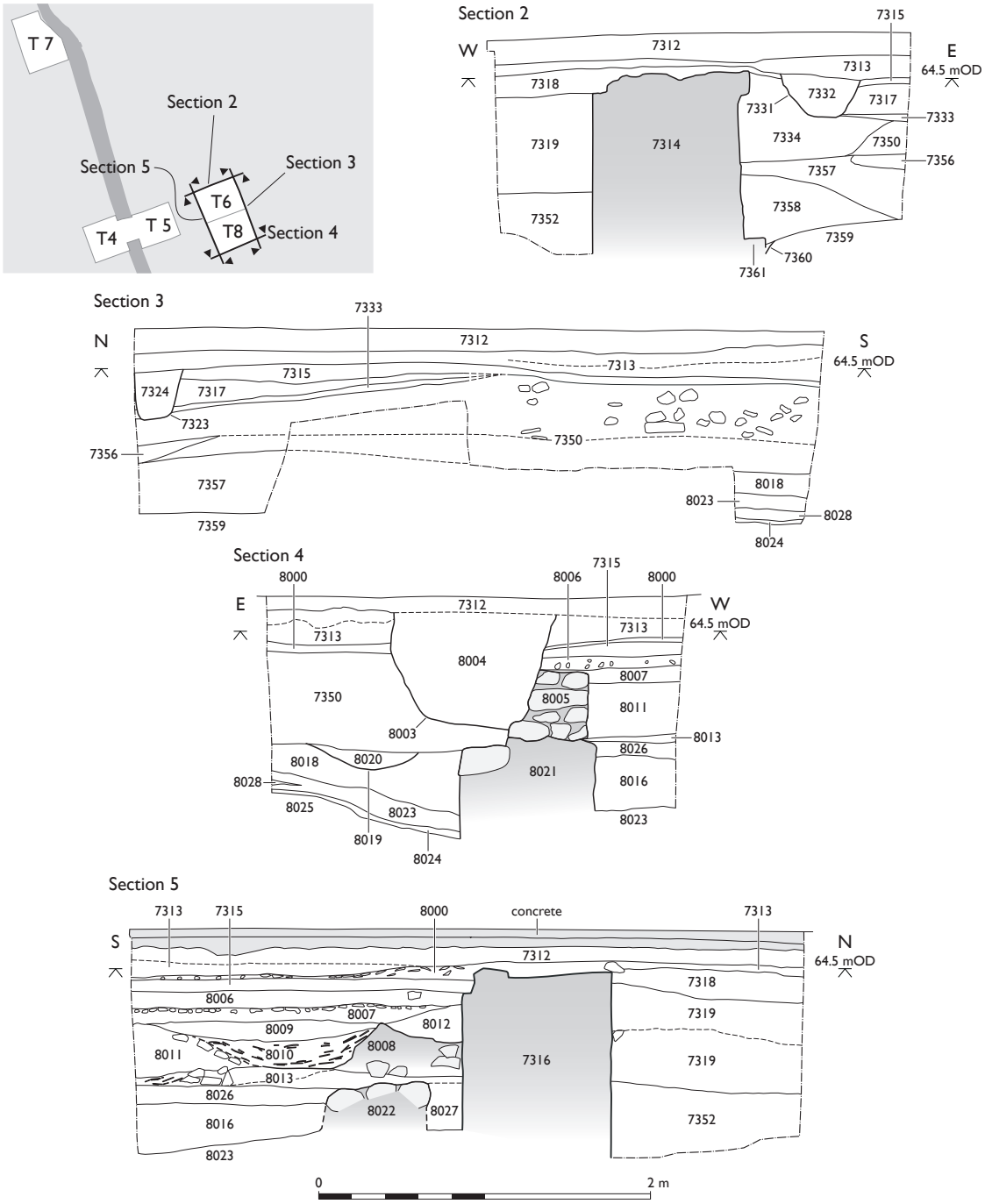

Fig. 11 North face of trench 6, section 2; east face of trenches 6 and 8, section 3; south face of trench 8, section 4; west face of trenches 6 and 8, section 5

quem in the mid-late 13th century. The presence of so much residual material presumably reflects periodic clearance or maintenance of middens, though the dumps of chalk rubble are more likely to relate to construction, such as digging foundations or levelling prior to building.

Phase 4a – 12th century AD

The principal development in this sub-phase was the construction of a substantial, rectangular (13.2 m × 6.35 m) masonry, cellared building [7347], probably a chamber block of two-storeys, aligned north-south, of which parts of the west [7346], south [7316], and east [7314] walls of its south gable end were recorded in trenches 4–6 and the north-west external corner [7373] in trench 7 (Fig. 9). Several *in situ* ashlars in the east face of the garden wall, one perpendicular to the wall face, represent the north-west inner corner. The north-east exterior corner is clearly feature 620, a masonry structure clipped by the west edge of trench Y5 (Young *ibid*, 59).

Building [7347] was constructed in a large rectangular, near vertical-sided trench, slightly wider and presumably longer than the building, some 0.7 m deep at the south end, cut into the backfill of the Phase 3 ringwork ditch. The edges of the trench were recorded to the west [cut 7372, fills 7369, 7368, 7367] (Fig. 10 section 7) and cut [7386 fill 7387] (Fig. 10 section 6) and east [cut 7360, fill 7361] (Fig. 11 section 2) though cut [7372] was not visible in plan and only inferred during cleaning of the sections. The fills of the construction trench were broadly similar, comprising frequent to moderate amounts of chalk rubble, occasional flint and rare fragments of Roman tile in an olive-brown clay loam. There was evidence of bioturbation, particularly root activity, and other disturbance to at least the top 0.1 m of the fill on the west side where it was directly overlain by garden soil. The difficulty of identifying cut [7372] in plan resulted in the removal of Phase 4a construction trench fill [7367] with Phase 3 ditch fill [7344], the finds being assigned to the latter before the distinction was established. Following identification of the cut, further cleaning and cutting back of the north section produced five sherds from [7367] but nothing from [7344]. The mixed sherds from [7344/7367] were excluded from the dating of Building [7347] but are broadly of late 11th–12th century date; a fallow deer bone was radiocarbon dated to cal AD 1040–1215 (OxA-27898, 897 ±23 BP).

Several undiagnostic mainly shell-and-sand tempered body sherds were recovered from the fill of the construction trench. They cannot be dated closely but suggest a date in the 12th century.

Set on a single course offset foundation [7348 and 7361] the walls were 0.8 m wide and survived to a height of almost 1.0 m (Fig. 10 sections 7–8, Fig. 11 section 2). They were constructed of coursed stone rubble, mainly local shelly limestone, including Quarr stone, greensand and some flint, with occasional Roman tile and lumps of *opus signinum* bonded in a soft lime and greensand mortar. Finely tooled limestone ashlar quoins which protruded between 2–3 mm from the wall face were stressed to the south (Fig. 12 elevations 2–3, Fig. 14 a) and straight in the north-west exterior corner (Fig. 12 elevation 1, Fig. 14 b) but staggered in its internal angle. Two courses of stone and occasional Roman tile set diagonally in Romanesque style formed apparently continuous horizontal decorative courses around the building (Fig. 12 elevations 2, 4–5, Fig. 13). The reused Roman material probably came from one of the villas along the valley of the Lukely Brook, the nearest of which is at Carisbrooke Vicarage (Spickernell, 1859; Wilson, 1970) though that south-west of Clatterford (Scott, 1993) cannot be discounted.

The interior of the building was partly examined in trenches 5–6 where sufficient was excavated to establish that it was cellared with a thick, well preserved greensand render on the walls (Fig. 14a). A thin charcoal-rich layer [7362] (Fig. 10 section 8) possibly the remnant of a floor, produced a tiny scrap of undiagnostic pottery and a conger eel bone. All the other deposits within the building related to its demolition.

The construction trench [7360] of the east wall was sealed by a make-up layer of fine chalk and earth [7358] which was overlain by lenses of brown silty loam and chalk gravel

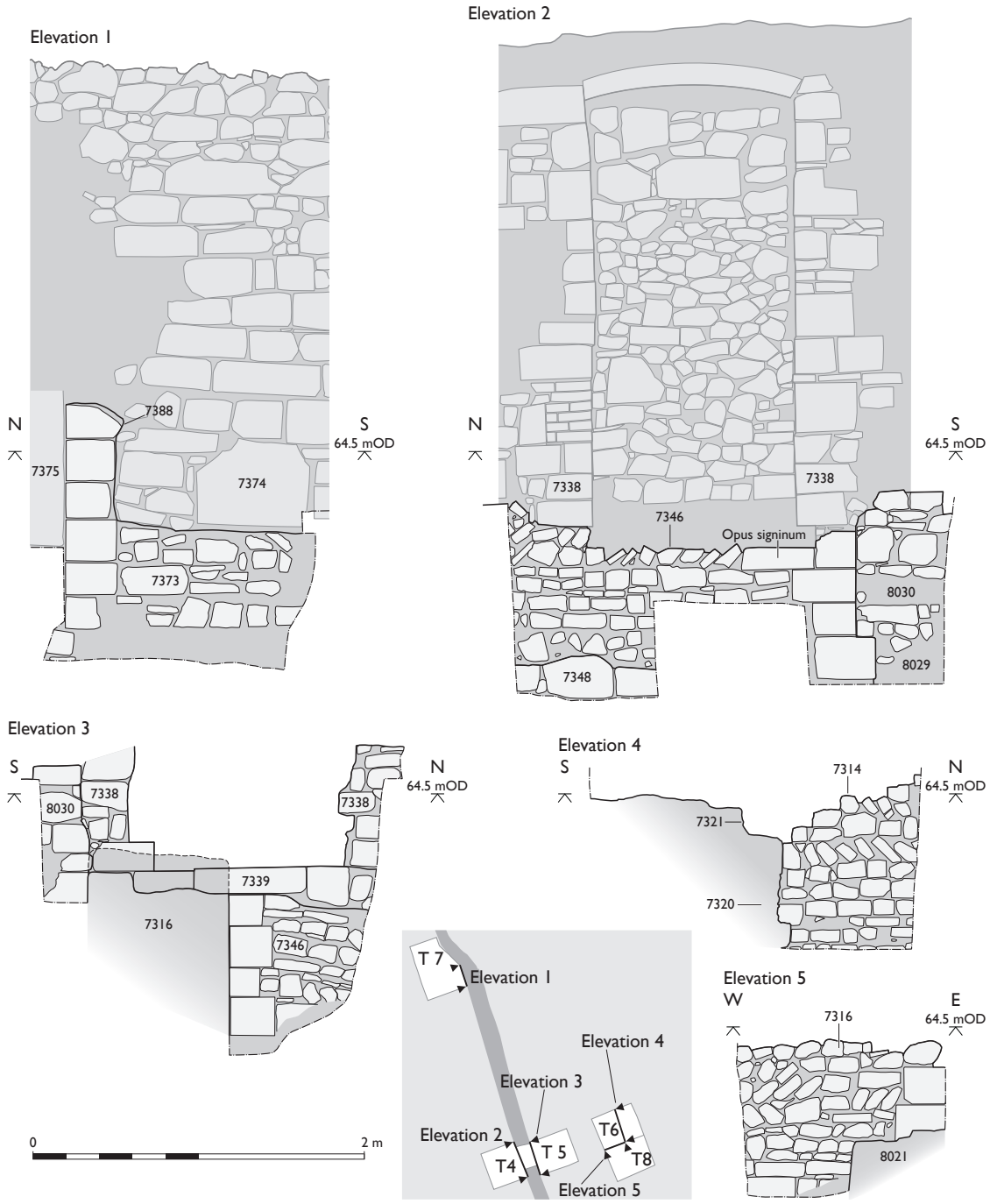

Fig. 12 Elevation 1: west face of the garden wall, trench 7, showing the north end of Building 7347; elevation 2: south end of Building 7347 and wall 8030 in relation to the 19th century garden niche, trench 4; elevation 3: east face of Building 7347 and the south door frame and sill of the 19th century entrance, trench 5; elevation 4: east face of wall 7314 and profile of buttress 7320, trench 6; elevation 5: south face of wall 7316, trench 8

[7357/7351] (Fig. 11 section 2). Similar deposits [8024, 8028 and 8023] were examined in a sondage to the south of the building where they had subsided into the underlying ditch (Fig. 11 section 4). These layers appear to represent a series of thin surfaces upon which domestic rubbish accumulated and are clearly the equivalent of the yard surfaces identified in trench Y5 (Young, *ibid,* 60, 121). Quantities of mainly shell-and-sand tempered pottery, four horseshoe nails, animal bones and oyster shell were recovered. Fish bones, charcoal and a variety of seeds including wheat and oats were retrieved from sample <7807>.

Phase 4b – 13th–15th century

Building [7347] continued in use throughout this phase and was associated with the formation of a midden [8016/8018/8027] up to 0.28 m thick confined to the south of the building (Fig. 11 sections 3–5). Blackened by charcoal, the midden produced a large amount of kitchen refuse which included pottery, animal and fish bone as well as fish scales, marine shells and a quartzose whetstone. Along with the dominant shell-and-sand tempered wares, there were two sherds of Normandy Gritty ware and a sherd of Hampshire redware, the latter indicating a date in the 13th century or later. Analysis of the bone assemblage indicates that it is likely to derive from kitchen or food preparation waste and reflects a high status diet in which pig and fish were eaten fairly regularly. This deposit is a continuation of the midden recorded as context 286 by Young (*ibid*, 60) in trench Y5.

Built against the southern corners of Building [7347] were two walls of different character which ran southwards continuing the alignment of the earlier building (Fig. 9). Only small lengths of each were examined. The west wall [8030] was 0.68 m wide and constructed of roughly coursed greensand, limestone, some flint and occasional Quarr stone rubble bonded in a cream-yellow lime mortar. Its foundation, examined only on the west side of the wall (trench 4), had a 0.20 m wide, single course offset [8029] at its base set in a near vertical sided, 0.45 m deep construction trench [8031, fill 8032]. There were no finds. The foundation butted the quoins and partly overlay the offset foundation of Building [7347] (Fig. 12 elevation 2, Fig. 13 c). A straight joint (Fig. 13 a) which survives to a height of c. 2.4 m in the east face of wall [8030], previously thought to be the reveal of a 19th century gateway, is undoubtedly the point of abutment with Building [7347] and indicates that a section of the extant garden wall south of this point is medieval fabric. Although extensively repointed, it was possible to identify at least 1.6 m of original wall before a building break gave way to more heavily pointed and patched stonework. The height of the abutment scar and presence of two possible blocked putlog holes suggests that the wall stood to at least the first floor level of the earlier building and may have been higher. The only dating evidence was a layer of probably re-deposited material [7353] which butted the east side of the wall and also the south face of wall [7316] in trench 5; the base of the layer was not reached. Finds included 13th–14th century pottery, numerous animal bones and marine shells, a socketed arrowhead, iron nails and some Roman tile. A single small fragment of a 17th century clay tobacco pipe stem is likely intrusive from the layer above.

The south-east corner of Building [7347] was butted by a 0.85 m wide foundation [8021] constructed of greensand blocks in a decayed lime-greensand mortar (Fig. 9, Fig. 14 c). Two courses were revealed. It was not quite flush with the corner of Building [7347], extending 0.28 m beyond the east face of the latter probably as an offset, which would allow for a wall c.0.57 m wide. There was no visible construction trench, but it must have cut midden [8016/8018/8027], the foundation presumably being tight against the sides of the trench. A date of construction in the 13th- 14th century is implied. Although not fully excavated, there was a suggestion that the foundation was relatively shallow, possibly no deeper than the lowest course exposed, as insertion of a trowel at various points under this course failed to detect any further stones. A narrower (0.62 m wide) east-west foundation [8022] of slightly smaller greensand rubble and flint butted the west face of [8021] to form a right-angle. It was built about 0.18 m south of and roughly parallel with wall [7316] which resulted in a narrow

Fig. 13 (a) South gable end of Building 7347 and buttress 7320 looking west. Note the straight joint in the 'garden' wall just left of the reopened entrance; (b) detail of Romanesque work in wall 7314 and the offset foundation of buttress 7320 which it butts; (c) detail of Romanesque work and staggered quoins in wall 7346 showing the sill of the 19th century gateway

gap between the walls. There was no foundation trench, but again it must have cut or sat on midden [8016/8018/8027] (Fig. 11 section 5). The only deposit within the structure, i.e. to the west of wall [8021] and south of wall [8022] was a make-up layer of limestone fragments in a light olive brown sandy loam [8026]; no finds were recovered (Fig. 11 section 4).

To the east of wall [8021] was a 0.5 m wide, 0.35 m deep U-shaped gully [8019] (Fig. 9, Fig. 11 section 4, Fig. 14 c). Its northern end was truncated by a later feature, but it could not have extended much beyond as it was not traced alongside wall [7314]. Finds from its olive brown silty fill [8020] included several animal bones, sherds of 13th century pottery, a few oyster shells and an iron barrel padlock of 12th–14th century type (Fig).

In the absence of a direct stratigraphic relationship between walls [8030] and [8021], and secure dating of wall [8030], there is no certainty that they belong to the same structure or even the same construction phase. The apparent shallowness and narrowness of foundation [8021/8022] suggests that it is from a separate, possibly timber-framed structure or an extension to the earlier building. Further support for this comes from a stratigraphic disjunction in the Phase 4b and Phase 5 deposits either side of the modern path to the public lavatory block which separated trenches 5 and 8. In trench 5, to the west of the path and south of wall [7316], a thick layer of re-deposited midden-like material [7353] (not shown in plan or section) butted wall [8030] and ran east up to the section face by the path. On the east side of the path, at a similar height, in trench 8, there was no such layer but a series of demo-

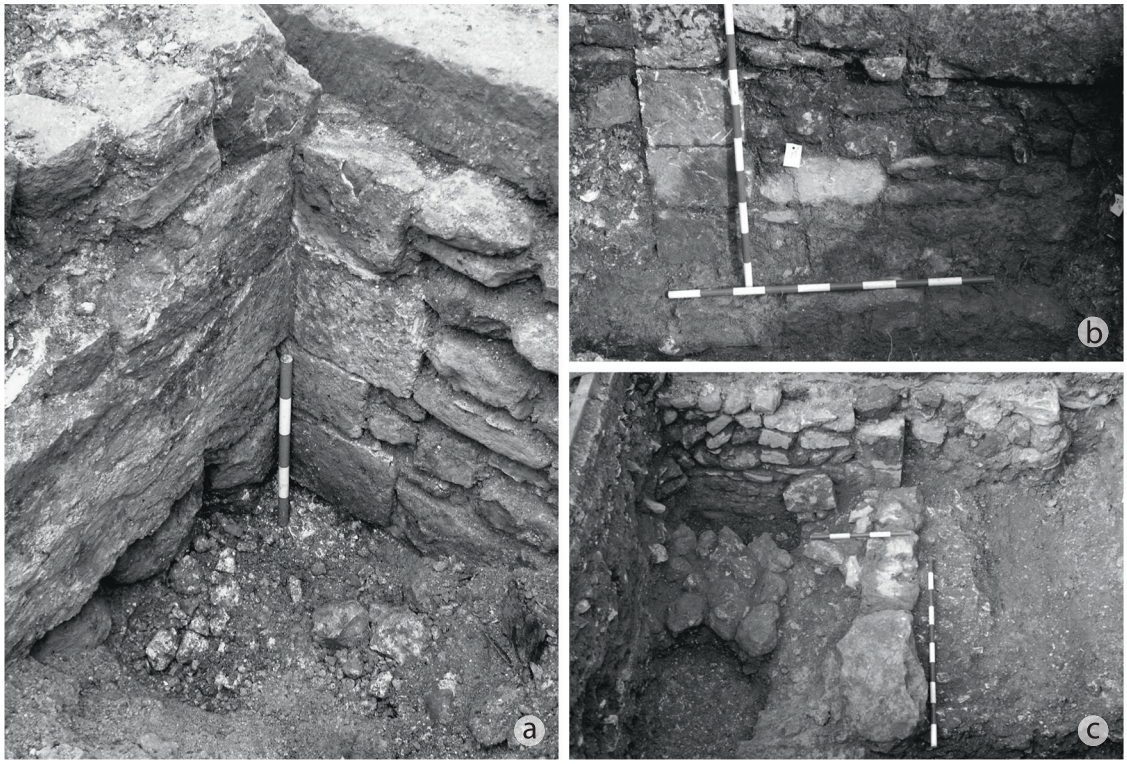

Fig. 14 (a) Interior corner of walls 7314 and 7346 showing stressed quoins, trench 6 looking west, scale 0.5 m; (b) detail of the quoins of the north end of wall 7373 below the rebuilt garden wall, trench 7 looking west, scales 1 m; (c) south wall 7314 butted by phase 4b walls 8021 and 8022 with gully 8019 to the right, trench 8, looking north, scale 1 m

lition deposits [8013, 8011, 8010] bounded to the east by wall [8021] (Fig. 11 sections 4 and 5). This suggests the presence of a further wall below the modern path which, if correct, would provide a companion for either [8030] or [8021].

This evidence may therefore be interpreted in several ways. Either [8030] is a substantial and high free-standing enclosure wall or it is part of a possibly two-storey structure some 4 m wide, possibly a solar or warderobe undercroft, whose east wall lies under the path. The structure on the south-east corner of Building [7347] is interpreted as a garderobe tower built either in the angle formed by the inferred east wall of the solar or warderobe and Building [7347] or a small, free-standing, square or rectangular structure no more than about 3 m wide, assuming its west wall is beneath the path and wall [8030] is an enclosure wall.

Probably in the late 13th–14th century, though there is no close dating evidence, the putative garderobe was re-built largely on its earlier foundations (Fig. 9). The walls were taken down to foundation or cill level. Slate, chalk and flint demolition rubble [8013] confined to the west of [8021] partly overlapped the latter and entirely covered [8022] (Fig. 11 sections 4 and 5). The re-built north-south wall [8005] was 0.65 m wide and of greensand and chalk rubble, randomly coursed and very roughly built, bonded with a yellowish-orange lime mortar (Fig. 11 section 4). Its east face was flush with the corner of Building [7347], which it butted. Of the same construction phase, an east-west wall 0.48 m wide [8008] was built slightly to the north of [8022]. Nothing of the internal arrangement of the structure survived.

Dumps of green-brown loam similar to degraded greensand, with variable amounts of

greensand rubble and occasional Roman tile tipped from the south-east [7334, 7350, 7356 and 8014] were deposited to the east of the chamber block and wall [8005] (Fig. 11 section 2–4; note layer 8014 is not shown in section) raising the level by almost 0.3 m. Above, but confined to the east of the chamber block, was a midden of marine shells, principally oysters [7333] (Fig. 11 section 2–3). Few finds were recovered from the dumps, including residual 13th–14th century pottery, animal bone, oyster shells and glazed crest and ridge roof tiles. Several 15th century sherds were recovered from [7334] and [7333].

These dumps are analogous to two thick deposits identified in trench Y5 where they sealed the demolished remains of Buildings 416, 539/298 and 290. The lower dump was dated to the first half of the 15th century, the one above to the second half of the 15th century, though Mepham (2000, 122) notes the lack of closely datable diagnostic pottery from the lower deposit. Examination of an unpublished section drawing of the west face of trench Y5 shows that a layer of oyster shells, clearly the equivalent of layer [7333], extended northwards for much of the length of Building [7347].

Although large amounts of material accumulated to the east, no evidence was found of similar activity immediately west of Building [7347] and wall [8030]. Instead, a garden soil [7310/7311] and [7378] (Fig. 10 sections 6 and 7) originated probably in the 18th century and re-worked during the 19th–20th century directly overlay the backfill of the Phase 3 ditch and Phase 4a construction trenches of Building [7347]. This resulted in a significant difference in the ground level west and east of Building [7347] and wall [8030], the east side being up to 0.5m higher, a situation still evident today.

Structural instability in the south-east corner of the chamber block, presumably as a result of subsidence into the underlying Phase 3 ditch fill, and possibly the reason for re-building garderobe walls [8005] and [8008] slightly earlier, required the addition of a large, almost square (0.8 m × 0.76 m) buttress [7320] to its east face (Fig. 9). Constructed of limestone and greensand blocks and some flint in a brownish-yellow lime mortar, the buttress had a wider stepped foundation, up to 0.3 m to the north and east and slightly narrower to the south, set in a slightly battered construction trench [cut 7335, fill 7336] (Fig. 13 a-b). The foundation was about 0.7 m deep from the top of the step, with near vertical sides and a single offset course at the base which appeared to sit directly on Phase 3 ditch fill [7359] (Fig. 12 elevation 4). A construction date in the 15th century or later is indicated.

Phase 5 – 16th–18th century

The chamber block and putative garderobe were demolished in this phase, their walls taken down largely to ground level leaving only vestiges of the quoins and stump of the west wall of the chamber block. A fragment of wall [803″″0] was retained, preserving the straight joint with the chamber block.

The cellar of the chamber block was infilled with a series of demolition deposits. The lowest [7352 and 7354] contained large quantities of roof slate, some complete, and greensand rubble but no dateable finds (Fig. 10 section 8, Fig. 11 sections 2 and 5). Above [7354], a layer of in situ burning [7345] lensed out some 0.25 m short of the west wall [7346] and slumped into a soft area in the underlying deposit (Fig. 10 section 8). It contained large amounts of trunk oak including charred surfaces from timbers and was associated with significant fire damage to the interior surfaces of the west and south walls which had turned their render and stonework bright pink; the surface of the underlying layer was also heavily scorched. Eight nails, including a large door stud, probably derived from burnt structural timbers. The only other find was a lead shot, deformed through firing. This conflagration, presumably reflecting the clearance of timbers and timber structures from the demolished buildings which were not thought capable or worthy of reuse at the time of demolition, was localised to the south-western end of the building. A thick layer of building rubble [7319] which included large quantities of Roman tile, brick and box flue tile, overlay [7345] and [7352]. The small amount of pottery recovered suggests a date in the late 16th century or early 17th century. Forming a surface level with the

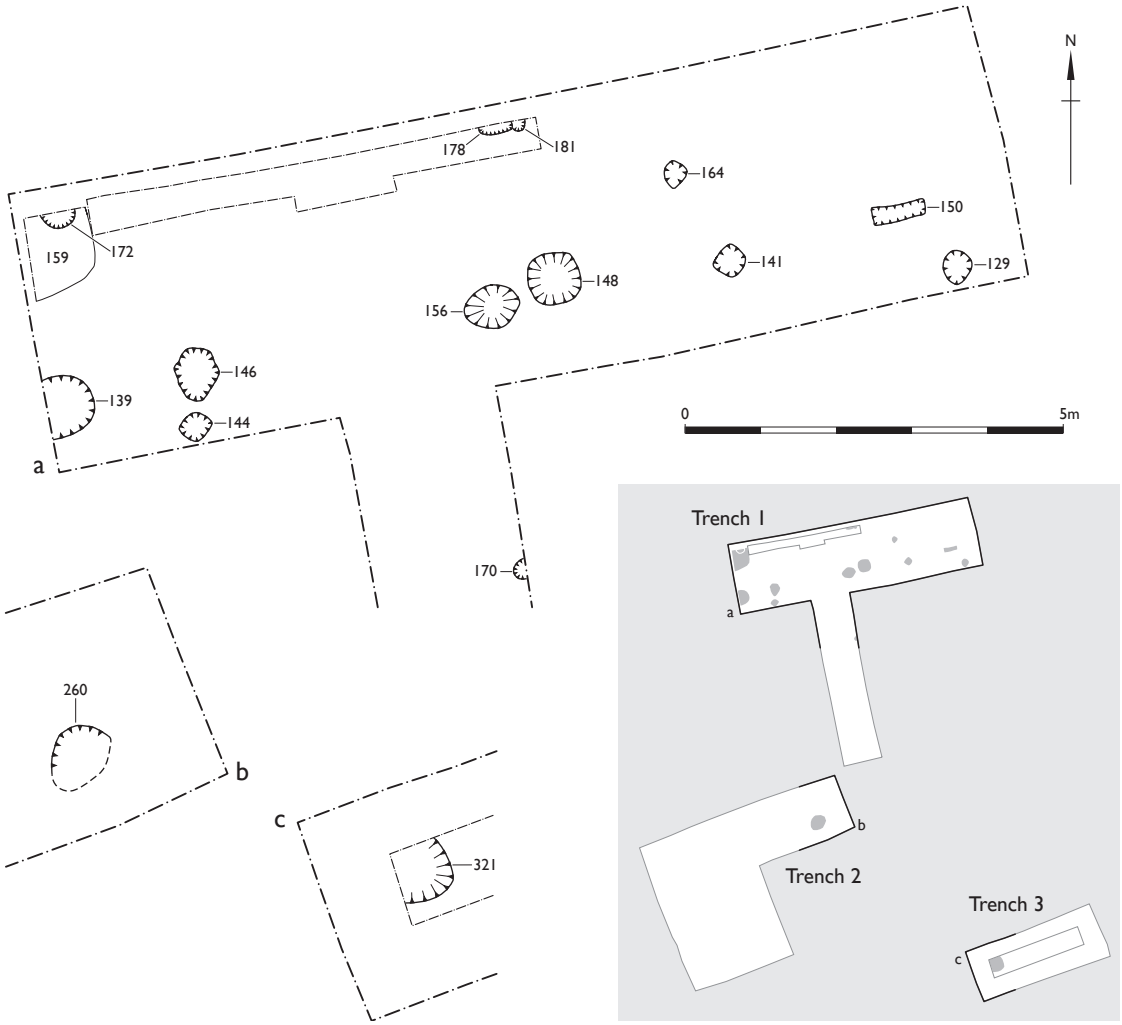

Fig. 15 Plans of phase 5 features, trenches 1–3

surviving surfaces of walls [7316] and [7314], a layer of stones and CBM fragments in a dark greyish loam [7318] similar to [7319] is interpreted as the upper, weathered fill of the cellar (Fig. 10 section 8, Fig. 11 sections 2 and 5). A sherd of a Beauvais double sgraffito plate and a rowel spur suggest a late 16th century date. To the east of wall [7314] was a levelling layer [7317] (Fig. 11 sections 2–3). Its relationship to the construction cut [7335] of buttress [7320], where the layer was at its thinnest, was removed during machining though it was thought to overlie the top surface of the buttress.

The demolition of the putative garderobe on the south-east corner of Building [7347] was represented by a series of rubble deposits [8011/8012, 8008, 8010, 8009, 8007 and 8006] confined to the west of wall [8005] (Fig. 11 sections 4–5). A few fragments of animal bone and five residual sherds of medieval pottery were recovered.

Incorporating the retained section of wall

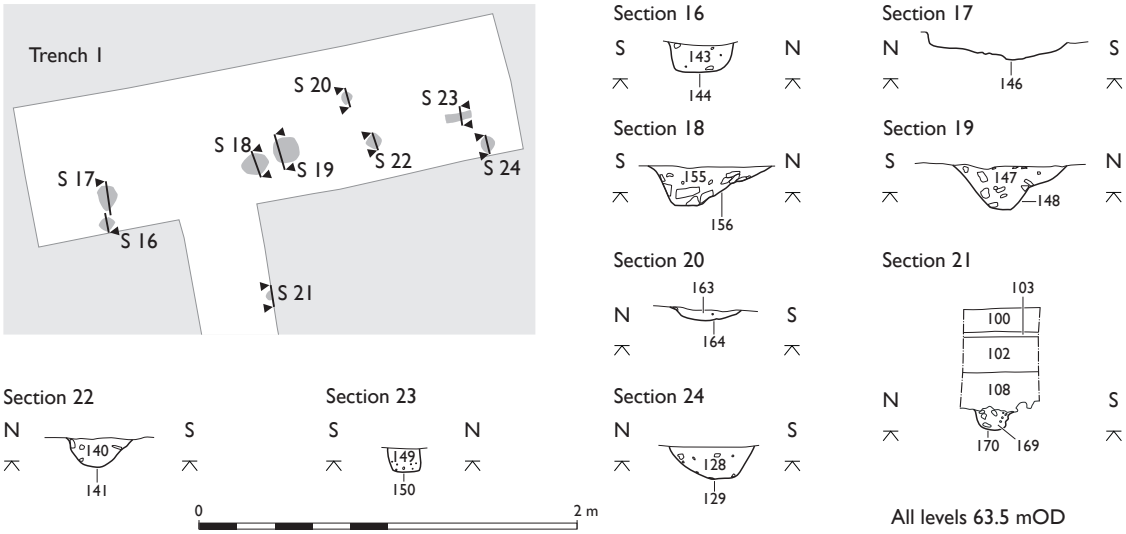

Fig. 16 Sections of Phase 5 features, trench 1

[8030], enclosure wall [7374] – the extant east wall of the Privy Garden – was built directly on the stump of the west wall of the chamber block, with a new doglegged section [7375] added to the north (Fig. 9), as shown on a plan of 1723, largely as it exists today. Although not directly dated, the retention of wall [8030] and parts of the west wall of the chamber block suggest that construction of the new enclosure wall was planned at the time of demolition, and may have been completed by the early 17th century. The rebuilt wall incorporates much reused medieval stonework and architectural fragments.

Area east of the enclosure wall

This appears to have been an open yard surfaced with roof slates [7315] over which a midden [8000] developed (Fig. 11). The midden contained large quantities of oyster and cockle shells, fish and animal bone and a little pottery. Fragments of pantiles indicate a date in the 18th century, though the duration of midden accretion and extent of disturbance through trampling are unknown. Stratigraphically related but re-worked as a garden soil in the 19th century, a layer of dark sandy earth [7325] recorded in trench 5 to the south of wall [7316] and against wall [8030] produced large quantities of marine shells, especially whelks, and roof slate. Clay tobacco pipes and a pantile suggest an 18th century date.

Area west of the enclosure wall (Fig. 15*)*

Apart from a late 16th-early 17th century post-hole [172, fill 171] (Fig. 15 a) and a layer of dark earth [159] within a hollow directly above it in trench 1 (Fig. 7 section 13), and a shallow pit [321, fill 320] (Fig. 15 c, Fig. 8 section 15) which contained a fragment of a 17th century clay tobacco pipe in trench 3, most of the other features and deposits from this phase were 18th century or undated.

In trench 1, four 18th century shallow post- or planting holes [129, fill 128; 141, fill 140; 144, fill 143 and 156, fill 155] and several similar but undated features [178, fills 177 and 179; 181, fill 180; 139, fill 138; 146, fill 145; 148, fill 147; 170, fill 169 and 164, fill 163 including a linear slot 150, fill 149] (Fig. 15 a, Fig. 16, Fig. 7 section 13) all containing small fragments of brick and mortar, were overlain by a thin, calcareous layer [108/126] (Fig. 7) dated to the 18th century. The formation of this deposit,

which directly overlay the natural to the north of the trench, appears to have truncated the sequence, removing any medieval layers and reducing cut features to little more than shallow depressions. It is not clear whether this was associated with landscaping, removing deposits to level up the south (see below), or the development of a horticultural soil. Finds included mixed medieval and post-medieval pottery and fragments of 18th century clay tobacco pipe stems (several incorrectly attributed to feature [111] derived from the removal of [108] directly above it); finds recovered from machining were assigned to context [126].

In trench 4, a thin garden soil [7330] preserved against the east enclosure wall was cut by an oblong pit [7328, fill 7329] dated by fragments of 18th century clay tobacco pipe stems. An undated post-hole [260, fill 230] (Fig. 15 b) overlain by a 19th century garden soil in trench 2 is tentatively assigned to this phase.

A dump of greensand rubble and roof slate [316] overlain by a series of layers of chalk, loam and roof slate [315/318, 311 and 310; 314 was allocated to finds from machining] in trench 3 are associated with levelling the south of the area. Together, they raised the ground by over 0.6 m, virtually level with the northern half of the area and are probably related to the establishment of a garden in the 17th and 18th centuries. A plan of 1723 shows the area as 'now a garden' planted with trees. Layers [315/318] and [311] produced mixed medieval and post-medieval pottery suggesting a *terminus post quem* in the 17th century, animal bones and marine shells; layer [311] was also particularly rich in oyster shells. Layer [310] contained similar finds but also included eight fragments of 18th century clay tobacco pipe stems and a coin dated AD 1721.

Selected fallow deer bones from contexts [310, 311 and 314] were submitted for radiocarbon dating as part of the Dama International Fallow Deer Project (Sykes 2010; Ayton, this paper). The results, all consistently mid-12th to mid-13th century, indicate that a proportion if not most of the faunal assemblage is probably residual, like the pottery, and indicate that medieval deposits were being removed, possibly from the northern part of the Privy Garden (they could equally be from other parts of the castle), and re-deposited for this landscaping. A single sherd of white refined earthenware from [315] and a 19th century clay tobacco pipe stem from [314] indicate disturbance or contamination.

ENVIRONMENTAL EVIDENCE

Sampling and recovery by Gill Campbell

Animal bone and marine shell were hand-collected from all contexts encountered during the evaluation. In addition sixteen flotation samples (Campbell *et al.* 2011, 12) were taken principally for the recovery of marine shell, animal bone and finds. The majority of the seven samples taken during 2006 came from feature fills or from midden deposits, whilst the nine samples from 2008–9 came mainly from midden/ occupation layers, and, with the exception of the single sample from the prehistoric feature (Phase 2), were dated to either Phase 4 (a and b) or 5. Samples ranged from five litres to 100 litres but most were of forty litres or 100% of the context as seen within the excavation trench (Campbell et al. 2011). Samples were floated using a modified Siraf tank with the flot captured on a 250 micron mesh and the residue (the material that did not float) retained on a 500 micron mesh. Once dry the residues from these samples were separated into fractions. 100% of the >4mm fraction and 25% of the 4–2mm fraction of each sample residue was sorted in order to retrieve finds, bone, marine shell and any charred material that had failed to float.

The mammal, bird and fish bone from the 2006 samples were not investigated as they were mislaid at the time the analysis was undertaken and mainly came from redeposited contexts. The scientific dating results (see below) obtained suggest that these contexts are of mixed date and therefore not suitable for further analysis. Four samples from the 2008/9 evaluation (<7801> [7325], <7803 [7362], <7805> [8000] and <7807> [8023]) produced over 30 identifiable fragments of mammal and bird bone (Ayton 2011) and substantial numbers of fish bone from the >4mm and 2–4mm fractions. In light of this, 25% of the

<2mm residue from these samples was scanned in order to try to recover further material.

Plant remains including charcoal by Mariangela Vitolo and Gill Campbell

Seven samples from 2006 evaluation and nine from 2008/2009 excavations were scanned to assess their archaeobotanical potential. On the basis of the assessment results (Robinson unpublished; Vitolo unpublished), all of the samples from 2006 and three from 2008/2009 had the potential to provide information about the environment and the cereals consumed at the castle and were considered worthy of further analysis. Plant remains were identified using a dissecting binocular microscope at magnifications up to x50 and with reference to the Historic England botanical comparative reference collection.

In addition to the samples analysed for charred plant remains, samples <7802>, from Phase 5 layer [7345] and <7803>, from a Phase 4a floor deposit [7362] were analysed for wood charcoal. Fifty fragments were randomly selected from the coarse fractions of the flot (> 2 mm) and the charcoal retained from the residues from sample <7803>. Only 30 fragments were analysed from sample <7802, because oak was the only species found. All charcoal fragments were examined initially under a low power dissecting microscope at magnifications up to x40 in order to determine the general structure and to aid fracturing in three planes (transverse, tangential and longitudinal). Identification took place using a high power incident light microscope at magnifications between x50 and x500.

The results from the analysis of charred plant remains are presented in Table 2 and the results of the charcoal analysis in Table 3. Nomenclature follows Stace (1997) for plants other than cereals and Zohary & Hopf (2000, table 3, table 5) for the cereals. Further details on methodology and a more detailed discussion of the results are given in Vitolo & Campbell (2011).

The assemblage

Charred plant remains were only present in low concentrations and preservation was generally rather poor with indeterminate cereal grains outnumbering those that could be identified to genus level and no diagnostic cereal chaff recovered. Only samples <7807> from 12th century yard surface [8023] and samples <3000> and <3001> from medieval midden (Phase 4) layers [322] and [324] yielded more than 50 items per litre with only <3000> producing over 100 items. Despite these limitations the assemblage is one of the few to be analysed from the Isle of Wight whilst the dataset from medieval castles is also extremely limited.

A single sample (<1001>) was analysed from prehistoric feature fill [182]. It produced a mixture of hulled and naked barley grain and a few weed seeds including black bindweed (*Fallopia convolvulus*) and knotgrass (*Polygonum aviculare* agg.). Some of the grains were very well preserved and the naked barley grain was small in comparison with the other grains. This suggested that the grains might be mixed origin, and, given that the feature also produced Bronze Age and Iron Age pottery, two of the hulled grains and the fragmentary naked barley grain were submitted for radiocarbon dating. The naked barley grain and one of the hulled barley grains produced Middle Bronze Age dates which are statistically consistent (see Marshall *et al.* this paper). The other hulled barley grain gave a late medieval date cal AD 1320–1440 (Marshall *et al.* this paper) demonstrating the presence of intrusive material from the overlying contexts and that the charred plant assemblage is of mixed date.

In contrast to the results from sample <1001> the samples from medieval contexts produced principally wheat grain with only occasional possibly barley grains noted. The majority of the wheat grains were too poorly preserved to be identified beyond genus level but some grains from samples <7807> and <3001> showed a morphology typical of naked wheat while a single grain from sample <7807> was of glume wheat type. This single grain could represent variation within the naked wheat crop or might be residual from earlier activity.

In addition to wheat grain reasonable numbers of oat grains were present in the medieval samples, though given that no oat

Table 2 Charred and mineral-replaced plant remains from Carisbrooke Castle 2006 and 2008/9 excavations

Taxa	*Common name Sample*	*1001*	*7807*	*3004*	*1000*	*3003*	*3000*	*3001*	*3002*
	Context	*182*	*8023*	*343*	*173*	*329*	*322*	*324*	*319*
	Date range	*MBA–RB*	*12th*	*11th–14th*	*11th–14th*	*11th–14th*	*11th–15th*	*11th–15th*	*11th–15th*
	Phase	*2*	*4a*	*4*	*4*	*4*	*4*	*4*	*4*
		fill	*occ/yard layer*	*pit fill*	*pit fill*	*layer*	*midden*	*midden*	*dump*
	Sample size in litres	*40*	*40*	*40*	*40*	*40*	*40*	*40*	*40*
Papaver rhoeas/ dubium/ hybridum	poppy	–	–	–	–	–	–	2	–
Agrostemma githago L.	corncockle	–	2	–	–	–	–	–	–
Fallopia convolvulus (L.) Á Löve	black bindweed	2	–	–	–	–	–	–	–
Polygonum aviculare agg.	knotgrass	1	–	–	–	–	–	–	–
Polygonum sp.	knotgrass	1	–	–	–	–	–	–	–
Rumex sp	dock	–	–	–	–	–	2	1	–
Polygonaceae indet (m)*	knotweed family	–	1	–	–	–	–	–	–
Aphanes arvensis L.	parsley-piert	–	–	–	–	–	1	–	–
Pisum sativum L.	pea	–	–	–	–	–	–	1	–
cf *Pisum sativum L.*	cf pea	–	–	–	–	–	3	–	–
Vicia/Lathyrus sp	vetch/tare	–	3	–	–	–	–	15	–
Vicia/ Lathyrus/ Pisum sp.	large legume	–	–	–	–	–	–	–	1
Geranium sp	crane's bill	–	–	–	–	1	2	–	–
Plantago lanceolata/media L.	ribwort/hoary plantain	–	–	–	–	–	–	1	–
Euphrasia/Odontites sp	eyebright/ red bartsia	–	–	–	–	1	–	10	–
Galium sp	bedstraw	–	–	–	–	–	–	1	–
Rubiaceae indet. (m)*	bedstraw family	–	1	–	–	–	–	–	–
Sambucus nigra L.	elder	–	–	–	1	–	–	–	–
Centaurea cyanus L.	cornflower	–	–	–	–	–	–	1	–
Centaurea sp.	knapweed	–	–	–	–	–	–	3	–
Anthemis arvensis L.	corn chamomile	–	–	–	–	–	–	1	–
A. cotula L.	stinking chamomile	–	–	–	–	–	14	34	1
Anthemis sp	chamomile	–	–	1	–	–	–	1	–
Anthemis type L.	chamomile type	–	–	–	1	–	–	–	–

Table 2 (*cont.*)

	Sample	*1001*	*7807*	*3004*	*1000*	*3003*	*3000*	*3001*	*3002*
	Context	*182*	*8023*	*343*	*173*	*329*	*322*	*324*	*319*
Chrysanthemum segetum L.	corn marigold	–	–	–	–	–	–	1	–
Leucanthemum vulgare Lam.	oxeye daisy	–	–	–	–	–	–	1	–
Juncus sp. (capsule)	rush	–	–	1	–	–	–	–	–
cf *Eleocharis palustris* (L.) Roem. & Schult.	common spike rush	–	1	–	–	–	–	–	–
Cyperaceae indet.	sedge family	–	–	–	–	–	–	1	–
Lolium temulentum L.	darnel	–	18	–	–	–	–	1	–
Bromus sp	brome	–	11	–	–	–	–	–	–
Avena sp	oat	–	3	–	–	4	15	2	–
cf *Avena* sp	oat	–	1	–	–	–	–	–	–
Avena sp. (sprouted)	oat	–	–	–	–	–	–	1	–
Poaceae (small grained) indet	grass family	–	–	–	1	1	3	23	–
Poaceae indet.	grass family	–	8	–	–	–	–	7	–
Hordeum vulgare L. (hulled,twisted grain)	hulled, twisted barley	1	–	–	–	–	–	–	–
H. vulgare L.(hulled grain)	hulled barley	8	–	–	–	–	–	2	–
H. vulgare L.(naked grain)	naked barley	1	–	–	–	–	–	–	–
cf *H. vulgare* L.(grain)	cf barley	–	2	–	2	–	–	1	–
cf *H. vulgare* L. (sprouted grain)	cf barley	–	–	–	1	–	–	–	–
Triticum sp., free-threshing type (grain)	free-threshing wheat	–	5	–	–	–	–	7	–
Triticum sp,. glume wheat type (grain)	glume wheat	–	1	–	–	–	–	–	–
Triticum sp.(grain)	wheat	–	1	4	4	3	19	–	6
Cereales indet (grain)	cereal	4	16	15	7	10	40	70	1
Cereal indet size (culm node)	cereal	1	–	–	–	–	–	–	–
Cereal size (sprout)	cereal	–	1	–	–	–	–	–	–
	unident. Seed	–	1	–	1	–	–	6	6
	charred Insect	–	–	–	+	–	–	–	–
Cenococcum sp.	fungal resting bodies	+	–	–	+	+	+	++	+
Total		19	76	21	18	20	99	194	15
Number of items per litre		0.48	1.90	0.53	0.45	0.50	2.48	4.85	0.38

Table 3 Charcoal analysed from Carisbrooke Castle 2006 and 2008/9 excavations

Taxa	*Common name*	*Sample*	*7803*			*7802*		
		Context	*7362*			*7345*		
		Date range						
		Phase	*?4a*			*5*		
		Context type	*occupation layer/floor within building*			*in-situ burnt layer*		
			No of fragments		*weight in grams*	*No of fragments*		*weight in grams*
			>4mm	*4–2mm*		*>4mm*	*4–2mm*	
Ulmus sp.	elm		1	–	0.18	–	–	–
cf *Ulmus* sp.	elm		–	1	0.03	–	–	–
Fagus sp.	beech		5	1	2.29	–	–	–
cf *Fagus* sp.	beech		1	–	0.73	–	–	–
Quercus sp	oak		12	15	4.10	19	10	14.85
Alnus sp.	alder		4	5	14.40	–	–	–
Unidentified			2	3	0.65	1	–	1.05
Total			25	25	22.38	20	10	15.9

chaff was found, it cannot be established whether these are derived from wild or cultivated oats. A sprouted oat grain from <3001>, a sprouted cf. barley grain from <1000>, and a detached cereal type coleoptile from <7807> are as likely to represent grain spoilt in storage as evidence for malting. The only other cultivated plants within the assemblage were large seeded legumes. A single specimen from sample <3001> was identified as pea (*Pisum sativum*) while three examples from sample <3000> were tentatively identified as pea.

The medieval samples also produced typical medieval weed species such as corncockle (*Agrostemms githago*), stinking chamomile (*Anthemis* cotula), cornflower (*Centaurea cyanus*) corn marigold (*Chrysanthemum segetum*) and darnel (*Lolium temulentum*). Some of these remains are probably derived from the cleaning of cereal grain prior to processing for consumption while others may be from weeds growing in and around the castle yards or from burnt dung or stable waste.

All the charcoal from sample <7802> consisted of oak (*Quercus* sp.) and it is likely that this is derived from structural timber. In sample <7803> a wider variety of species were identified, mainly oak and alder (*Alnus* sp.), although some fragments of beech (*Fagus* sp.) and elm (*Ulmus* sp.) were also recorded. Some charcoal fragments from this sample were badly insect damaged, hinting to the possible use of old decayed wood for firewood (fuel). The sample also contained a few fragments of coal. All the fragments from both samples have annual rings that are almost parallel rather than curved, evidence that they are all from trunk wood, rather than, for instance, branches or twigs, apart from one fragment from <7803> which was unidentifiable root wood (probably oak).

Discussion

The dates obtained on the hulled and naked barley from feature fill [182] show that during the Middle Bronze Age naked and hulled barley were being grown on the island. This is the first such evidence from the Isle of Wight and therefore adds to our knowledge of crop husbandry in the area. The cultivation of

hulled and naked barley at this time agrees well with the archaeobotanical evidence from southern England including Bestwall Quarry, Dorset, where radiocarbon dates on both hulled and naked barley returned Middle Bronze Age dates (Carruthers 2009, Campbell & Straker 2003).

The frequency of wheat grain in the 12th–15th century samples suggest that this was the principal cereal eaten by the castle inhabitants during this period. Peas, barley and possibly oats may also have been consumed although the remains recovered could also be derived from animal feed. The weed species and other wild plants in the assemblage could come from stable waste and the vegetation growing in the castle yards and other open spaces. However, this material might also derive from the removal of weed seeds from grain prior to consumption. It is likely that both flour for bread and whole grain for use in frumenties and other pottages would have been purchased, stored and used within the castle.

Naked wheat is very common at medieval sites in England, it occurs for instance at castles such as Wiston, Pembrokshire (Caseldine 1997), Rumney, South Glamorgan (Williams 1992), Hen Domen, Montgomery (Greig 1982) and Middleton Stoney, Oxfordshire (Robinson 1984). Wheat was also the most occurring cereal found in charred assemblages from medieval pits in Winchester and frequently occurs on rural sites (Greig 1988). Rye was not recorded from Carisbrooke, but it has been recovered from medieval contexts in Southampton (Green 1986; Hunter 2005) and at other medieval castles, such as Wigmore, Herefordshire (Vitolo 2015), Boteler's, Warwickshire (Moffett 1997), and Wiston (Caseldine 1997). Although rye was commonly cultivated in medieval times, it was not used much for making bread, because it was regarded as food for the poor and less desirable than bread made from wheat (Wilson 1984, 200).

The few remains of pea provide the only evidence for cultivated plants other than cereals from the site. Where anoxic deposits do not form part of the archaeological resource, evidence for the use of fruit and vegetables is rare. The Accounts of Isabella de Fortibus mention two herbaria at the castle, one "before the Hall" in 1270 and another "next the Chapel" in 1287–8 (Stone 1891, 100). Both, and probably other gardens, could have provided food both for the castle's inhabitants and for the market, as observed in other medieval castles (Dyer 2006).

Mammal and bird remains by Gemma Ayton

Full details of the methodologies employed in the analysis are given in Ayton (2011) The bone was recorded according to the zoning system outlined by Serjeantson (1996) and Cohen and Serjeantson (1996). A number of criteria were used to distinguish between sheep and goat (Boessneck 1969; Boessneck et al. 1964; Halstead et al. 2002; Hillson 1995; Kratochvil 1969; Payne 1969; 1985; Prummel & Frisch 1986; Schmid 1972). Distinction between other closely related species follows Callou (1997) for hare and rabbit, Lister (1996) for red and fallow deer, Tomek & Bocheński (2009) and MacDonald (1992) for chicken, pheasant and guinea fowl, Tomek & Bochenski (2000) for corvids, and Andrews (1990), Corbett & Harris (1991) and Lawrence & Brown (1974) for small mammals. The age of epiphyseal fusion in domesticates follows Silver (1969). The mandibular tooth wear of pigs and sheep was recorded using Grant (1982) and Payne (1973, 1987) respectively. The majority of mammal and bird bone measurements follow von den Driesch (1976) and Cohen & Serjeantson (1996) respectively. Other measurements follow Payne & Bull (1988) for pigs, Davis (1992) for cattle humeri and metapodials, Davis (1996) for sheep. The surface preservation of each recordable fragment was recorded as either 'poor', 'moderate' or 'good' with evidence of burning and gnawing also noted. Butchery marks were recorded by zone and defined as chops, cuts, sawing, shaving marks and axial splitting.

The assemblage

Around 1000 recordable fragments were recovered from features dating from the 11th–20th century with the majority of the assemblage derived from features dating from

Table 4 Number of Identified Specimens (NISP) for the hand-collected assemblage from phases 3–5. Separate sheep and goat identifications are included in total sheep/goat count

Taxa	*Phase 3*	*Phase 3 Trench Y5*	*Phase 4a*	*Phase 4a Trench Y5*	*Phase 4b*	*Phase 5*
Cattle	3	159	5	162	49	98
Sheep/Goat	5	571	4	368	79	53
Sheep	*1*	–	–	–	*18*	*17*
Goat	–	–	–	–	*3*	–
Pig	4	524	9	506	99	54
Red/Fallow deer	1	12	1	15	10	15
Red deer	–	8	–	2	2	–
Fallow deer	1	14	–	11	5	13
Horse	–	23	–	2	–	–
Dog	–	61	–	2	1	–
Cat	–	4	1	21	1	–
Lagomorph	–	–	–	–	9	17
Hare	–	100	1	31	10	5
Rabbit	–	–	–	–	–	2
Fox	–	1	–	–	–	–
Whale	–	–	–	1	–	–
Large mammal (vertebra + ribs)	–	–	1	–	4	2
Medium mammal (vertebra + ribs)	–	–	–	–	22	7
Chicken/Guinea fowl/Pheasant	–	210	5	136	46	37
Domestic/Greylag goose	–	7	–	–	3	5
Goose (*Anser* sp.)	–	18	–	26	–	3
Mallard/Domestic duck	–	10	–	7	2	1
Teal	–	2	–	2	–	–
Duck (*Anas* sp.)	–	3	–	6	–	–
Woodcock	–	–	–	–	–	2
Woodpigeon	–	–	–	1	–	–
Columbid	1	1	1	–	1	1
Turdid/Sturnid	–	–	–	–	1	–
Rook/Carrion crow	–	1	–	–	3	2
Crow	–	2	–	–	–	–
Raven	–	2	–	–	–	–
Wader	–	1	–	–	–	–
Buzzard	–	1	–	–	–	–
Tawny Owl	–	10	–	–	–	–
Peacock	–	2	–	–	–	–
Curlew	–	–	–	1	–	–
Oystercatcher	–	–	–	1	–	–
Toad	–	–	–	–	–	1

Table 5 Number of Identified Specimens (NISP) for the sieved assemblages from Phases 3–5. Separate sheep and goat identifications are included in total sheep/goat count

Mesh Size	*Phase 4a*		*Phase 4b*		*Phase 5*	
Taxa	*>4mm*	*2–4mm*	*>4mm*	*2–4mm*	*>4mm*	*2–4mm*
Cattle	4	–	3	–	1	–
Sheep/Goat	5	–	12	1	3	1
Sheep	–	–	1	–	–	–
Goat	–	–	–	–	–	–
Pig	8	–	25	–	4	–
Red deer/Fallow deer	–	–	–	–	2	1
Red deer	–	–	–	–	–	–
Fallow deer	–	–	–	–	1	–
Dog	1	–	–	–	–	–
Medium mammal (vertebra + ribs)	–	–	6	1	5	–
Lagomorph	4	–	8	–	31	–
Hare	1	–	–	–	1	–
Rabbit	–	–	–	–	4	–
Mole	1	2	–	–	1	–
Rat	1	–	–	–	1	–
Rat/Water vole	–	–	–	–	4	–
Large rodent	8	–	–	–	2	–
Field vole	–	–	–	–	1	–
Common shrew	–	–	–	–	2	–
House mouse	–	1	–	–	1	–
Murid	–	–	–	–	8	–
Small murinae	2	–	1	(2)	4	–
Small rodent	5	15	–	–	–	–
Chicken/Guinea fowl/Pheasant	10	–	21	–	26	4
Domestic/Greylag goose	–	–	–	–	1	–
Teal	–	–	1	–	–	–
Wood pigeon	–	–	1	–	1	–
Columbid	–	3	–	–	4	3
Rook/Carrion crow	2	1	–	–	–	1
Frog/Toad	1	1	–	–	–	–

the 13th –15th century (Phase 4b) and 16th –18th century (Phase 5) and likely to represent food waste (Tables 4, 5). Both domestic and wild species were recovered in all phases with a greater emphasis on wild species in Phases 4b and 5. Horse was not recovered from the current evaluations and both cat and dog remains were rare, though evidence of gnawing on bones from all phases suggests that both animals were resident at the castle (Ayton 2011).

Phase 3

Context, [7344], the latest fill of an 11th century ringwork ditch, was the only context to produce bone from Phase 3 (Table 4). The 15 fragments of recordable bone comprised cattle (*Bos Taurus*), sheep/goat (*Ovis aries/ Capra hircus*), pig (*Sus domestica*), deer (Red deer, *Cervus elaphus/* Fallow deer, *Dama dama*) and a single dove/pigeon (*cf Columba* sp, size of rock/stock dove) bone. A fallow deer (*Dama dama)* left tibia from this context produced a radiocarbon date of cal AD 1040–1215 (OxA-27898, 897 ± 23 BP) see Marshall *et al.* this paper.

Phase 4

Phase 4a. One hundred and four recordable fragments of animal bone were recovered from Phase 4a contexts with the majority of the material retrieved from yard surface [8023] (Table 4, 5). Pigs and medium size galliforms (chicken, *Gallus gallus/* pheasant, *Phasianus colchicus/* guinea fowl, *Numida meleagris*) were the most abundant taxa followed by sheep/ goat and cattle. All four taxa are represented by both meat-bearing and non-meat-bearing elements with no evidence of butchery. Two neo-natal specimens were recovered including one *cf* sheep/goat ulna and one pig ulna but the data are otherwise insufficient to inform on age-at-death. The six lagomorph specimens include a pelvis and tibia identified as hare. The pelvic fragment, from [8023], had small cut marks along the pubis.

Other bird remains include four columbid specimens – a juvenile radius recovered by hand and three phalanges from samples, one of which may be from a young bird, and three rook, *Corvus frugilegus/* carrion crow, *Corvus corone* specimens also recovered from residues. A relatively large number of small mammal remains from samples include black rat (*Rattus rattus*), house mouse (*Mus musculus*) and mole (*Talpa europaea*).

Phase 4b. Animal bone was retrieved from 22 contexts through hand-collection and sieving. The largest accumulations were recovered from contexts [8016] and [322], both of which represent midden material, and context [319], a dump of chalk rubble which has been interpreted as a possible bank. The Number of Identified Specimens (NISP) for this phase shows that the assemblage is dominated by pig followed by sheep/ goat (including 18 sheep and three goat), chicken/ pheasant/ guinea fowl (of which a third are identified to chicken) and cattle respectively (Tables 4, 5). However, the estimate of Minimum Number of Individuals (MNI) (Table 6) suggests that sheep/ goat are the most abundant species, with the apparent dominance of pig based on NISP counts partly due to the large number of loose teeth and fragmented mandibles.

Sheep/goat limb and girdle bones predominate suggesting that these remains comprise meat joints. Cut marks were noted on the shaft of a tibia and on an acetabulum and these may have occurred during the removal of meat from the bone or during the skinning process. Epiphyseal fusion data indicates that the assemblage is dominated by mature animals (Ayton 2011). This suggests a preference for mutton over lamb, although the assemblage includes animals that were killed between 10 and 28 months.

The pig remains include both meat-bearing and non-meat-bearing elements. Most of the carcass is present with the exception of the cranium, but mandibles predominate. The cranium is relatively fragile and prone to destruction and may have been broken up prior to deposition in order to remove the brains (Smith 2000) though no evidence of butchery was noted on mandibular or cranial fragments. Sykes (2007) notes that medieval elite assemblages are characterised by an abundance of pig mandibles and suggests that the head may have been selectively imported to elite sites or

Table 6 Minimum Number of Individuals (MNI) for the most frequently occurring taxa. Separate sheep and goat identifications are included in total sheep/goat count

Taxa	*Phase 3*	*Phase 3 Trench Y5*	*Phase 4a*	*Phase 4a Trench Y5*	*Phase 4b*	*Phase 5*
Cattle	1	13	1	8	3	5
Sheep/Goat	1	46	1	29	9	6
Sheep	–	*15*	–	*4*	*6*	*5*
Goat	–	*2*	–	*1*	*1*	–
Pig	1	19	2	18	6	4
Red/Fallow deer	1	9	1	6	2	5
Lagomorph	–	7	2	4	2	4
Chicken/Guinea fowl/Pheasant	–	19	1	8	5	4

that animals were butchered at elite sites and their meat re-distributed.

Epiphyseal fusion data indicates that most pigs were killed by 24 to 30 months while tooth wear data suggests that the majority of pigs died between 14 and 21 months. Two specimens are from very young animals including a foetal/neonatal phalanx and a mandible with an unworn deciduous fourth premolar. One female and nine male canines were recovered either as isolated teeth or still within the mandible suggesting a selection of male pigs. Comparison of first and second molar width of the Phase 4b pigs from Carisbrooke Castle with those of similar date from Portchester Castle, Hampshire, Faccombe Nertherton, Hampshire and Guildford Castle, Surrey (Sykes 2007) shows that the Carisbrooke specimens are similar in size to the smaller specimens from Guildford Castle and Faccombe Netherton and that the largest specimens from Carisbrooke Castle are within the size range of the smallest specimens from Portchester Castle. This may suggest that the pigs at Carisbrooke Castle were of a different morphotype than those from Portchester Castle (Ayton 2011). Although the earliest textual references to regional types date to the seventeenth century, Saxo-Norman pig remains from Flaxengate, Lincoln were smaller than contemporary animals from Exeter indicating some regional variation by the 11th century (Albarella 2006).

Phase 4b produced 51 fragments of cattle bone representing a minimum of three individuals with the majority of the skeleton present apart from the cranium. Only three mandibles were recovered and these lacked *in situ* teeth and only one isolated molar was recovered. The jaws, along with the cranium may have been removed as part of an earlier butchery process with cattle arriving at the castle as semi-dressed carcasses. Five fragments of bone displayed evidence of butchery. Chop marks were noted on two proximal radii, an illium and a proximal femur and are indicative of dismemberment. Chop marks were also noted on the distal shaft of a tibia and may have occurred during removal of the feet. Just 19 fragments of cattle bone provided epiphyseal fusion data with the results suggesting that most of the animals were over four years old when killed (Ayton 2011). The assemblage also includes two fragments of right pelvis of foetal/neonatal cattle and cattle/red deer.

Phase 5

An assemblage of 429 recordable fragments was recovered from Phase 5 contexts. MNI counts (Table 6) show that although sheep/goat (only sheep were securely identified) continue to be the most abundant taxa, cattle and deer are now more frequent than pig. The sheep/goat remains again comprise mainly meat-bearing elements though a small number of extrem-

ities were also recovered. Distal scapulae and humeri are much less common than in the Phase 4b assemblage. There are a number of possible reasons for this absence. The joints of meat represented by the humerus and the scapula may no longer have been supplied in the same quantities as in the earlier phase. Alternatively, these parts of the skeleton may have been discarded or distributed elsewhere or subjected to further processing. Epiphyseal fusion data from 21 specimens suggest that the majority of sheep/goats survived beyond 2.5 years of age, contrasting with the evidence from Phase 4b. Tooth wear data include a single mandible of a very young sheep (with a lightly worn deciduous fourth premolar and unerupted first molar).

The majority of pig remains from this phase also comprised meat-bearing elements though non-meat-bearing elements were also recovered. The skull is represented by mandibles only (four specimens). A total of 23 bones provided data regarding epiphyseal fusion, analysis indicating that the majority of the animals were slaughtered by 24 to 30 months. A single fused proximal tibia provides evidence that some pigs survived beyond 3.5 years of age. None of the mandibles recovered retained a complete tooth row *in situ*. Of the four canines recorded from this phase one was female and three male.

The cattle bones recovered comprised most parts of the skeleton with the exception of the skull, mandibles and isolated teeth. Three bones, a right distal tibia, astragalus and calcaneum from dump deposit [320] probably derive from the same distal limb suggesting that the waste was not greatly disturbed following burial. A total of 43 specimens provided epiphyseal fusion data, analysis showing that 71% of the animals were over four years old when slaughtered. Some very young animals were present also as indicated by two scapula and one femur fragments of foetal/neonatal cattle/ cf cattle.

Deer

Red deer remains were recovered from Phase 4b while fallow deer were recorded in Phases 3, 4b and 5. Deer remains were more frequently recovered in the later phases (Tables 4–6) and in Phase 5 the MNI counts (Table 6) show that fallow deer were the second most abundant taxa and equal in quantity to cattle. However dating of the fallow deer remains from layers [310], [311] and [314] in trench 3 shows that they are from the 12th–13th century and are thus residual in these Phase 5 contexts (see Table 12; Fig. 18). Furthermore bones found in Phase 3 layer [7344] in trench 4, Phase 4b layers [7350] and [7357] in trench 6, and Phase 5 layer [8000] in trench 8 could derive from only a few individuals. This shows that the deer assemblage is considerably re-worked and cannot be considered as indicating changes in deer procurement overtime but rather that it represents activity spanning the 12th and 13th centuries cal AD.

Despite these constraints and the small numbers of remains recovered, the assemblage is of considerable interest. The majority of the remains derive from the hind-limbs with a small number of antlers, skulls, mandibles and metacarpals present. Butchery evidence was noted on seven fragments, with six of these fragments positively identified as fallow deer and the seventh fragment, a calcaneum, recorded as red/fallow deer. Cut marks on this calcaneum, as well as an astragalus, a first phalanx and the distal ends of a tibia and a metatarsal may be associated with skinning whilst chop marks on the distal ends of two femora may be indicative of dismemberment. A single fragment of red/fallow deer skull, comprising the frontal region with the pedicel and coronet of one of the antlers attached from Phase 4b layer [8027] also showed evidence of butchery; a chop mark being noted on the skull above the eye-socket. It is possible that the antler and associated cranial fragment were left attached to the hide to aid transportation from the hunting site back to the castle and they may also represent the remains of a trophy.

Taken as a whole the evidence suggests that the assemblage results from the 'unmaking' process (Sykes 2007) and may represent the remains of deer hunted by the castle's inhabitants or joints of meat presented as gifts. The 'unmaking process' was part of a highly ritualised form of hunting, known as the *chasse par force* which is thought have been introduced to England by the Normans (Sykes 2007).

Following the hunt, the deer was 'unmade' at the kill site. The carcass was skinned, disembowelled and butchered with the meat being distributed according to a set protocol. The feet were removed but left attached to the skin which was used to carry home the meat and the antlers. The pelvis was left at the kill site as an offering to the crow or raven and the shoulders were presented to the best hunter and forester or parker as their fee.

C Lagomorphs

Hare was recovered from Phases 4a, 4b, and 5 and rabbit from Phase 5 (Table 4; 5). Problems with identification occurred due to the unfused state (young age) of 14 specimens which were recovered from Phases 4a, 4b and 5. All parts of the carcass are represented including meat-bearing and non-meat-bearing elements. The skulls and mandibles are the least well represented element which may be a result of taphonomic issues or indicate that the heads were discarded elsewhere. It is possible that some of the lagomorph remains are intrusive, particularly the unfused specimens which may represent the remains of young rabbits that died in their burrow (Sykes 2007).

However, hare remains were recovered from a Phase 4a midden deposit (8023) whilst rabbit remains were recovered from Phase 5 midden layer (8000) suggesting that both species supplemented the diet of the castle inhabitants.

Birds

The bird assemblage is dominated by medium-sized galliforms (Tables 4–5). Only domestic fowl was positively identified though it is difficult to separate the closely related bones of the chicken, guinea fowl and pheasant (Serjeantson 2006). Analysis (Ayton 2011) showed that chicken was an important part of the diet and that most of the carcass was present though the smaller, more fragile elements are underrepresented. This may indicate that the heads and wing extremities were cut off before cooking. Other taphonomic processes, for example scavenging and gnawing, may have also destroyed these elements.

The high proportion of immature bones suggest that the birds were raised in the settlement (Serjeantson 2006) or that young fowl were imported. Medullary bone was noted in two specimens from the Phase 4b assemblage and two specimens from the Phase 5 assemblage, indicating the presence of hens in lay. No spurred tarsometatarsi, which might indicate the presence of cockerels, were recovered, although young birds may have been killed before the spur had attached to the bone (Serjeantson 2009). Immature chickens were common in medieval wealthy and religious households, such as Eynsham Abbey (Serjeantson 2006), and the consumption of chickens was a mark of wealth and social status (Serjeantson 2009)

Small quantities of goose bones were recovered from Phase 4b and 5 deposits. Nine fragments were identified as Greylag goose (*Anser anser*), though it is not possible to distinguish securely between the wild and domestic forms. Two fragments of bone from Phase 5, including the shaft of a coracoid and a tibiotarsus, have been noted as being particularly large and may represent domestic birds. Three fragments could not be identified to species though two are thought to derive from the larger *Anser* sp and one from the smaller *Branta* sp.

Duck was also identified from Phase 4b and 5. The Phase 4b assemblage contained one mallard (*Anas platyrhynchos*) tarsometatarsus, while a single radius and a scapula from Phases 4b and 5 respectively could be from either mallard or other medium-sized species, for example pintail (*Anas acuta*) or wigeon (*Anas penelope*). Rook/crow were present in small numbers and probably represent the remains of scavengers. Species separation was not possible due to destruction of the diagnostic characteristics.

Sixteen pigeon bones, comprising both domestic pigeon/rock dove (*Columba livia*)/ stock dove (*Columba oenas*) and woodpigeon (*Columba palumbus*), but possibly also the smaller species e.g. collared dove (*Streptopelia* sp), were recovered with juvenile specimens present in Phases 4a, 4b and 5. The relatively high percentage of immature columbid bones (63% of the pigeon bones recovered) can be taken as evidence of the consumption of squabs, immature birds that are eaten at about four weeks and before the bird fledged and

began to toughen its flying muscles (McCann 1991).

Pigeon bones become common in domestic waste from the 11th century onwards when they became a routine part of the upper class diet (Serjeantson 2009). Other high-status sites where the consumption of immature birds has been recorded include Hextalls Manor, Surrey (Bourdillion 1998), St Gregory's Priory, Canterbury (Serjeantson 2001), Eynsham Abbey, Oxfordshire (Ayres *et al.* 2003) and Windsor Castle, Berkshire (Baker 2010).

Comparison with earlier work

The mammal and bird remains from excavations by Young to the east of the Privy Garden (trench Y5) investigated by Smith (2000) and Serjeantson (2000) respectively generally come from contexts that pre-date the material recovered from the evaluations, the exception being midden layer 286 which is the equivalent of Phase 4b midden layers [8016, 8018 and 8027] (see above). The proportions of the main domesticates from midden 286 compare well with the results from Phase 4b. Sheep/goat remains are the most abundant (from MNI counts) followed by pig, chicken/pheasant/guinea fowl, and lastly cattle.

Remains not recovered in the part of this midden excavated in 2006–8/9 but present in midden 286 include horse, curlew and oystercatcher as well a single whale vertebra used as a chopping board, with one or two specimens identified in each case (Smith 2000; Serjeantson 2000). These additional species reflect the relative size of the two assemblages (NISP for the hand-collected material =1301 from midden 286 and 347 from all 2006 –8/9 Phase 4b contexts (Ayton 2011).

The age at death data from midden 286 show that most sheep were killed over one year but before their 3rd year, indicating consumption of mainly mutton consistent with the current work, and that pigs were of mixed age with males predominating in the assemblage, again consistent with the present study.

Skeletal element analysis by context for the domestic fowl assemblage from trench Y5 revealed some interesting disposal patterns (Serjeantson 2000). Whilst the 11th century ditch fill was dominated by tarsometatarsi, skulls, pre-maxillae and mandibles suggesting primary butchery waste resulting from the removal of the head and feet before cooking and serving (Serjeantson 2000) midden 286 was dominated by meat-bearing elements (a pattern also reflected in the Phase 4b assemblage from the current work (Ayton 2011)). This suggests that by the 12th–13th century birds were supplied to the castle semi-dressed with the head and extremities removed in contrast with practice in the 11th century when primary butchery occurred on site.

Status

The animal and bird bone assemblage recovered from the evaluation reflects a mixture of kitchen and table waste, with the predominance of subadult and older cattle, sheep/goat and pig indicative of a consumer rather than a producer site albeit with possible local production of some animals as suggested by the presence of very young bones/ teeth of all three taxa.

The presence of squabs, hares, and the high proportion of domestic fowl and pig in the 12th–13th century deposits are all indicative of a high status diet (Sykes 2007). The 11th century deposits, reported on by Smith (2000) and Serjeantson (2000) also contain high proportions of pig and domestic fowl, along with deer, hare and a peafowl again indicating high status. The evidence from the 16–18th century deposits investigated in 2006–8/9 is less clear as the assemblage contains considerable re-worked material with the exception of midden layer [8000]. This midden produced the first definite evidence of rabbit from the site and also contained hare, pig, deer, domestic fowl and columbid remains suggesting that in the 16th–18th century the occupants also enjoyed a privileged diet.

Fish remains by Rebecca Nicholson

Around 500 items were identified from the 2008/9 samples with only 12 fish bones hand retrieved (Table 7). All bones and scales were identified using the author's modern comparative collection. The remaining, unidentified, bones were small or tiny fragments and were frequently parts of rays or spines, which are

Table 7 Numbers of fish fragments, by phase from Carisbrooke Castle 2008/9 excavations

Taxa	*Common name*	*Phase*	*4a*	*4b*	*5*	*Total*
cf. *Amblyraja radiata*	starry ray		1	–	–	1
Raja cf. *montagui*	spotted ray		–	2	–	2
Anguillidae	eels		1	–	–	1
Anguilla anguilla	common eel		6	33	–	39
Conger conger	conger eel		1	2	8	11
Clupea harengus	herring		54	214	17	285
Salmonidae	salmonids		–	9	–	9
Esox lucius	pike		5	3	–	8
Cyprinidae	cyprinids		–	–	1	1
Gadidae	cod family		3	4	13	20
Gadus morhua	cod		1	–	8	9
Gadus/Pollachius	cod/saithe/pollack		–	1	–	1
Pollachius sp.	saithe/pollack		–	–	1	1
P. pollachius	pollack		–	–	2	2
Merlangius merlangus	whiting		–	1	–	1
Trisopterus sp.	bib/pout		–	–	2	2
Belone belone	garfish		–	–	1	1
Trachurus trachurus	scad		1	1	–	2
Dicentrarchus labrax	bass		–	–	10	10
cf. *D. labrax*	bass		–	–	1	1
Perca fluviatilis	perch		1	–	1	2
Sparidae	sea breams		3	1	2	6
Labridae	wrasses		–	–	2	2
Mugilidae	mullets		–	1	6	7
Lisa sp.	thin-lipped/golden grey mullet		–	1	–	1
Scomber scombrus	mackerel		1	–	–	1
Gasterostidae	sticklebacks		1	–	1	2
Flatfish			3	1	1	5
Pleuronectidae	right-eyed flatfish		–	40	4	44
Pleuronectes platessa	plaice		–	3	–	3
Unidentified			6	8	10	24
Grand Total			88	325	91	504

generally considered to be undiagnostic. Fish scales were present but can be difficult to determine as they vary in appearance not only between taxa but also with position along the body. The majority of scales recovered were identified as sea bream, which have relatively robust and distinctive scales. Where many scales were present they have been counted as one where this was the only identification for the taxon in the sample, or zero where other remains had been identified. This ensures that taxa with many surviving and distinctive scales are not grossly over-represented. Other dermal structures included the distinctive skin bucklers, thorns and prickles from rays. Where possible, attempts were made to speciate ray (Rajidae) dermal denticles using guidelines in Gravendeel *et al.* (2002).

Bone condition was scored on a subjective scale of very good, good, fair, poor, based on the overall appearance. Most of the bones scored fair or good, but owing to their generally small size very few bones were measureable. Fish sizes were estimated by a combination of bone measurements and direct visual comparison with bones from comparative modern fishes. Where possible measurements were taken on the premaxilla and dentary of cod family fish (following Wheeler & Jones 1976). Eel lengths have been calculated from the chord length of the cleithrum (after Libois *et al.* 1987). Where measurements were not taken, fish size has been estimated for gadids and flatfishes using the categories "tiny" (0–0.2m), "small" (0.2–0.35m) "medium" (0.35–0.6m) "large" (0.6–1m) "extra large" (>1m). Further details are given in Nicholson (2016).

The assemblage

Bones from herring were numerically dominant in Phase 4a and 4b. Midden [8016] included a minimum of 14 herrings. This sample was the richest in terms of fish remains, containing almost 300 identifiable bones from at least 22 species of fish, probably a result of the advantageous conditions for bone preservation afforded by the marine shell. The material from this context and related yard surface [8023] provide a valuable insight into the fish available to, and eaten by, the occupants of the 12th–13th century castle. It is clear that fish was obtained not only from boats operating in the Solent, but also from local rivers or fishponds. Eels, pike and perch augmented the seafish, which apart from herring included cod, whiting, plaice, sea bream, mackerel, scad, mullet and rays. One of the eels from sample <7808> would have measured about 64 cm. Six large salmonid vertebrae, possibly from a single fish, may be from salmon or sea trout, as it is difficult to separate bones from these closely related species. All came from 13th century midden [8016]. A conger eel vertebra came from floor deposit [7362], also phased to the 12th–13th century. Midden [7333] included bones from herring, conger eel and small gadid(s), probably including pollack.

The Phase 5 assemblage (16th–18th century) came mainly from midden context [8000]. Gadids, including large cod, smaller pollack and pout or bib, were proportionately more frequent in this assemblage than in those from the earlier periods, with at least two small bass were also present. Other taxa included conger eel, wrasse, mullet, seabream and flatfish as well as perch and a small cyprinid, the last two exclusively freshwater fish. A single stickleback bone was present, as was also the case in 12th century sample <7807>. It is not clear whether these tiny and spiny fish were eaten, although they are found relatively frequently in sieved samples from medieval urban sites. Hand collected bones from this phase included head bones from at least one large conger eel, a cleithrum and vertebra from large cod, and a garfish dentary. Although it is difficult to speculate from what is, after all, a small assemblage, the fact that the only cod bones recovered are from the appendicular region and vertebral column may indicate the procurement of preserved fish. Stockfish (largely dried cod, haddock, saithe and ling from northern waters) and saltfish (especially salted and pickled herring, cod, eels, whiting and mackerel) were extensively traded during this period.

Discussion

The fish represented in the 12th–13th century assemblage could all have been caught in local waters, principally in the Solent. Most are sea fish, typical for catches caught in inshore waters.

Freshwater fish represented only around 2% of the identified assemblage, or some 11% if the migratory eel, salmonid(s) and the tiny stickleback are included. In the Middle Ages, freshwater fish were often kept in artificial ponds or 'stews' (Drummond & Wilbraham 1991, 39). Eels, bass and grey mullet frequent estuaries and in the case of eel and mullet also may also be found up-river in freshwater areas. All of these fish could have been caught in the tidal reaches of River Medina.

Of the sea fish, larger specimens include cod and haddock, while smaller gadids, whiting, pollack and bib or pout, are also present and clearly made up a significant proportion of the catch at least in the 16th–18th centuries. Bones from right-eyed flatfish are fairly frequent in all periods, but only plaice was positively identified. Dermal denticles from rays as well as occasional bones from scad, mackerel, conger eel, garfish and wrasse demonstrate the mixed nature of the local catches, as do the sea breams. The sea breams were represented only by scales, probably an indication that these fish were descaled prior to cooking and serving. Similar fish assemblages have also been reported in assemblages from Melbourne Street, Southampton (Bourdillon & Coy 1980), Southampton French Quarter (Nicholson 2011) and Southampton Lower High Street (Hamilton-Dyer 1997). Many of the species recovered from the Carisbrooke Castle evaluation were also found in contexts associated with the medieval fish market at St. Michaels, Southampton (Coy & Hamilton-Dyer 1987), although gurnards and hake, present at the Southampton sites are noticeably absent at Carisbrooke. While herring could have been a local catch it is probably more likely that they were purchased as salted or pickled fish. The herring industry was well-established in Norfolk and Suffolk by the twelfth century and by AD 1300 Southampton was trading with Lowestoft (Studer 1910, 5 cited in Coy 1980). Herrings, together with mackerel and scad, are oily fish which turn rancid very quickly unless preserved. In the earlier medieval period herrings were prepared by gutting and salting, which allowed the fish to survive transportation inland, but was not suitable for long term storage (Cutting 1955, 57; Locker 2000, 55).

The extent to which fish remains can be used to indicate status is debatable. Some fish, particularly sturgeon, salmon and turbot would have been expensive and so purchased only by wealthy households; however of these only salmon or sea trout was present in the Carisbrooke assemblage.

Although freshwater fish generally commanded a high price in the Middle Ages, many of the freshwater fish from Carisbrooke were small specimens and these would have been as cheap as herrings (Dyer 1988, 33). Several bones from large pike were recovered from 13th century midden [8016], and if purchased these would have commanded a high price; in the 15th century a mature pike cost the equivalent of a skilled craftsman's wage for a week (Dyer 1988, 33).

Wealthy households would have consumed more meat (including fish) than the average townsperson or rural peasant, but the relative quantity of meat eaten is hard to establish from archaeological deposits, particularly for small excavations. What can be said, however, is that the Carisbrooke assemblage derived from 12th–13th century middens and yard surfaces includes a diverse range of fish from a relatively small quantity of soil. This implies that fish were regularly on the menu.

The 12th–13th century Carisbrooke assemblage has many similarities to that recovered from the pre-AD 1320 assemblage from Portchester Castle in terms of identified taxa, bearing in mind the fact that the Porchester bones were all hand-retrieved during excavation. Unlike the Carisbrooke assemblage, large ling (*Molva molva) were* recovered from Porchester (Coy 1980) and were almost certainly purchased as stockfish. 12th–13th century deposits from Launceston castle (Cornwall), which were sieved, contained abundant bones from mature hake (*Merluccius merluccius)*, undoubtedly a local catch. Other gadids were also frequent, as was conger eel, with scad, gurnards (Triglidae), flatfish (including large turbot, (*Scophthalmus maximus*)), sea breams, mullet, herring, eel, rays and spurdog (*Squalus acanthius*) also present (Smith 1995). Fifteenth century deposits included a similar range of fish, but herrings were absent and sturgeon (*Accipenser sturio*) also identified (ibid.): the

latter undoubtedly an indication of 'status' dining.

Marine shell by Greg Campbell

Marine shell formed the largest class of anthropogenic material recovered from the excavations. 2383 shells or identifiable fragments of individual shells were identified from 58 contexts, making the assemblage comparable in size to those recorded from substantial excavations in inland towns (e.g. Campbell 2011). The intact shells or pieces diagnostic of individual shells (umbones of bivalves, apices and apertures of gastropods) were extracted and identified to genus, or species where possible, by comparison with standard reference works (Hayward & Ryland, 1990;1995) or the author's own reference collection. Scientific nomenclature of the types of shell recovered followed Hayward & Ryland (1995); common names (if any) were taken from Hayward *et al.* (1996), and habitat preferences for each type were taken from these works. For each type of shell in each deposit, every intact shell and diagnostic fragment was counted. For most types of bivalves the left and right valves were identified and counted separately. The results are presented in Table 8.

Consumed shellfish

Oysters were the most common shell (59% of the assemblage), and were found in every phase from Phase 3 onwards. Some shells were very similar in form to the Portuguese oyster (*Crassostrea angulata*) (Tebble 1966, 54), but these and all other oyster shells were found to be the flat or common oyster (*Ostrea edulis*). This native species colonizes a wide range of stable sea-beds in inter-tidal and shallow waters, forming dense masses and eventually reefs if not broken up by harvesting (usually by dredging).

Preservation was adequate, with 30–50% of the valves intact enough to measure in a given context. Oyster tops (right, upper, flatter valves) were slightly more numerous than bases (left, lower, cupped valves) overall, which is unusual for oysters (Law & Winder 2009), but the difference was not statistically significant (($\chi^2_{[1]}$: 0.484; *P*(same number): 0.49) Campbell 2013). Also, there were no substantial differences in valve numbers in any one deposit and thus no evidence that oysters were served 'on the half-shell' (in the left valve, right valve removed).

Cockles were also common (32% of the assemblage), especially in Phases 4 and 5. Most were common cockle (*Cerastoderma edule*), but deposits rich in cockles included a substantial minority of lagoon cockle (*C. glaucum*). These species live in inter-tidal and shallow waters near shore just below the surface of muddy and sandy beds, sometimes in vast numbers. Common cockles prefer fully marine conditions, while lagoon cockles tolerate more brackish water and muddier beds, such as harbours and estuaries, but their ranges overlap. Both species are harvested easily by raking or digging, which is usually followed by sieving (Hancock 1967). Preservation was adequate, with 40–50% being measurable. While they were almost always found in deposits along with other shells, they were the most numerous shells in four deposits. For both species, left and right valves were found in roughly equal numbers.

Mussels and whelks were much less commonly consumed (less than a hundred shells, and restricted to Phases 4 and 5). All the mussels were native common mussel (*Mytilus edulis*, which colonizes a wide range of stable marine surfaces, sometimes forming dense masses), with no examples of the warm-water Provençal mussel (*M. galloprovincialis*, of Atlantic Iberian and southwestern French coasts). Preservation was typically poor for this fragile shell, with about a dozen measurable; left and right mussel valves were not counted separately. The whelks (*Buccinum undatum*, highly mobile carnivore-scavengers of deeper near-shore waters that sometimes venture into the inter-tidal, delicacies fished by dredging but mainly by potting) were much better preserved, with about three-quarters worth measuring. Both mussels and whelks were found in deposits with other shells, although most of the whelks were found together in the Phase 5 midden [7325].

Only two other types of shells were consumed, and then only rarely. The four carpet-shells (*Tapes decussatus*, shallow burrowers

Table 8 Marine shells from Carisbrooke Castle: 2006 and 2008/9 excavations

Taxa *Phase*	*3*	*4a*	*4b*	*4*	*5*	*6*	*7*	*8*	*Total*	*% of all shells*
Oysters	27	59	381	218	468	9	3	12	1398	59
Cockles	–	–	214	–	522	2	–	14	753	32
Mussels	–	2	73	–	21	–	–	–	96	4
Whelks	–	–	12	–	66	1	–	2	81	3
Other types	–	1	47	1	26	–	–	1	76	3
Total number of shells identified	27	62	928	219	1103	12	3	29	2383	
No of shell bearing contexts	1	6	8	13	20	3	2	5	58	
% of shell bearing contexts in each phase	1.7	10.3	13.8	22.4	34.5	5.2	3.4	8.6		
% shells by phase	1.1	2.6	39	9.2	46.2	,0.5	0.1	1.2		

of near-shore beds of muddy gravel and sand) are seldom eaten in Britain today, but are the *palourdes* of modern French cuisine (Quéro & Vayne 1992, 58), and were the highly prized 'butter-fish' of Victorian Hampshire (Davidson 1999, 139). The single crab dactylus ('thumb-claw') from Phase 5 midden [7325] (not identified to species) showed the occupants of the castle at this time ate crab, but very rarely.

Incidentals

Shells of inedible molluscs that often live on or amongst the consumed types, or of edible shells too small to have been eaten, were found only in very small numbers, even in the sample residues: most of the catches of edible shells were cleaned of these before they were brought to the castle. These incidental shells would have been removed and discarded during final cleaning of the shells before cooking ('kitchen waste'). Phase 4b midden [7333] contained a small number of species of marine sand (four carpet-shell hinges wave-eroded to coarse sand-size (too small to identify to species), three valves of the tiny cockle *Parvicardium exiguum*, a single valve of rayed trough-shell *Mactra stultorum*, and a single needle-whelk *Bittium reticulatum*), showing some marine sand was brought to the castle with the edible shells or their packaging. The single mud-snail (probably *Hydrobia ulvae*) from Phase 5 midden [8000] showed a little marine mud clung to some edible shells all the way from the sea-side to the castle.

Most incidental shells were saddle-oysters (42 upper valves of *Anomia ephippium*) or oyster spat (18 small valves of one- or two-year-old oysters); these often attach to shells of larger oysters, and were found in deposits with larger oysters (the majority of both saddle-oysters and spat came from the soil sample of Phase 4b midden [7333]), so they were probably the few missed during the initial oyster-sorting and cleaning prior to shipping to Carisbrooke. The single sting-winkle (*Ocenebra erinacea*, a mobile shallow-water predator), from Phase 5 midden [7325], can live amongst oysters preying on organisms fouling their shells, so it was also overlooked during oyster-cleaning. Periwinkles (*Littorina littorea*, common grazers on inter-tidal and shallow-water weedy rocks and stable muds), while often consumed (and easily harvested by hand-picking), were very rare (only four were found) and too small to eat, so they may have been collected incidentally with other shells.

Shellfish use and its change through time

Shellfish were being consumed at least in small quantities as early as late Phase 3 though few deposits were available for study. Shellfish were most commonly eaten at the castle in later medieval times (Phase 4), especially the 13th – 15th centuries, and to a lesser extent in the later post-medieval period (Phase 5), and were discarded in middens of kitchen waste. In later phases, shellfish were discarded much less frequently in this part of the site, although consumption did not cease completely.

The shellfish in midden [8016], the earliest midden in Phase 4b, were almost exclusively oysters. Detailed analysis (Campbell 2013) showed that most oysters in midden [8016] were from un-managed beds in deep water, some in good conditions for oyster growth, and some in poor conditions. However, a considerable part of the supply was of near-shore oysters and oysters from managed beds. This is not early for management; some oyster beds supplying Southampton were managed from the later Saxon period (Campbell 2010, 15).

Phase 4 redeposited midden [322] had very similar oysters to those in midden [8016]; it seems likely that [322] was also deposited early in Phase 4b or derived from an early source. The oysters in subsequent Phase 4b midden [7353] were supplied principally from deep-water and un-managed beds, perhaps with a good proportion from poorer-quality waters (slow-growing oval oysters were nearly as common as fast-growing forms); near-shore beds and reefs supplied few oysters (Cambpell 2013).

Midden [7353] was also quite rich in cockles. Quite small cockles were acceptable, considerably smaller than what is legal now. Only a tiny number were less than 18 mm, so small a fraction that this minimum acceptable size was probably maintained by sieving during harvest. Analysis of shell shape showed most

cockles in this midden, including the lagoon cockles, were from beds relatively low in mud while analysis of growth rate distinguished the exploitation of several cockle populations (Campbell 2013). Both common and lagoon cockles were harvested around low tide in small numbers, common cockles alone from the middle shore, in considerable numbers, and both common and lagoon cockles from the high middle shore, in some quantity. The lagoon cockles were considerably smaller on average, probably because they grew quite poorly in the coarser beds on the high middle shore (Campbell 2013).

The later Phase 4b midden [7333] contained oysters from deep water and near-shore beds, but was richer in oysters from reefs than the other middens. Two broad sorts of reefs, one fast-growing, the other in poorer growth conditions, were harvested throughout; the quality of growth was known and the very slow-growing reefs were harvested less often. Midden [7333] also contained most of the mussels from the excavation, and most of the incidental shells of marine sand and mud, so the mussels may have been collected from sandy beds, rather than the rocky shores more expected to support mussels.

Throughout Phase 4b, what constituted acceptable oysters to be used at Carisbrooke remained effectively unaltered. Only oysters over 45 mm were really acceptable. Average oysters were typically of moderate size (55–65 mm and 4–6 years old), but larger, older oysters were available in some numbers, so over-exploitation was not depleting the oyster stock.

Shellfish consumption diminished in the earlier post-medieval (Phase 5), with fewer shells of fewer types in fewer deposits. Cockles and whelks were more favoured than in medieval times; perhaps bulk transport times to Carisbrooke had improved.

In midden [8000], deep-water un-managed beds were the main source of oysters; the management of oyster beds may have diminished. The concept of what constituted acceptable oysters had also altered from the previous phase. Typical oysters remained of moderate size (55–65 mm and 4–6 years old) but oysters that were smaller, younger, and of a smaller minimum size had become acceptable; oysters may have begun to be over-fished (Campbell 2013).

This midden also had abundant cockles, which continued to be quite small (mean size and age, and median size and age were very similar to Phase 4b). As in Phase 4b, the minimum acceptable size was about 18 mm, probably maintained by sieving. Shape analysis and growth pattern showed harvesting had shifted to muddier beds on the low and middle shore (a source of only common cockles), with a few common and lagoon cockles from the muddiest beds near high tide (Campbell 2013). Only slow-growing lagoon cockles from high-shore beds were harvested, so the lagoon cockles were considerably smaller than the common cockles.

For midden [7325], deep-water beds continued as the main source of oysters, without much evidence of management of the beds; but reefs became a significant source. Acceptable and typical sizes of oysters were comparable with those from midden [8000], suggesting oysters continued to be somewhat over-fished (Campbell 2013).

Midden [7325] produced few cockles and this decline was accompanied by greater discrimination in what was acceptable: the minimum and average sizes increased to almost modern legal size, and the minimum size might have been selected by hand-selection, not sieving. Shape and growth-pattern analysis showed most common cockles came from moderately muddy beds (middle and high-middle shore) while most lagoon cockles from the least muddy beds (on the middle shore) (Campbell 2013).

Whelks were abundant in midden [7325]. It is quite likely that these whelks were harvested incidentally during oyster-dredging. The whelks were infested in a similar manner as oysters, and the infestation included oyster spat, which tend to prefer other oysters, so the whelks were living among or near the oysters. The damage pattern is characteristic of dredging (unusual in Britain, since it is unsustainable); some whelks were dredged repeatedly. The very consistent size-shape relationships suggest they were all dredged from a similar habitat, in fast tidal flows (the main source of the oysters in the midden) (Campbell & Russell 2014).

Midden [8000] was distinct from midden [7325], despite the possibility that material from the former was redeposited in the latter. Correspondence analysis showed their oysters differed in shape and in infestation. The density of cockles differed between the middens, and the cockles differed in size, age, and proportion of species. Cockle allometry and growth-rate analyses showed some were being harvested from different beds (Campbell 2013).

Comparison with material from the earlier excavations and nearby sites

A wide variety of sources supplied the shellfish, with the sources and the concept of what was acceptable for a type of shellfish altering subtly but significantly over time, even within a phase. This differs from the previous shellfish excavated from the site, which were almost entirely oysters, harvested from the same type of sea-bed throughout the occupation of the castle (Wyles & Winder 2000, 188). The shellfish discarded in the more public parts of the castle may have differed substantially from those prepared in the kitchens and discarded near them. It is more likely that the recent excavations recovered a more representative sample; how the shellfish were recovered between 1921 and 1996 was not documented, and these assemblages were unusually rich in intact shells (Wyles & Winder 2000, 185). Oyster top valves were more badly preserved than bases at Carisbrooke, the reverse of the situation almost everywhere else (Law & Winder 2009). The oysters at Carisbrooke must have been treated quite differently in the kitchen or in the ground from the usual way.

The rarity of incidental types of shellfish showed the catches were supplied commercially, i.e. cleaned and sorted before shipping to the castle. This differs from medieval and early post-medieval Southampton (Campbell 2010, 15): oysters were dredged and supplied sorted and cleaned as at Carisbrooke, but cockles and periwinkles were harvested by each household and sorted and cleaned at home.

The shellfish (both consumed and incidental types) were dominated by species of unconsolidated sea-beds of mud, sand and gravel, characteristic of the northern sea off Wight (the Medina estuary and the Solent beyond). There are few or no marine molluscs of solid rocky shores (limpets, toothed top-shells, larger periwinkles) that are common in the island's southern coasts. When looking for supplies of fresh shellfish, the occupants of Carisbrooke throughout its history were distinctly 'north-facing'.

ARTEFACTUAL EVIDENCE

Prehistoric pottery by Michael Russell

A group of five small sherds and seven scraps (28 g) of prehistoric pottery was recovered from sample <1001> from context [182]. All apart from a base angle are weathered, abraded featureless body sherds.

The sherds were examined under a binocular microscope with eyepiece graticule at ×10 and x40 magnification to characterise fabric and technology. The methodology follows the recommendations by the Prehistoric Ceramic Research Group (2010).

Three fabrics were identified. Fabric FS1 is a soft, orange-red, oxidised ware with a rough surface. It contains moderate amounts of angular, poorly sorted calcined flint up to 3 mm, with modes between 1–2 mm; moderate amounts of shell up to 2 mm with modes between 0.5–0.8 mm; a rare scatter of sub-rounded, mainly clear, quartz grains up to 0.5 mm; rare sub-rounded lumps of chalk or limestone up to 2.5 mm and moderate amounts of iron-rich clay pellets up to 0.5 mm.

Fabric SF1 is soft and variably fired with rough oxidised orange-brown surfaces and margins and a dark core. It contains abundant, well-sorted shell up to 1.5 mm, most under 1 mm; moderate amounts of chalk or limestone up to 3.5 mm and moderate amounts of poorly sorted, angular calcined flint up to 2 mm with modes between 0.5–1 mm.

Fabric SG1 is a distinctive smooth, unoxidised, brown ware with a soapy texture. It contains abundant, fairly well-sorted shell up to 2 mm with modes between 0.5 mm and 1 mm; common, sub-rounded, clay pellets or possibly grog between 0.5 mm and 0.8 mm and a rare scatter of well-sorted, sub-rounded, quartz grains up to 0.2 mm.

Local manufacture may be indicated by the presence of chalk/limestone, shell and flint all of which are available within a 1 km radius of the site. This small assemblage is not closely dateable. On the basis of fabric, however, FS1 is possibly Bronze Age or Iron Age. Fabrics SF1 and SG1 are similar to Iron Age shell-tempered pottery from the island, particularly middle Iron Age fabrics A and B from near-by Mount Joy Hill, Newport (Tomalin 1994, 127; pers. comm.). Of the 38 sherds of prehistoric pottery from previous excavations at the castle (Mepham 2000, 99), all residual within later contexts, only two were in flint-and-shell tempered ware (F1) while 36 were in shell-and-quartz sand ware (S1); F1 is most comparable to FS1.

Post-Roman pottery by Duncan H Brown

An assemblage of 1,458 sherds, from 71 contexts, was sorted by ware type, broadly in accordance with fabrics identified in previous work at Carisbrooke (Mepham 2000), sherd type, vessel type, surface treatment and decoration and quantified by weight in grams, rim percent, sherd count and maximum vessel count. Recording was carried out by the author in June 2013 and the data, in the form of a spreadsheet, is available in the project archive, where a more extensive pottery report can also be found. The total of recorded pottery recovered by sieving is 800 sherds, weighing 1,660 grams and the average sherd weight of two grams for sieved material and that small size has made it difficult to identify the ware type for most of the sherds from samples. Those 800 sherds have therefore been excluded from the following discussion of the quantified pottery, leaving an assemblage of 658 sherds, weighing 6,349 grams and representing a maximum of 608 vessels. The pottery has been dated to ceramic periods: late Saxon,10th and 11th centuries; Saxo-Norman, 11th to 12th centuries; Anglo-Norman, 12th to early 13th centuries; high medieval, 13th and 14th centuries; late medieval, late 14th to early 16th centuries; post-medieval, mid-16th to early 18th centuries; and modern, mid-18th to 20th centuries. There is also a general 'medieval' period for sherds that cannot be precisely characterised. This brief discussion of a small and fairly mixed assemblage considers both the nature of the assemblage and how it informs interpretations of the site.

The pottery

Late Saxon, Saxo-Norman, Anglo-Norman, high medieval, late medieval, post-medieval and modern ware types are all present. The quantities from the entire assemblage are listed in Table 9, grouped chronologically by the ceramic periods mentioned above, from late Saxon to modern. The range of wares is very similar to those described by Mepham (*ibid*) and no detailed descriptions need be entered into here. Mepham commented on the low amounts of Continental imported pottery and the same is true here, with only a few sherds of Anglo-Norman and high medieval French pottery present.

The most common ware in the assemblage is the group of shell and quartz tempered coarsewares described by Mepham (*ibid*) and dated by her to a period spanning the Conquest to high medieval periods. No attempt has been made here to separate them into well-defined fabric types, mainly because both the structural sequence and the relatively low quantities of pottery make it difficult to reach any firm conclusions. There is a clear need for a closer definition of this group of wares but this assemblage is not the place to start. A distinction between Saxo-Norman shell-tempered and an Anglo-Norman or high medieval type has been made here on the basis of the method of manufacture. Those identified as Saxo-Norman are obviously hand built and seemingly softer, perhaps after firing at a relatively low temperature. Those classified as later have well-defined base angles and well-finished rims, which suggests either finishing on a turntable or that they were fully wheel-thrown, although Mepham described all her types as hand built (*ibid*). Inclusions are also slightly smaller in the later variants and the surfaces are harder, suggesting a higher firing temperature. This ware appears very similar to Southampton coarseware (Brown 2002), a chalk and flint-tempered product that represents a distinct, high medieval coarseware tradition within an important mainland port

Table 9 Quantities of ware types present in the whole assemblage, excluding finds from soil samples

Ware type	*Rim percent*	*Weight (g)*	*Sherd count*	*MVC*
Michelmersh-type		9	3	3
Saxo-Norman shell-tempered	105	1170	130	121
Saxo-Norman coarseware	4	16	3	3
Saxo-Norman sandy coarseware		48	4	2
Later shell and quartz tempered coarseware	93	2424	340	334
South-East Wiltshire/Dorset coarseware		145	16	14
South-East Wiltshire/Dorset sandy		66	5	5
Normandy Gritty ware		41	4	4
North French white ware		27	1	1
North French green-glazed whiteware		21	3	3
South-East Wiltshire coarseware		4	1	1
High medieval coarseware		40	3	3
South Hampshire redware		139	14	14
Local pink sandy		79	10	4
Dorset whiteware		43	2	2
Laverstock-type		123	6	5
High medieval sandy		67	5	3
Saintonge green-glazed		1	1	1
Medieval coarse sandy ware		4	2	2
Medieval coarseware	11	174	6	5
Medieval sandy ware		30	4	4
Medieval glazed ware		23	4	4
Late medieval organic-tempered sandy ware		59	1	1
Late medieval sandy ware		75	4	4
Late medieval well-fired sandy ware	15	239	12	12
Surrey whiteware		3	1	1
Tudor Green		5	3	3
Beauvais double-slipped sgraffito		18	1	1
Post-medieval redware		47	5	5
Post-medieval sandy ware	4	391	14	3
Surrey / Hampshire Border ware		8	1	1
Frechen stoneware	8	26	2	2
Verwood	3	78	4	4
English white stoneware		5	1	1
English stoneware	20	113	3	3
NE white-slipped redware		384	12	2
Refined earthenware	3	53	12	12
White refined earthenware		6	2	2
Transfer-printed	7	45	6	6
Sanitary ware		49	1	1
Flower pot	8	51	6	6
Totals	281	6349	658	608

for the Isle of Wight. Southampton coarseware is related to earlier flint-tempered types and thus provides a local parallel for the continuation of a gritty coarseware tradition. It is likely, therefore, that these Isle of Wight coarsewares were also produced over a long period of time. Shell and quartz tempered types are the dominant type of coarseware, occurring with a variety of other wares of Saxo-Norman, Anglo-Norman and high medieval date, and indeed are the dominant coarseware throughout, so it seems that this tradition extended from at least the late tenth to fourteenth centuries. As an indicator, here, of context date it is therefore somewhat limited and much of it has been placed into the compromise ceramic period 'Anglo-Norman / high medieval'. Shell and quartz-tempered coarseware is, as Mepham suggests, most likely to have been made on the Isle of Wight but that is not the case for most of the other medieval products present, which include Wiltshire/ Dorset coarse and glazed sandy ware, South Hampshire redware and the related local pink sandy ware (see Brown 2002, 14 and 15), Dorset whiteware and Laverstock-type glazed ware. All those types were produced on the mainland and as Mepham suggests, there seems to be little evidence for the local manufacture of glazed sandy wares. Vessel form can be identified for only 197 out of 608 maximum vessels. Jars or cooking pots are the most common coarseware type from the Saxon to high medieval periods, although there are also lamps, while jugs typify the glazed sandy wares. The few late medieval sandy wares present mainly take the form of jugs and could have a local origin, while post-medieval and later types are all likely to be from the mainland and occur in a variety of forms, including jars, jugs, bowls, plates and flower pots.

Context

Table 10 shows the quantities of pottery of each ceramic period in each stratigraphic phase and illustrates the mixed nature of the assemblage. The Phase 3 pottery came from context [7344], identified as the Conquest period fill of the ditch, context [7343]. The pottery from this deposit is mostly shell and quartz-tempered coarseware, with one fragment of Wilts/Dorset sandy ware and has been given an Anglo-Norman date. The implication is that the fill of the ditch is slightly later than the Conquest period and probably 12th or early 13th century. It does seem more likely that the ditch would be filled in some time after its initial construction.

Phase 4a pottery consists almost entirely of shell and quartz-tempered coarseware, the exception being two small sherds of Saxo-Norman shelly ware. As has been discussed above, dating these coarsewares is not straightforward but the absence of high medieval glazed sandy types might indicate an Anglo-Norman date for the deposits in this phase, including the construction trench for wall [7373]. The quantities of pottery are small, however, to the extent that there is inadequate dating evidence for the construction of the building, although a *terminus post quem* of the 11th century can be inferred. Pottery from possible yard surface [8023] came entirely from sieving and has an average sherd weight of just over 2.5 grams. Much of this is clearly badly abraded and perhaps trampled or redeposited and is therefore not secure dating evidence. Midden deposit [8024] contained larger sherds of shell and quartz-tempered coarseware, which can be dated from the 11th to 14th centuries. This is comparable to the group associated with yard surfaces discussed by Mepham (Mepham, 121), who interpreted the high proportion of 12th century pottery as largely residual among a 'persistent later component'. This may, however, support the suggestion that production of shell and quartz-tempered coarseware continued into the high medieval period.

Phase 4b is also chronologically coherent, with the pottery mainly falling into the high medieval period. The sherd size is relatively small however, and among the eleven contexts in this phase, which include dumped layers in trench 6 and midden deposits in trench 8, residuality is highly likely.

Pottery from the general Phase 4 is more mixed, although contexts from this phase produced the most material. Shell and quartz-tempered coarseware remains the most common type, which again suggests that it was made throughout the 13th and into the 14th centuries. In later phases the pottery is increasingly mixed, especially in Phase 5, although an

Table 10 Quantities of pottery of each ceramic period present in each site phase, excluding finds from soil samples

Phase	*Ceramic period*	*Late Saxon*	*Saxo-Norman*	*Anglo-Norman*	*Anglo / high medieval*	*High medieval*	*Late medieval*	*Medieval*	*Post-medieval*	*Modern*	*Totals*
3	weight			8	244						252
Conquest	count			1	20						21
period	MVC			1	20						21
4a	weight		12		210						222
12th	count		2		26						28
	MVC		1		26						27
4b	weight		48	43	705	241	40	95			1172
12th – 15th	count		4	3	58	17	2	4			88
	MVC		2	3	55	14	2	3			79
4	weight	6	933	166	768	103	27		4	1	2008
12th – 15th	count	2	99	17	167	14	1		1	1	302
	MVC	2	91	15	165	13	1		1	1	289
5	weight	3	237	82	472	261	331	14	429	6	1835
16th – 18th	count	1	31	7	65	20	18	1	18	2	163
	MVC	1	31	7	64	15	18	1	7	2	146
6/7	weight				25				8	5	38
19th	count				4				1	1	6
	MVC				4				1	1	6
7	weight		4						38	514	556
19th	count		1						2	23	26
	MVC		1						2	13	16
7/8	weight			1						1	2
19th – 20th	count			1						1	2
	MVC			1						1	2
8	weight					13	1		71	179	264
20th	count					2	1		4	15	22
	MVC					2	1		4	15	22
Totals	weight	9	1234	300	2424	618	399	109	550	706	6349
	count	3	137	29	340	53	22	5	26	43	658
	MVC	3	126	27	334	44	22	4	15	33	608

Table 11 Small finds by phase and material type

Phase	*Iron*	*Copper alloy*	*Lead*	*Glass*	*Flint*	*Stone*
2					Flake and blade	
3	Nail				Flake, 2 blades and a burnt piece	
4	15 nails, 4 fiddle key nails, 1 knife blade, 2 staples, 1 bar		3 strips		3 flakes, flint ball	Spindle-whorl
4a	10 fiddle key nails, 4 strips		1 sheet, melted piece			
4b	3 nails, barrel lock, arrowhead		2 pierced sheets			Whetstone
5	39 nails, spur, 2 buckle pieces, arrowhead, 2 unidentified	Trade token, coin, 2 pins, fitting, 1 wire fragment (in 23 tiny pieces), 1 small sheet	2 melted pieces, shot	3 sherds of window glass	4 flakes, 1 blade, 1 gun flint	

increasing occurrence of later types supports the general phasing of contexts.

Conclusions

With a preponderance of local coarseware, some medieval glazed wares and a few imported types, this assemblage is similar to that excavated previously at Carisbrooke (*ibid*). There is increasing evidence that shell and quartz-tempered coarseware was produced over a longer period of time than originally suggested but beyond that, the assemblage is not large enough to support advanced interpretations. It is worth noting that even here several lamps have been identified, as they have been previously (*ibid*, 112). The author has observed lamps occurring more frequently in castle assemblages than at other types of dwelling and it is interesting to see that Carisbrooke is no exception. The range of vessel forms is otherwise consistent with most medieval sites, with more jars and cooking pots than jugs.

Small finds by Michael Russell with a note on a spur by Michael Lewis

An assemblage of 125 small finds was recovered from Phase 2 to 5 contexts, of which just over half came from Phase 5 (Table 11). A conservation assessment, including X-rays of the iron and copper alloy objects, by Historic England's Conservation and Technology Team is available in the Archive Report. Investigative conservation on a small selection of metal objects was conducted by Wiltshire Conservation Service: no remedial conservation was required. Surface treatments were examined by XRF by David Dungworth, Historic England Conservation and Technology Team.

Objects of iron

The assemblage is dominated (70.4%) by objects of iron, mainly wrought nails and nail shanks in a variety of sizes. Other structural components such as bars and staples are also present. A group of eight nails, including a large dome-headed door stud, from a layer of *in situ* burning [7345] is likely to derive from the clearance of structural timbers as part of the demolition of Building 7347. Fiddle key nails, double clenched where complete, are common in Phase 4 and 4a contexts, particularly yard surface [8023], construction trench fill [7387] and redeposited midden [322]. A small fragment of a knife blade from pit fill [173] and two probable buckle pin loops from

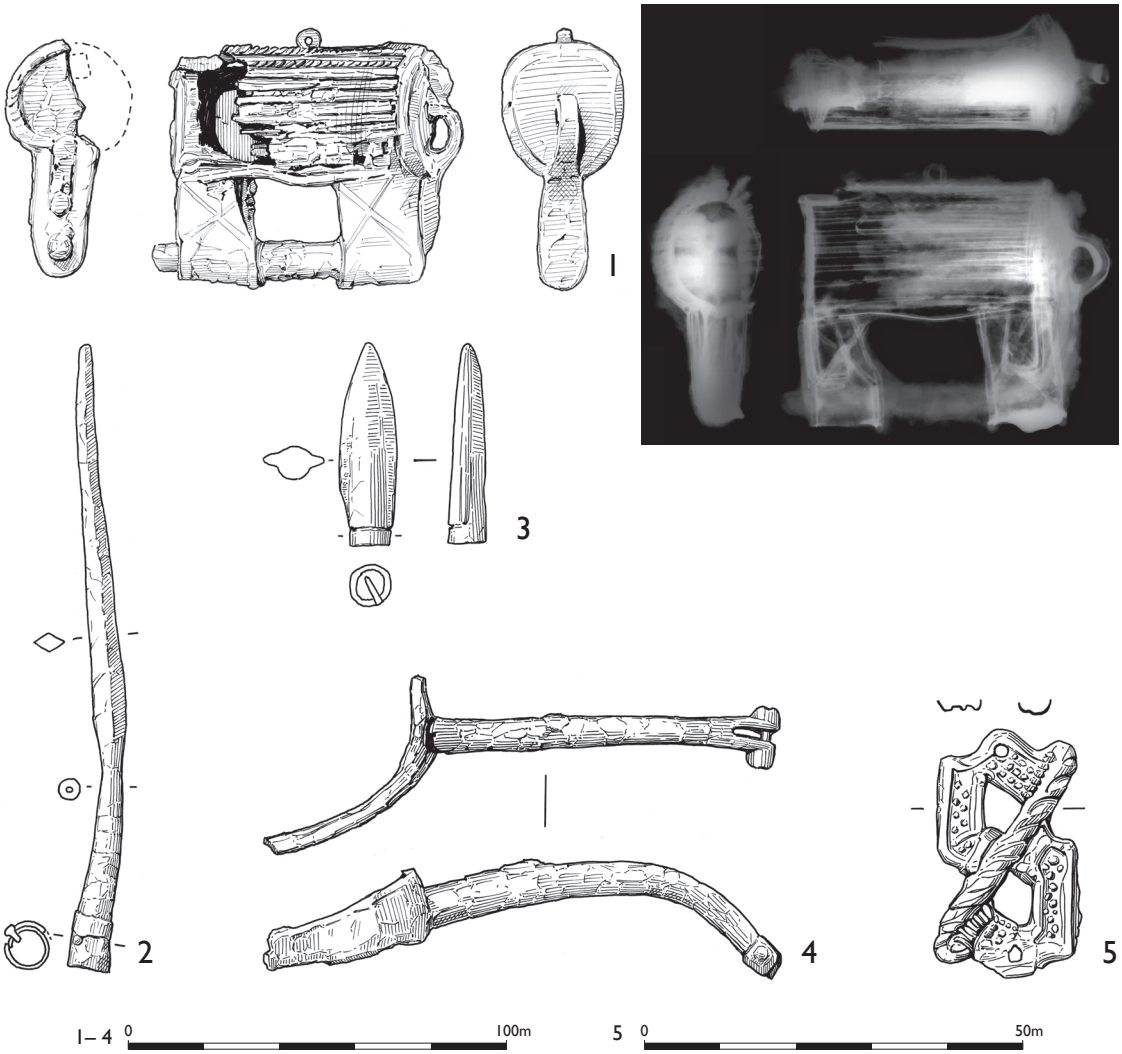

Fig. 17 Small finds illustrations: 1 barrel lock alongside x-radiograph images; 2 arrowhead; 3 arrowhead; 4 rowel spur; 5 copper alloy fitting. Drawn by Judith Dobie

midden [8000] are the only personal items recovered.

A complete barrel lock (Fig. 17, 1) with cylindrical body c. 70 mm × c. 40 mm, bar in place, with a suspension loop at one end and another on the base was recovered from fill [8020] of a Phase 4b gully. X-rays and investigative conservation reveal the housing to be constructed of narrow strips of iron. Fine strands of twisted iron wire were used as decoration on the housing and arms; a criss-cross pattern is visible on both arms. The lock was plated with a leaded bronze; XRF analysis identified traces of copper, tin and lead. X-rays show complex internal structures and shackle spring. Locks of this type appear in the 12th century AD and continue in use throughout the 14th century; those with wire decoration may be earlier

(Egan 1998). Two similar but plain locks were previously found at Carisbrooke (Young *ibid*, fig. 56, 101–102).

Military equipment is represented by two arrowheads: a socketed, slender bodkin form with lozenge-sectioned tip, Jessop's type M7 (1996, 198) from Phase 5 pit fill [320] (Fig. 17, 2) and a compact winged and socketed form, Jessop's type M4 from Phase 4b redeposited midden [7353] (Fig. 17, 3). Both types were current in the High Medieval period and were used for armour piercing. Similar forms were found in previous work on the site, all in late medieval or post-medieval contexts (Young 2000, fig. 51, 35–36).

Rowel spur by Michael Lewis

Iron long rowel-spur, c. 135 mm × c. 49 mm × c. 24 mm, weight 57.2 g, incomplete and corroded (Fig. 17, 4). Its relatively straight rectangular section sides are incomplete. One side is broken c. 18 mm from the join with the neck. The other, which curves outwards (originally both sides formed a D-shape around the wearer's foot, below the ankle), is broken c. 56 mm from the neck join. Both terminals are missing. The long undecorated neck is c.104 mm long, circular in section, and curves, downwards and outwards c. 48 mm from the rowel end, and is therefore distorted; possibly post-dispositional damage. The rowel box has domed bosses and appears complete. The rowel is missing, but radiography shows that part of the rowel-pin survives. Demolition layer [7318] Phase 5.

This spur is broadly similar to other recorded long rowel spurs, such as that from London (Ellis 1995: 145–7, No. 355), dated to 1450–1500. Ellis (*ibid* 129) notes that by 1400 the necks of spurs were becoming longer which complimented contemporary fashion for lengthening and pointing such items. Such spurs continued in use until the first half of the sixteenth century in England (Ellis 1991: 61). It would therefore seem plausible that the Carisbrooke spur dates to c. 1450-c. 1550, which agrees with other dating evidence for Phase 5.

Objects of copper alloy

A total of seven copper alloy items, all from Phase 5 contexts, includes two wire pins [7319 and 8000], a half peny (sic) trade token bearing the name John Price at ??rmouth (probably Yarmouth) dated AD 1670 [108/126], a penny dated AD 1721 [310], fine wire and a small sheet fragment, both from [8000] and a fitting or fastening pierced at either end (Fig. 17, 5) made from a thin sheet of copper with repousse decoration [8000].

Objects of lead

Of the ten lead objects, most are structural elements such as trimmings of sheet presumably used in roofing, or amorphous melted pieces. Two small, rectangular (23 mm × 19 mm) pieces of sheet each pierced slightly off centre probably to take a nail may be associated with roofing [7333]. The only non-structural item is a small shot some 13 mm in diameter, flattened and deformed on one side through impact [7345] Phase 5. This is rather small for musket shot and more likely to be canister or a carbine ball.

Objects of glass

Only two small shards of medieval window glass were found, both associated with the demolition of Building [7347]; one sherd with grozed edges is the tip of a probably lozenge-shaped quarry. A third, clear, recent piece is likely to be intrusive in midden [8000]. Window glass was correspondingly sparse in previous work, most deriving from post-medieval and modern contexts (Seager Smith 2000, 155–56).

Objects of flint and stone

Apart from a small blade and flake from prehistoric feature [182], 11 other flakes, one burnt, were residual in later contexts. The assemblage is too small to be diagnostic but is broadly Neolithic or Bronze Age in date. A single gun flint came from Phase 5 dump [311].

The only objects of stone were a fine grained quartzose whetstone with a well-worn, dished, surface [8016], a pierced white, possibly limestone disc c.41 mm in diameter and 10 mm thick which might be a spindle-whorl [319] and a natural flint 'ball' 21 mm in diameter (11 g) with orange cortex [341]. Balls of similar type in a variety of sizes were found almost exclusively from trench Y5 (Lancley 2000 163).

Clay tobacco pipes by David A Higgins

Introduction

Excavations carried out by English Heritage in the Privy Garden at Carisbrooke Castle as part of a gardens project in 2006 and 2008–9 produced a total of 716 fragments of clay tobacco pipe. These comprised 73 bowl, 591 stem and 16 mouthpiece fragments from the 2006 excavations and three bowl, 32 stem and one mouthpiece from the 2008–9 excavations. Taken together, this is a significant assemblage that ranges in date from the early seventeenth century through to the early twentieth century.

Although the 2006 and 2008–9 finds are generally rather fragmentary and primarily from mixed make-up layers, the new material includes a good number and range of marked and decorated pieces that were produced locally. These make an important contribution to the scanty evidence available from the island as a whole, especially when combined with more complete examples of the same types recovered from elsewhere.

As a result, these finds provided the catalyst for a major review of the pipes and pipemakers from the Isle of Wight, which is presented as a separate study (Higgins, in this volume), with just a summary of the excavated material being included here. Illustrations of the excavated material as well as a general discussion of its place within the broader picture and a more detailed list of the marked pipes recovered can be found in the separate study.

Each of the fragments from the 2006 and 2008–9 excavations has been individually examined and details of each context group logged onto an Excel spreadsheet, a copy of which has been deposited as part of the site archive. The recording system is based on that developed at the University of Liverpool (Higgins & Davey 2004). An archive report on the 2008–9 finds has also been prepared (Higgins 2011).

Material recovered

The 716 pipe fragments from the castle excavations were recovered from 41 different contexts during the excavations, in addition to which there is one group of unstratified finds. Most of these groups are small, containing ten or fewer pipe fragments, and there are only 11 contexts that have produced larger numbers (between 11 and 147 fragments). All of these larger groups include residual seventeenth or eighteenth-century material alongside fragments of nineteenth century or later date. While this shows that smoking was regularly taking place on the site from the seventeenth century onwards, the excavated deposits were clearly very mixed and only sealed at a much later date than most of the finds they contained. Regular disturbance of these deposits over the years is also indicated by the fragmented state of the pipes and the high incidence of residual material.

While it is disappointing that there are not better groups of contemporary finds, the pipe fragments themselves represent a wide range of bowl forms and styles, with a significant number of marked and decorated pieces amongst them. These have made a significant contribution to preparing a broader overview of the pipes that were made and used on the island (Higgins, in this volume). Where pipe fragments have contributed to the dating of individual features or deposits, this has been noted in the descriptive sections above.

The pipes

Some of the stem fragments from the 2006–8 Privy Garden excavations are likely to date from the first half of the seventeenth century but no recognisable bowl forms dating from before the middle of the century were found. This is probably a result of them having become too fragmented to recover, since earlier forms were certainly in use at the castle, as demonstrated by earlier finds from the site (Brereton 2000, fig 63, 1–4). Evidence from elsewhere suggests that during the early part of the century heel types would have been the dominant form in use. From around the middle of the century roughly equal numbers of spur and heel forms were used, after which the spur forms gradually increased in popularity so that, by the early eighteenth century, they had become the dominant form. There is very little late eighteenth century evidence for pipe use on the site, but this is a common characteristic of the period, when snuff taking temporarily ousted smoking as the preferred means of

taking tobacco. Evidence for smoking at the castle resumes in the early nineteenth century and clay pipes spanning the next century are well represented amongst the assemblage. These later pipes will not be discussed here but details can be found elsewhere (Higgins, in this volume).

The seventeenth century pipes were usually unmarked and very few of them have rim milling, which is a characteristic of the local pipemaking industry, although occasionally milling was used to decorate stems, as with an example from [124]. From around 1700 marking became much more frequent with moulded initials or symbols on the sides of the heel or spur being used, as well as stem stamps, which were usually full name marks formed with incuse lettering. Fourteen fragments of late seventeenth to mid-eighteenth century date with makers' marks on them were found in the Privy Garden, most of which were produced by the Stephens family of Newport (IOHN/STEP/HENS stem stamps × 5; IS moulded spur marks × 2; RICH/STEP/HENS stem stamp × 1 and RS moulded spur mark x1). A moulded WA mark probably represents another Newport maker, William Ally, while four other moulded marks remained unidentified (a WG? mark, a sun mark and two illegible). There were a further 20 marked pieces of nineteenth century or later date, most of which also represent Newport makers, but with occasional pieces coming from the mainland, details of which can be found elsewhere (Higgins, in this volume). The imported pieces are either from adjacent areas, such as Portchester of Southampton, or from more remote centres such as Broseley in Shropshire (3 examples), which specialised in making the more expensive long-stemmed ('churchwarden') pipes.

The evidence from the excavated assemblage shows that local styles of pipes were in use from at least the mid-seventeenth century onwards, which in turn demonstrates the early establishment of a pipemaking industry on the island. The pipes were generally plain and functional with no evidence of unusually elaborate or high quality pieces being used on the site. Marked pipes dating from *c*1700 onwards show that manufacturers from nearby Newport were supplying the majority of the pipes used on the site and this remained the case until the ultimate demise of the local clay pipe making industry in the early years of the twentieth century.

Ceramic building material by Kayt Marter Brown

This report summarises the ceramic building material recovered from excavation during 2006 and 2008–9. All fragments were quantified, counted and weighed during initial processing on site and this quantification forms part of the site archive. Within this material a significant amount of residual Romano-British fragments were recovered alongside post-Roman and post-medieval assemblages.

The assemblages derive from 30 and 34 contexts respectively, all phased to the 11th century or later. Of the 34 contexts from the later fieldwork, 35% (by count, 65% by weight) was retrieved from a single layer (7319). Although previous work has been undertaken at Carisbrooke, unlike the pottery, the ceramic building material was not characterised by fabric but solely by form (Cleal 2000, 164), due to the high levels of re-deposition encountered. Given the similar nature of these more recent assemblages the same approach was adopted, with only broad fabric distinctions noted.

Within the Romano-British material, the bulk of the assemblage comprises a single, sandy fabric with varying proportions of ferruginous ironstone and argillaceous inclusions, comparable to fabric 2 at Brading Roman Villa (Trott, 1999, 205). No late Roman calcareous fabrics were present, although these have been noted elsewhere on the Isle of Wight (Betts & Foot 1994, 27). The Roman villa located within the grounds of the vicarage in Carisbrooke (*ibid*, 33) is the most likely source for this small assemblage which appears to comprise fragments reused within medieval structures. The tile comprised the standard range of types; tegula, imbrex, box flue and the range of brick types includes *bessalis* and fragments indicative of the larger brick types *sesquipedalis* or *tegula bipedalis*. Most fragments were small and in a poor condition; no tegula cut-aways were observed and the only complete dimensions obtainable were from two *bessalis* (measuring 195 mm × 195 mm × 45 mm thick and 190 mm

× 195 mm × 35 mm). Both intentional and incidental markings occurred in the form of signature marks and a single partial hand print.

Plain roof tiles formed the bulk of the post-Roman assemblage and were simply divided into fine or medium sandy fabrics and a sandy fabric with sparse flint, none of which could be confidently assigned to a specific source. Ridge tile fragments were also present, often crested and glazed with the most complete example comprising three triangular crests and green glaze. The kiln at Knighton (Fenelly 1969), dated to the early 15th century, was producing ridge tiles in a similar fabric to that observed at Carisbrooke Castle, although the Knighton examples have crenellated, rather than triangular crests. There were two examples of un-glazed ridge tiles incised with a skeletal leaf pattern, a style previously observed both at Carisbrooke Castle (Cleal 2000, 164, fig. 62, 4) and in Southampton (Platt & Coleman-Smith 1975, fig. 217, 1431). A single hearth brick with distinctive stab marks (Cleal 2000, fig. 62 nos10–12) in a soft, sandy fabric with abundant, moderately well sorted quartz was the only example of this type. Post-medieval tiles comprised plain roof tiles, including pantiles which are likely to be of 18th century date (Clifton-Taylor 1989, 275).

Slate roof tiles by Michael Russell and David Williams

With the exception of tiny probably intrusive pieces from Phase 3 context [7344] and Phase 4a contexts [7362 and 7387], slate appears commonly in later Phase 4b contexts, probably from the late 13th century, and is a consistent component of Phase 5 demolition and dump deposits.

Almost all of the slate comprises small, highly fragmented, amorphous pieces. Only nine complete and seven virtually complete tiles were present. The majority of fragments had traces of lime mortar on one or both surfaces. Finished edges were generally trimmed or less commonly snapped with a clean vertical or diagonal break. Tile thickness varied from 5 mm–12 mm, most between 8 mm and 10 mm.

The complete tiles were narrow (between 80 mm and 145 mm, most up to 115 mm) and rectangular of two lengths: a short tile between 150 mm and 200 mm long and a longer tile up to 280 mm long. Their corners were square or sub-round. Single or double, round or sub-square, nail or peg holes were represented, single holes more commonly. Nail/peg holes were between 7 mm and 10 mm across. All the narrow short tiles came from the demolition deposits within the cellar of Building [7347], while two examples of the longer tile were associated with the demolished garderobe to the south.

A large quantity of slate tiles was found during the excavation of a medieval tile kiln at Quarr Abbey, Ryde (Riall *et al.* 1995, 24–28). The Quarr tiles were considered to have come from the West Country where the de Redvers, who were patrons of the abbey, had extensive estates. No complete slate tiles were recovered from Quarr, but there was a clear preference for narrow tiles of between 75 mm and 140 mm in width. In contrast to the Carisbrooke slates, there was no evidence of mortar on any of the Quarr pieces. Associated with occasional sherds of Saxo-Norman and 12th century pottery, some of the Quarr slate deposits appear to pre-date the 13th century tilery and were probably from the abbey buildings founded in 1142. Some of the slate was re-used in an ancillary building, possibly a drying shed, connected with the tilery (Riall *ibid,* 26).

Provenance by David Williams

A representative roofing-slate from Carisbrooke Castle was examined with a view to suggesting a likely source of quarry production. The slate has been derived from Devonian formations and is a mellow shade of grey-blue, split along the bedding planes to achieve the classic 'riven' appearance. A hand-specimen comparison was made between the Carisbrooke slate and that of a range of examples of slates from quarries and locations in Cornwall, Devon and Wales, held in the large stone collection at the Department of Archaeology, University of Southampton. Unfortunately, an exact match was not found. However, using a stereo microscope [x 40 magnification] and based on colour and texture, it was possible to rule out a Welsh origin and also a north Cornish one from the important quarries at Trevalga and Delabole.

Although the colour of the Carisbrooke slate is very similar to that from quarry material at Delabole, the texture of the Carisbrooke slate is much finer and less 'gritty' than the Delabole material, which contains more microcrystalline quartz. Perhaps one of the slate bearing areas of south Devon is more likely in this case as a source for the Carisbrooke slate, as from the 1170s this appears to have been the source of much of the roofing material used in medieval Southampton, just across the Solent from Carisbrooke (Platt & Coleman-Smith 1975, 25; see also Jope & Dunning 1954, 209–217).

RADIOCARBON DATING` by Peter Marshall, John Meadows, Christopher Bronk Ramsey, and Nicola Russell

Introduction

Radiocarbon dating was undertaken to address specific questions:

1) to determine whether the small naked barley is Bronze Age in date?
2) to ascertain if the large hulled barley grains were Roman or later in date?
3) to contribute to a better understanding of the date of the re-introduction of fallow deer into England in the early medieval period.

Laboratory methods

The three fallow deer samples submitted to the Oxford Radiocarbon Accelerator Unit (ORAU) (Table 12) were processed using the gelatinisation and ultrafiltration protocols described by Brock *et al.* (2010) and Bronk Ramsey *et al.* (2004a). They were then combusted, graphitised and dated by Accelerator Mass Spectrometry (AMS) as described by Brock *et al.* (2010) and Bronk Ramsey *et al.* (2004b).

Five samples were dated at the Scottish Universities Environmental Research Centre (SUERC). The carbonised grains were pre-treated using the acid-base-acid method (Stenhouse & Baxter 1983) and the fallow deer following a modified Longin method (Longin 1971). The pre-treated samples were then converted to carbon dioxide in pre-cleaned sealed quartz tubes (Vandeputte *et al.* 1996), graphitised as described by (Slota *et al.* 1987), and measured by AMS (Freeman *et al.* 2010).

Both laboratories maintain continual programmes of quality assurance procedures, in addition to participation in international inter-comparisons (Scott 2003; Scott *et al.* 2010), which indicate no laboratory offsets and demonstrate the validity of the precision quoted.

Results

The radiocarbon results are given in Table 12, and are quoted in accordance with the international standard known as the Trondheim convention (Stuiver & Kra 1986). They are conventional radiocarbon ages (Stuiver & Polach 1977).

Calibration

The calibrations of the results, relating the radiocarbon measurements directly to calendar dates, are given in Table 12 and in Figs 18 (distribution in outline) and 19. All have been calculated using the calibration curve of Reimer *et al.* (2013) and the computer program OxCal (v4.1) (Bronk Ramsey 1995; 1998; 2001; 2009). The calibrated date ranges cited in the text are those for 95% confidence. They are quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years or five years if the error is < 25 years. The ranges in Table 12 have been calculated according to the maximum intercept method (Stuiver and Reimer 1986) and those in Figs 18–19 are derived from the probability method (Stuiver & Reimer 1993).

Stable isotope measurements

All the fallow deer samples gave C:N values within the range normally used to indicate good collagen preservation (2.9–3.6; DeNiro 1985).

Fallow deer. The radiocarbon dates clearly fall into a coherent group concentrated in the twelfth and thirteenth centuries cal AD (Fig. 18). The measurements are not, however, statistically consistent (T'= 10.5; T'(5%)= 4; ν=

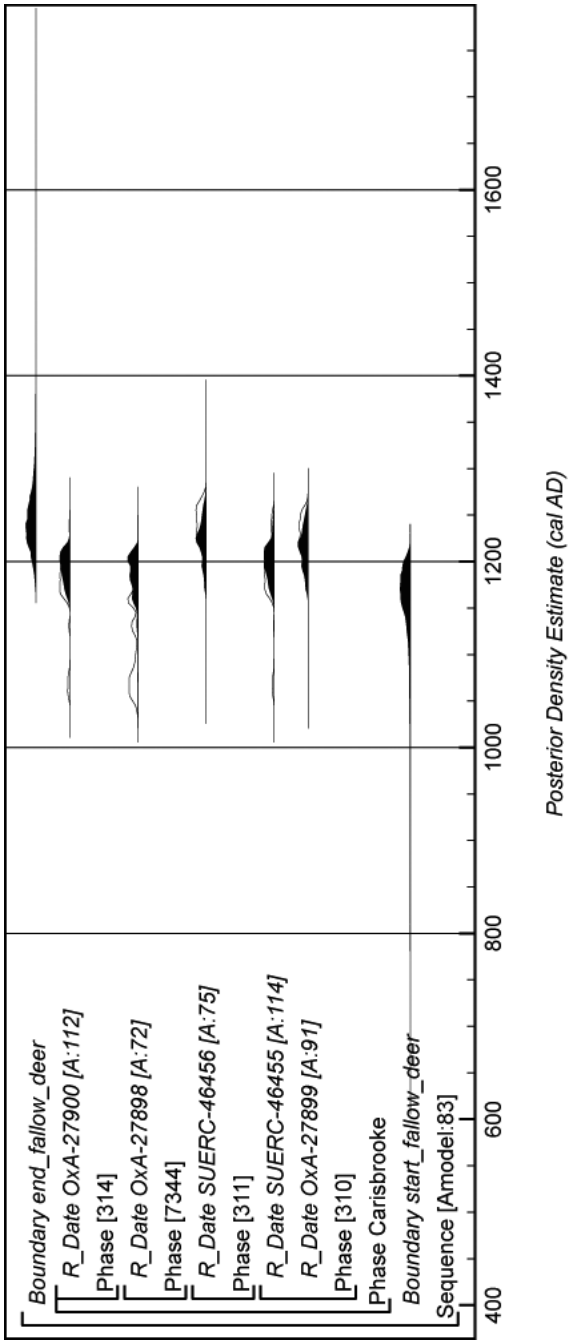

Fig. 18 Probability distributions of dates from Carisbrooke Castle fallow deer

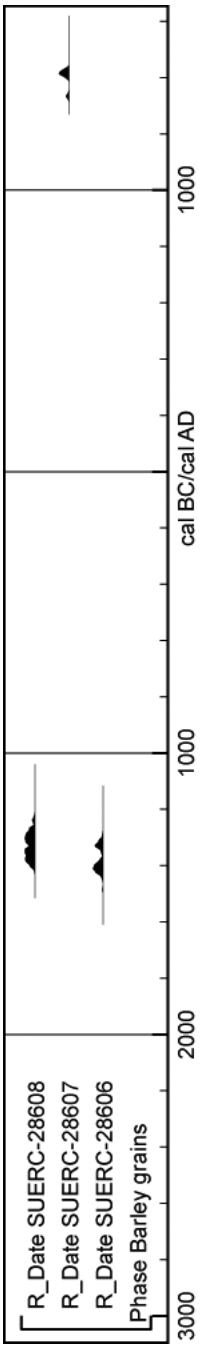

Fig. 19 Calibration of radiocarbon results from barley grains by the probability method (Stuiver and Reimer 1993)

Table 12 Carisbrooke Castle radiocarbon and stable isotope results

Lab Number	Sample ID	Material	Radiocarbon Age (BP)	δ13C (‰)	δ15N (‰)	C:N	Calibrated date range (95% confidence)	Posterior Density Estimate (95% probability)
Fallow Deer								
OxA-27898	[7344] bone ID 191	Animal bone, *Dama dama,* left tibia (size difference indicates not from any of the other dated individuals)	897±23	−21.5	7.4	3.2	cal AD 1040–1215	*1120–1220*
OxA-27889	[310] bone ID 489 sample A	Animal bone, *Dama dama,* right tibia	820±24	−21.0	5.5	3.2	cal AD 1165–1265	*1165–1255*
SUERC-46455	[310] bone ID 488 sample B	Animal bone, *Dama dama,* right tibia	853±28	−22.1	7.5	3.3	cal AD 1050–1260	*1155–1245*
OxA-27900	[314] bone ID 386	Animal bone, *Dama dama,* right tibia	866±24	−21.6	6.4	3.1	cal AD 1050–1225	*1150–1220*
SUERC-46456	[311] bone ID 443	Animal bone, *Dama dama,* right tibia	792±28	−22.6	7.4	3.2	cal AD 1200–1280	*1170–1265*
Barley								
SUERC-28606	<1001> (182) hulled barley A	*Hordeum vulgare* var *vulgare* (single grain)	3120 ±30	−23.5			1440–1300 cal BC	
SUERC-28607	<1001> (182) hulled barley B	*Hordeum vulgare* var *vulgare* (single grain)	525 ±30	−24.4			cal AD 1320–1440	
SUERC-28608	<1001> (182) naked barley	*Hordeum vulgare* var *nudum* (bulk)	3065 ±30	−23.3			1420–1220 cal BC	

9.5; Ward & Wilson 1978), and so they probably represent more than one episode of activity.

Simple visual inspection of the calibrated radiocarbon dates does not allow us to assess the date of fallow deer death activity at Carisbrooke Castle accurately, since the calibration process does not allow for the fact that this group of radiocarbon dates are related – they all come from the same site. Bayesian statistical modelling is required to account for this dependence (Buck *et al.* 1992; Bronk Ramsey 2000), which we have undertaken using OxCal v.4.2 (Bronk Ramsey 1995; 1998; 2001; 2009). The date ranges from these models are given *in italics* to distinguish them from simple, calibrated radiocarbon dates.

The model shown in Fig. 18 interprets the fallow deer bones as deriving from a continuous period of activity (Buck *et al.* 1992). This model has good overall agreement (A_{model}: 83; Bronk Ramsey 1995, 429), and suggests that the introduction of fallow deer at the site dates to *cal AD 1050–1225* (*95% probability: Boundary start_fallow_deer;* Fig. 1) and probably cal *AD 1140–1205* (*68% probability*).

Barley. The results show that whereas the context may be of late medieval date, there is much earlier grain present as well. Perhaps surprisingly, this includes both hulled barley (SUERC-28606) and naked barley (SUERC-28608). Indeed, the statistical consistency between these results (T'=1.7, T'(5%)=3.8, ν=1; Ward & Wilson 1978) means that these two samples could be of the same calendar date – whereas the two hulled barley grains dated clearly are not.

DISCUSSION

The small-scale evaluations of 2006 and 2008–2009 have demonstrated something of the character, nature, date and survival of the archaeology in this part of the castle. Importantly, several of the trenches allow direct correlation with the sequence from trench Y5 and enhance understanding of the development of the 12th century AD castle. These results are now discussed in relation to previous excavations.

The now flat appearance of the Privy Garden, the result of several episodes of dumping and levelling in the medieval period and the development of a garden probably from the 17th century AD, belies a hilltop which originally sloped away to the west and south leaving a relatively small plateau to the north-east of the area. There is increasing evidence to suggest that the natural topography of the hill-top, particularly the plateau of its ridge, determined the nature and extent of 'early' activity. The Saxon cemetery was likely placed on the crest of the hill so that it was visible from most directions; the post-built structures of the late Saxon burh and the 12th century AD masonry buildings of the motte-and-bailey castle (and presumably those of the Domesday castle) were on the plateau ridge, while the Conquest-period ringwork may now be seen as following the contour of the hill to the south and west.

The hill-top was the focus of activity from at least the Neolithic. A small assemblage of flint flakes and a few blades of broadly Neolithic or Bronze Age date, all from the Privy Garden, indicate probably low level activity. Of particular interest, however, is the discovery of a probably Bronze Age feature, the first of its kind from the site, which appears to have been disturbed or re-cut in the Iron Age. Charred grains of naked and hulled barley were radiocarbon dated to the middle Bronze Age and provide the first evidence of cereal cultivation on the island at this time, demonstrating that both types of barley were grown together. This is an important addition to the limited evidence for Bronze Age activity in the environs of the castle.

Although Margham (1992, 5) has suggested that Castle Hill, on which Carisbrooke Castle stands, might have been used as a hillfort in the Iron Age, the deep hollow-way to the east being part of its defences, to-date no evidence has been found to support this theory. Evidence for later prehistoric activity is limited to a scatter of 38 sherds of probably Iron Age pottery recovered from earlier excavations at the castle, all redeposited in later contexts (Mepham, 2000, 99) and four sherds from this evaluation, found in the secondary fill of the Bronze Age feature.

Despite the large quantity of Roman brick and tile from Phase 5 demolition deposits, especially from the fill of Building [7347], no

Roman features or pottery were recovered. Small amounts of similar material were noted in earlier excavations, and the overwhelming impression is that villas along the Lukely Brook, the closest being at Carisbrooke vicarage, were 'quarried' for building material re-used in the 12th century AD castle buildings.

No further evidence was found of the Saxon cemetery recorded in trench Y5. This may be due to the small size of the evaluation trenches and the types of deposit reached at cessation of excavation; the presence of the infilled Conquest-period ditch and medieval dumps indicate removal and potential masking of earlier deposits. Arnold (1990) grouped Carisbrooke with four other small cemeteries all of which were located immediately above steep-sided coombes on lighter land. Bigger cemeteries tended to be on lower ground. The Conquest period ditches seen in Young's Trench Y5 sterilised a large area of ground and may have destroyed other graves. Fragments of human bone were found in later layers. (Young 2000, 191). Residual sherds of Michelmersh ware relate to the occupation of the late Saxon burh.

Further exposures of the outer ditch of the Conquest-period ringwork reinforce Young's interpretation that it is defensive rather than a series of quarries. This substantial ditch may now be traced across the north-eastern corner of the Privy Garden, occupying the flatter ground there, closely following the contour of the hilltop. The lack of finds from the secondary chalk fills accords with evidence from the much larger exposures of equivalent ditch 1602 in trench Y5 where only 17 sherds were found (Mepham, 2000, 119). There is no reason to doubt the *terminus ante quem* of c. 1100 AD for the infilling of the ditch with some levelling up in the late 11th-early 12th century AD as indicated by context [7344]. A sub-rectangular spread of flints on a similar alignment to the ditch is tentatively identified as the floor or base of a contemporary structure.

The location of the Domesday chapel of St. Nicholas remains uncertain. Some consider that it occupied the site of the present chapel of the same dedication (Young, *ibid,* 41, 195; Gibbs 2004, 5) while Stone (1906, 246) preferred a location nearer the motte. The northerly continuation of the ringwork ditch under the eastern third of the extant chapel, itself rebuilt by Percy Stone in 1904–5 on the foundations of the 13th century predecessor, indicates that the Domesday chapel, if on this site, must be further west and presumably smaller. The space available, defined by the ringwork ditch to the east and the slope of the hilltop to the west, is likely to have been quite narrow.

With the discovery of a substantial, well-constructed, stone-built chamber block (Building [7347]) and several other structures and gullies, it is now clear that they, along with the medieval chapel, the footprint of which is faithfully echoed in Percy Stone's 1904–5 re-build, and the various buildings excavated by Young in trench Y5 and Rigold further south, form a coherent group originating in the 12th century AD, all based on a common north-south, east-west axis (Fig. 20). This complex, to the south side of the bailey, differs in orientation from the only other 12th century domestic building, the undercroft of a chamber block or ancillary hall modified and incorporated into the 13th century Great Hall, on the north side of the bailey. In terms of construction and particularly the style of ashlar quoins, Building [7347] is closely similar to the northern chamber block undercroft.

The southern complex comprises two distinct zones of activity separated by Building [7347], one to its east and the other to the west. Evidence for the eastern area derives largely from Young's trench Y5 and a series of trenches dug by Rigold in advance of the construction of the public lavatory block (Young *ibid* 59–67). Here, the chamber block (Building [7347]) and a ditch with a narrow causeway (Young's features 281 and 283, *ibid* 60) which ran north from the north-east corner of the chamber block, formed the western side of a group of coeval buildings arranged round the south and probably east sides of a yard. These buildings comprised, to the south, a masonry, single-storey structure of similar size to the chamber block, the walls of which were of coursed chalk rubble and flint with greensand quoins and door jambs (Building 416) and to the east a building represented by fragments of masonry walls and mortar and lime floors (Young ibid 66–7). Roughly central to the yard, a small rectangular (4 m × 2 m) two-phase timber structure with central hearth was inter-

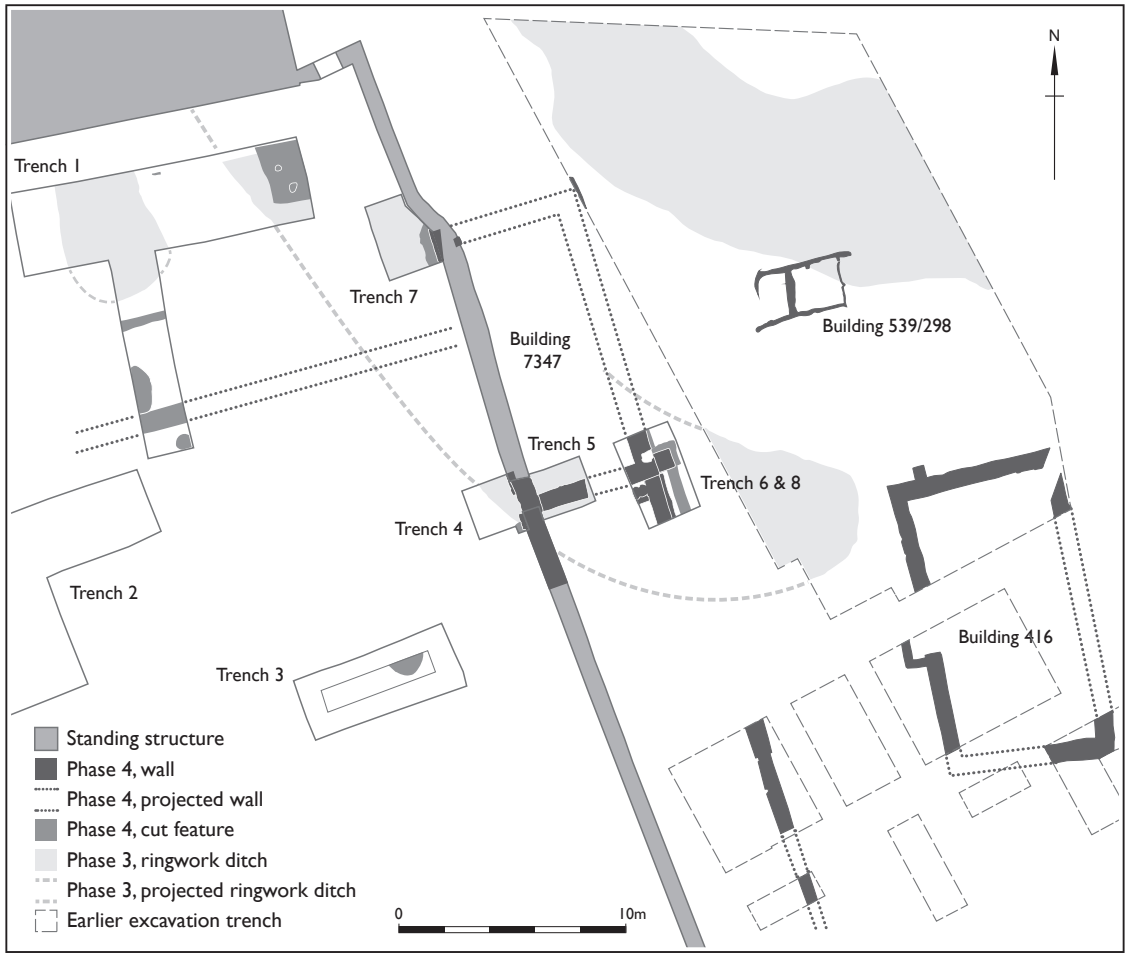

Fig. 20 Plan of medieval features

preted as a cookhouse/bakehouse (Building 539/298). Immediately north of the latter were two successive sub-rectangular chalk floors (3 m × 1.5 m) from another timber structure. Of these structures, Building [7347] was the most finely constructed and of highest status, possessing an undercroft below the principal first-floor chamber(s) which had glazed windows and a slate roof by the time of its demolition.

Yard surfaces associated with the use of these buildings produced large quantities of utilitarian pottery, mostly cooking vessels and jars, animal bone and other domestic refuse. Similar but slightly later material was recovered from a midden confined to the south of Building [7347]. Young's interpretation that it was a working area associated with food preparation is supported by recent analysis of the faunal remains and marine shells which indicates that they derive from both kitchen and table waste and reflect consumption of a wide range of animals, birds, fish and shellfish; sheep/goat, pig, young poultry including squabs and fish were eaten fairly frequently supplemented by deer and hint at a higher status diet than previously thought, particularly in the 13th century AD. Wheat appears to have been the principal cereal consumed on site, while weed seeds might reflect species growing within the castle or imported with cereal crops.

Continued development of the east area during the 13th–14th century is attested by the addition of further structures to the south end of the chamber block, including a possible warderobe or solar and garderobe, a small rectangular extension to the west wall of Building [416], and a series of masonry walls to the south which appear stratigraphically 'late'. By the 14th century, this area was intensively occupied by a variety of buildings, some of which were connected with food preparation and cooking.

The area to the west of the chamber block was quite different in character. From the 12th century, it was a largely enclosed space defined by the high rampart bank surmounted by the curtain wall to the west and south, the chamber block and boundary ditch to the east, and the chapel of St. Nicholas to the north. Access would have been through the chapel or more probably the chamber block. Notwithstanding the issues of truncation, particularly to the north, and the relatively small area examined in the evaluation, there is little evidence of 12th century activity apart from pit [342], which indicates that the slope of the hill to the south was still present at this time, and 'early' dumping to the west; there were none of the structures characterising the east zone. Rather, the evidence suggests low intensity activity represented by a few pits, post-holes, a bonfire and the floor of a small probably timber-framed building. If correctly interpreted, a north-south robber trench may indicate a 13th century or later building along the foot of the west rampart. The south of the area was used for dumping, possibly to level the space, in the later medieval period.

An apparently reserved area south of the chapel, possibly bounded by a gully which aligns with the north wall of the chamber block, and later and further south by a masonry wall [127], may represent the site of the 'herbary next the chapel' mentioned in the Accounts for 1287–88. As this part of the area was most affected by truncation this interpretation is uncertain, though a garden of this type would certainly be in keeping with the status of the chamber block and might explain why the area continued to develop as a post-medieval and later garden.

In spite of Worsley's (1781, 42) tantalising reference to an enclosed cemetery associated with St Nicholas' Chapel, no evidence of it was found during these evaluations. This is perhaps surprising given that trench 1 was immediately south of the chapel where burials, had they been present, might have been anticipated. The absence of human bone, disturbed by recutting or later activity, in any of the trenches would be unusual had the area been used as a cemetery. It is conceivable that it exists to the south end or within a small rectangular enclosure c. five m × eight m on the east end of the chapel depicted in a plan of 1723 but removed by 1743.

Stone's (1891, fig. 5) pioneering reconstruction of the layout of the castle's 13th century domestic buildings based on documentary sources and surviving buildings, identified the 'Chamber next the chapel' mentioned in the Accounts for 1290–1 (ibid, 75) as the building to the west of the chapel. This, however, is the Guard House built by Sir George Carey in the 16th century, and a far more compelling link is now provided by Building [7347].

While most of the buildings in the east area were demolished by the 15th century and buried beneath thick dump deposits which formed an open yard, Building [7347] and the structures added to its south end were retained; a buttress was added in the 15th century. This presumably reflects the continued importance of the chamber block and its close relationship with the chapel of St. Nicholas at a time when the principal domestic apartments and functions were focused on the north side of the bailey. The buildings in the west area may have been demolished at about the same time; those in trench 2 were covered by late medieval dumps.

The most likely historical context for the demolition of Building [7347] and its associated structures is the building campaign of Sir George Carey towards the end of the 16th century. By this time the buildings may have been in poor repair, particularly given reports of neglect and limited spending on the accommodation earlier that century; certainly they would have appeared archaic and somewhat isolated. The retention of small portions of the west wall, mainly the quoins, of the chamber block and a substantial section of wall [8030] incorporated into the rebuilt

and extended enclosure wall strongly suggests that the rebuild was planned as part of and immediately followed the demolition. Carey, presumably, would not have wanted a ruinous or derelict eyesore to despoil the view from his newly built mansion and may have built the new wall to enclose what was to become a private garden.

From the 17th century, the east area appears to have served as an open yard and is shown in several 18th century engravings, while that to the west became a garden apparently only accessed through the chapel until a gateway was inserted in the enclosure wall in the 19th century. By the 18th century, the garden is documented in a series of plans, the earliest dated 1721, showing what appears to be an orchard to the south, and became a kitchen garden with cross-axial paths (seen during this excavation) by the early 19th century and pleasure garden around the turn of the century.

A total of three substantial masonry buildings of the 12th century, all of remarkably similar size (Buildings 416, 7347 and the undercroft below the Great Hall) have close parallels in the contemporary cellared structure, probably a chamber block, of the south manor area at Wharram Percy (Edward Impey, pers. comm.; Stamper & Croft 2000) and the masonry hall (S17) and chamber block (S16) at the royal manor of Grove Priory (Baker 2013, 83–91, figs 4.08 and 4.10). None of the Carisbrooke examples is considered sufficiently large to be the principal hall of a major magnate such as Baldwin de Redvers (cf. the de Redvers chamber block known as the Norman House at Christchurch Castle, Dorset which is some 20.4m × 7.0m overall). The problem is that there are now few places left for such a grand baronial hall, if it ever existed. The most likely is to the north of the east zone, running east-west in line with the chapel, or possibly along the foot of the north rampart on the site of the 13th century kitchens and Carey's mansion. Perhaps geophysical survey or further archaeological investigation will resolve this conundrum?

ACKNOWLEDGEMENTS

The author warmly thanks the many people who made this project possible, especially Anna Keay, former Properties Director, English Heritage, for initiating the work; Tim Butcher (2006) and Stephen Alexander (2008–9) former site managers, and all the site staff, for making us so welcome and allowing use of facilities there; the 2006 archaeological team: Dunkan Stirk (site supervisor), Foxy Demeanour (finds/environmental supervisor), James Cooper, Jenny Ryder, Chris Gibson, Nicholas Witchell, Daniel Ramirez Aguiar, Clare Henshaw, Scott Pannel, Danielle de Carle, Tom Cromwell, Vicky Crosby, Dave Fellows and Paddy O'Hara; the 2008–9 archaeological team: Dave Fellows (site supervisor), Brian Kerr, Vicky Crosby and Paddy O'Hara; Rebecca Loader, Isle of Wight HER; Paul Simpson, Isle of Wight Museums Service; Debs Goodenough, former Head Gardener at Osborne House, English Heritage; the staff of Carisbrooke Museum, particularly Rosemary Cooper (former curator), Sarah Lang (curator) and Christine Yendall (Librarian); Wiltshire Conservation Services for undertaking investigative conservation; Brian Kerr, Historic England, for his support and encouragement throughout the work; Gill Campbell, Historic England, for editing the environmental section; Poly Baker, Historic England, for editing the faunal remains report, and all the contributors to this article and the project more generally, notably the late Christine Jackman for help with accommodation, administration and finances and the late Sarah Jennings for her initial assessment of the pottery and finds from 2006. Finally the anonymous reader is thanked for their extremely helpful comments and suggestions.

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Author: Michael Russell, Historic England, Fort Cumberland Rd, Portsmouth PO4 9LD