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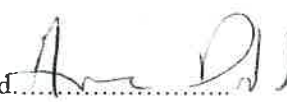
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OXFORD CASTLE

NGR SP 5098 0613

Scheduled Ancient Monument 21701

POST-EXCAVATION ASSESSMENT AND RESEARCH DESIGN

Version 2

**Incorporating comments by Brian Durham (OCC), Chris Welch and Dominique
de Moulins (EH)**

Oxford Archaeology

July 2006

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OXFORD CASTLE

POST-EXCAVATION ASSESSMENT AND RESEARCH DESIGN

SUMMARY

Following field evaluation in 1999-2002 Oxford Archaeology (OA) carried out a number of archaeological investigations within Oxford Castle (NGR SP 5098 0613). The work took place between March 2003 and November 2004, and was commissioned by Oxford Castle Ltd (a company wholly owned by the Osborne Group) in advance of the redevelopment of the site. The redevelopment involved the construction of a restaurant/hotel building; retail and residential buildings; a fitness centre; a wine bar; a basement store; a heritage/museum shop and an educational/residential building. The fieldwork comprised three open area excavations, 14 additional trial trenches and an ongoing watching brief.

The investigations revealed evidence for late Saxon cellar pits and cess pits to the north of the site and a late Saxon timber hall and road to the south of the site. Evidence for a rampart defining the southern limit of the Saxon burh was revealed throughout the southern area of the development. An associated retaining wall was revealed and retained, incorporated into the design of the development. Saxon burials were also exposed at the base of St George's Tower.

A section of the 11th-century ditch surrounding the base of the Castle Motte was fully excavated and a sequence of waterlogged silt deposits and dumped layers were revealed. At the edge of the ditch a northern section of the castle curtain wall was exposed. Medieval pits were seen within the bailey area, as well as throughout the development. Parts of the east gate bridge were seen to the east of the castle and a section of the curtain wall was seen at the base of St George's Tower, where a number of medieval inhumations were also seen. A large section of the 11th century castle ramparts were revealed in the south-east corner of the site.

Throughout the castle post medieval surfaces and walls were revealed. The castle moat was seen to have been canalised in the 16th or 17th centuries and the edges of the moat utilised as back yards.

The motte ditch was used as a burial ground for executed prisoners between the 16th and 18th centuries, and a total of 63 burials were recorded. The area was landscaped for use as a pleasure garden shortly before the construction of the prison in the late 18th century.

Evidence for the castle's western gate, Shire Hall, a large 13th-century cellar, medieval burials to the north of St George's Chapel and a possible Civil War sally port have been revealed within the latest phase of watching brief work.

The results are of both regional and national importance, they have potential to illuminate the development of the south-west corner of Oxford

through the late Saxon period. Evidence for activity within the medieval period is primarily limited to the area of the motte ditch, although smaller areas of activity were revealed during the watching brief. Apart from gravel quarrying, there is very little evidence for post-medieval activity within the castle, prior to the building of the prison in the later part of the 18th century.

OXFORD CASTLE

POST-EXCAVATION ASSESSMENT AND RESEARCH DESIGN

1 PROJECT BACKGROUND

1.1 Location and scope of work

1.1.1 The site of Oxford Castle, including the area of buildings used as Oxford Prison until its closure in 1997, is currently undergoing redevelopment. Oxford City Council (Planning Ref. No. 01/00029/NFZ) has granted a scheme put forward by Oxford Castle Ltd (a company wholly owned by the Osborne Group). The redevelopment includes: a restaurant/hotel building; retail and residential buildings; a fitness centre; a wine bar; a basement store; a heritage/museum shop and an educational/residential building.

1.1.2 Much of the castle is a Scheduled Ancient Monument (SAM 21701), and the older prison buildings are also protected under the Planning (Listed Buildings and Conservation Areas) Act, 1990, with part of the complex listed Grade 1. The development area is situated within the Central Oxford Conservation Area and the Area of Archaeological Interest defined in the Oxford Local Plan (1998). The site is therefore of exceptional historical, archaeological and architectural interest and significance and it was considered most important that all of these factors were taken fully into account during redevelopment. The site is at present in the ownership of Oxfordshire County Council.

1.1.3 Oxfordshire County Archaeological Services, with input from English Heritage and Oxford City Council, prepared a number of project briefs for archaeological field work on the parts of the site that were to be affected by development proposals. OA produced the relevant Written Schemes of Investigation (OA 2003, 1, 2 and 3), detailing how OA would deal with any archaeological excavation.

1.2 Geology and topography

1.2.1 Oxford Castle and the prison (hereafter referred to as 'the Castle') is situated in the centre of Oxford, and is bounded by Castle Street to the east, New Road to the north, Tidmarsh Lane to the west and Paradise Street to the south. The castle is built on the southern spur of the Summertown-Radley gravel terrace, to the east of the river Thames and to the west of the river Cherwell. The confluence of these two rivers is c 2 km south-east of the castle (Fig. 1).

1.2.2 The topography of the site slopes gently from north to south; at the north the ground level is at c 61.7 m OD, and in the south it is at c 60.5 m OD.

1.3 Previous archaeological work

- 1.3.1 Two phases of evaluation (OAU 1999 and OA 2002) located significant remains throughout the Castle site.
- 1.3.2 To the north-west of the site the eastern side of the motte ditch was revealed; it was approximately 15 m wide and over 6 m deep. Medieval deposits were encountered c 4 m below ground level (bgl) in the centre of the ditch and 2 m bgl at the eastern edge of the ditch. At the base of the ditch a large oak beam was discovered which might have formed part of a bridge structure across the ditch. A number of burials were revealed within the ditch, which may have served as a burial ground for executed, and other, criminals from the county gaol. The ditch was fully backfilled in the 18th century before most of the ditch edge was removed by quarrying. An early medieval foundation was seen, in the south-east of the area, which may have formed part of Shire Hall (see 3.2.10 below). The foundation was cut by pits and by a possible 17th century robber trench. To the north-east of the area possible 10th century and 11th century pits were encountered which appeared to be sealed by deposits resulting from the levelling of the Castle ramparts, prior to the construction of New Road. Similarly dated pits were seen in the south-east of the area.
- 1.3.3 To the south-east of the site evidence for *in situ* castle ramparts and possible castle wall foundations were revealed. The ramparts were formed from a series of dumped clays and bands of gravel, with a face which corresponded with the line of the probable Castle ditch seen to the south (aligned NNE-SSW). The rampart face sloped at an angle of approximately 30°, and was investigated to a depth of 57.5 m OD. It was abutted by a series of 18th century dumps of mixed clay and gravel, consistent with the deposits seen filling the castle ditch to the south.
- 1.3.4 A possible Saxon soil was seen to the south of the rampart and to the west a ragstone wall was revealed. The wall appeared to be dated to the 10th or 11th century and may have formed part of the southern town wall.

1.4 Archaeological and historical background

Introduction

- 1.4.1 The archaeological background of the site has been extensively studied in *Oxford Castle – a Heritage Survey* commissioned by Oxford County Council (OAU 1996). The following is based on the information contained in that document, where full references will also be found. The date references given below (e.g. 1952, 1972e etc) refer to the entries in Appendix B of that document.
- 1.4.2 The castle was built in 1071 by Robert d'Oilli at the west side of the late Saxon town, known to have been in existence as early as AD 911. At the time the Heritage Survey was carried out there was no known evidence for activity pre-dating the Saxon period. Pre-conquest (late Saxon) material has been found beneath the Castle mound (1952) and within the vicinity of the castle at Nuffield College (1948-9) and New

County Hall (1972), indicating that the Saxon town extended as far west as the river – as represented by the present Castle Mill Stream. Jope's excavations of 1952 revealed pits, occupation debris and traces of the houses overlain by the castle and part of a Saxon timber house was observed during construction of the new County Hall in 1972. The ceramic evidence suggests that a Danish ethnic group might have occupied the western suburb of the town (ex inf. M. Mellor). On the perimeter of the site, early street levels found below Castle Street in 1970 and 1972 have demonstrated the antiquity of the road leading out of Oxford to the west, which in its original form must have extended through the site of the later castle (1970c, 1972e). This route was diverted to the south-west of the castle, and a new West Gate constructed. Jope's excavations and Hassall's work (1966) have demonstrated that a minimum of 1 m of overburden seals the Saxon levels in places.

1.4.3 Originally the castle consisted of a motte and bailey, much of the latter of which survived into the 18th century, and the motte (the castle mound) still remains. The Chapel of St George in the Castle was founded in 1074 and its crypt and the 11th-century tower still survive. The date of the St George's tower itself is uncertain and it is possible that it is earlier than the castle. The internal layout of the medieval castle is unclear; even the circuit of curtain walls and towers, though broadly known, cannot be precisely located. A barbican on the south-east side of the castle appears to have been fairly short lived (though the inner gate continued in use) and it is possible that there was a corresponding feature to the north-west, but this is only known from a documentary reference. A study of documented medieval building repairs (OAU 1996, 5-6) suggests that there were many internal buildings, including the hall, chambers and wardrobe; these were supplemented by a range of service buildings including a kitchen, bakery, brewhouse and stables. The site was used as a prison after 1531, although a gaol would have existed on the site from the 11th or 12th centuries, and the walls and towers surrounding the motte and bailey were still standing in 1578. The tower on the motte is still shown in an early 17th century representation. The layout of the site changed little until New Road was built in 1769 and the first phase of the present prison was constructed south and east of the castle mound in the late 18th century.

1.4.4 The prison was rebuilt and greatly extended in the 1780s and 1790s, and then again in the 1850s. The building activities associated with this development largely removed the remains of the medieval castle.

1.5 Excavation methodology

General

1.5.1 Three proposed areas of development had the greatest impact on below ground archaeology, although there were many smaller parts of the development with significant archaeological impacts. The site was divided into areas accordingly (Fig. 8).

Area A

- 1.5.2 Area A comprised the footprint of a new hotel building at the base of the Motte, adjacent to the New Road frontage, the footprint covered an area of 1014 m² (see Fig. 2) The building was to be basemented, to varying depths; the deepest section had an engineering impact to 54.9 m OD, approximately 6 m below ground level (bgl); elsewhere the impact was to 55.8 m OD and 56.5 m OD.

Area B

- 1.5.3 Area B comprised the south-west end of the footprint for a new B Wing building (see Fig. 5). The basement of the building had an engineering impact to 56.7 m OD. To the east of the new building archaeological remains had been truncated by the previous B Wing. This area was subject to a watching brief.

Area C

- 1.5.4 Area C comprised the footprint of a new kitchen block with basement. The site covered an area of approximately 205 m² (see Fig. 5). The deepest section of the basement had an engineering impact to 56.8 m OD which was c 2 m below the upper archaeological horizon. The impact of the development resulted in full excavation of the site.

Area D

- 1.5.5 A new tunnel was proposed below the southern side of D Wing, linking the Crypt with the base of St George's Tower. Area D comprised the excavation of the space below the four westernmost cells.

Watching brief areas

- 1.5.6 The excavation of a number of deep service trenches was monitored under the conditions of a watching brief. The trenches that ran through areas of known archaeological significance were dealt with in advance of the service work.
- 1.5.7 The main areas of significance (Fig. 8) were a trench at the base of the south side of St George's Tower (Area E); a NW-SE trench to the east of the Houses of Correction (Area F) and a trench to the south of the North Range (Area G).
- 1.5.8 Significant remains were also found within the area fronting Tidmarsh Lane (Area H) and the area to the north of D Wing (Area I). These areas were dealt with as part of the main phase of groundworks.

Building Survey

- 1.5.9 OA was commissioned to produce a commentary, and supply additional information to the drawn and photographic surveys carried out by a number of architectural practices, during the building and conservation work on the historic buildings within the castle site. The procedure for this work was outlined in the project design

document produced by OA (*Oxford Castle - Castle and Prison Buildings, project design for investigation and recording of historic buildings*, OA 2002).

- 1.5.10 The building recording focussed on the following structures and preliminary reports were subsequently issued; A Wing and the North Range (OA 2004a); A-D Wing Link Building (OA 2004b); Boundary Walls (OA 2004c); C Wing (OA 2004d); D Wing (OA 2004e); Entrance Range and the Front Entrance Range (OA 2004f); The Governor's House, Office and Female Exercise Yard (OA 2004g); The Houses of Correction and the Treadwheel Building (OA 2004h); St George's Tower (OA 2005).
- 1.5.11 These reports substantially record the observations and discoveries on the buildings, and provide a guide to the archive. They will constitute the final reports on the buildings as commissioned, and no further work is anticipated beyond the incorporation of their findings into the final published report. However, the results of the D Wing investigation should be considered when considering any nearby below ground structures.

1.6 Post-excavation methodology

- 1.6.1 The post-excavation work commenced following the completion of the excavation work in watching brief Areas E, F and G. The post-excavation work started in November 2004; a digital record, including a context database and matrix, was made from the site records up to that date. All the finds and environmental samples recovered prior to November 2004 were sent to the relevant specialists for assessment.
- 1.6.2 Finds and environmental samples from the more recent watching brief work exist in far smaller quantities (see section 3.2) and have yet to be assessed. However, the finds and samples will be incorporated with the assessed assemblages, and will be examined during the full analysis phase.

1.7 Removal of overburden and disturbed strata

- 1.7.1 All mechanical excavation was undertaken using a toothless ditching bucket to minimise disturbance to archaeologically sensitive strata. Non-archaeological deposits were mechanically stripped in spits no deeper than 0.5 m. All stripping was carried out under archaeological control and supervision using site staff experienced in working with machines and machine operators.

1.8 Excavation of archaeological deposits

- 1.8.1 All significant archaeological deposits and features were hand excavated. All archaeological features were planned and where excavated their sections drawn at scales of 1:20. All features were photographed using colour slide and black and white print film. Recording followed procedures laid down in the *OAU Fieldwork Manual* (ed D Wilkinson, 1992).

- 1.8.2 The sampling programme for environmental analysis was agreed with the OA environmental consultants and collected with the advice of the relevant specialist.

2 QUANTIFICATION OF THE ARCHIVE

2.1 Stratigraphic

RECORD TYPE	QUANTIFICATION (Excavation)	QUANTIFICATION (Watching Brief, un- assessed)
Context records	3234	694
Matrices A1	9	1
Matrices A4	12	3
Plan sheets A1	34	5
Plan sheets A4	307	71
Section sheets A1	29	2
Section sheets A4	266	70
Sample registers	85	10
Level sheets	60	8
Small find registers	22	1
Bulk find sheets	132	21
Environmental transfer lists	2	1
Black and white films	90	12
Colour films	90	12
Daily journal	166	
Watching brief records	143	115

2.2 Artefactual and ecofactual material

MATERIAL	QUANTIFICATION (Excavation)	QUANTIFICATION (Watching Brief, un- assessed)
Pottery	8985	483
Ceramic building material (CBM)	c 2,000	c 200
Clay pipe	559	75
Fired clay	291	2
Worked animal bone	12	
Glass	324	57
Stone	175	11
Slag	109	4
Copper alloy	174	
Iron	370	99
Lead	5	
Coins and tokens	24	
Flint	83	1
Leather	77 bags	6 bags
Wood	26	2
Shell	688	31
Human bone	14960 (includes 65 articulated skeletons)	1016 (includes 8 articulated skeletons)
Animal bone	22678	1303

3 STRATIGRAPHIC SUMMARY

3.1 Introduction

Area A

- 3.1.1 The archaeological remains comprised the 11th century motte ditch on the north-west edge of the excavation and a series of intercutting pits on the north-east and south-east sides. The motte ditch was filled with a sequence of deposits dating from the 11th to the 18th century, including a number of 16th- to 18th-century burials. The pits were dated from the 11th to the 19th century. Much of the archaeology was poorly defined due to the high density of intercutting pits. However, despite the complexity of the archaeology, combining the pottery spot dates with the stratigraphic record demonstrates that there was little cross contamination of dating evidence.
- 3.1.2 In general the features encountered could not be accurately phased from the stratigraphic record alone, but were generally well dated by their finds.

Areas B and C

- 3.1.3 The 11th century castle rampart dominated the whole of Area C and the northern edge of Area B. The castle moat was seen to the south. Beneath the rampart a late Saxon soil, postholes defining a timber building and a defensive earthwork were revealed.
- 3.1.4 Although the features encountered were well dated, they could not be accurately phased from the finds alone. The stratigraphic record proved invaluable in providing accurate phasing.

Areas D-G

- 3.1.5 Generally the archaeology encountered in the watching brief areas was seen in narrow service trenches. The archaeology comprised earthworks, burials, castle masonry and intercutting pits. Generally a limited amount of dating evidence was recovered and the phasing of the features relied heavily on the stratigraphic record.

Phasing

- 3.1.6 The site was broadly phased into four periods using spot dates from the pottery assemblage and the stratigraphic record:
- Phase 1: Late Saxon (900-1071)
 - Phase 2: Medieval (1071-1485)
 - Phase 3: Post medieval (1485-1769)
 - Phase 4: Modern (1769-onwards)
- 3.1.7 The construction of the Castle in 1071 marks the start of Phase 2 and the construction of New Road in 1769 marks the end of Phase 3.

3.2 Area A

Phase 1 - Late Saxon 900 - 1071 (Fig. 2)

- 3.2.1 Two late Saxon pits (6684 and 6305) were revealed within the excavation area. Both pits appeared to have surfaces at their base, comprised of either thin chalk or lime deposits. One of the pits contained a beam slot that indicated the presence of a retaining wall; burnt daub was also recovered. The pits were probably cellar pits beneath timber framed superstructures. They were over 1 m deep and more than 3 m in length. It is feasible that the structures were either side of a street within the Saxon burh. Approximately 15 late-Saxon cess pits were observed to the rear of both features and may help to define the backspaces of the plots that they would have been located in.

Phase 2 - Medieval 1071-1485 (Fig. 2)

- 3.2.2 In 1071 Robert d'Oilli commissioned the construction of the Castle; Area A was located in what was thought to be the north-western corner of the bailey. A portion of the ditch around the motte was exposed and excavated; its base was revealed at c 8 m below ground level. Two large sumps at the base of the ditch could have been used to control the flow of ground water, during the initial excavation of the ditch. It is also possible that they also functioned as additional clay quarries.
- 3.2.3 At the base of the ditch was a sequence of silt deposits dating from the late 11th century to the late 15th century (Fig. 3). Environmental preservation was excellent and a large quantity of leather shoes was recovered; a limited number of wooden items were also found.
- 3.2.4 To the north-east of the motte ditch, on the upper outer edge, a large limestone footing for the castle curtain wall was seen. The wall may have dated from the late 12th century; a possible buttress or tower base was seen to butt its internal edge. To the south of this structure, again on the external edge of the motte ditch, a similarly dated, crude, limestone footing was revealed; it may have represented a support for a small bridge over the ditch.
- 3.2.5 Within the castle bailey area there was very little evidence for medieval activity, with only six medieval pits revealed. The pits were generally large and rectangular, over 1.5 m deep and more than 2 m long. They may have functioned as cess or rubbish pits. Early medieval pottery recovered from the upper fills of the late Saxon cellar pits indicated that any associated buildings had been levelled to make way for the castle.

Phase 3 - Post medieval 1485-1769 (Fig. 2)

- 3.2.6 The defensive function of the motte ditch appeared to be short-lived. From the 13th or 14th centuries until the 16th century it was used as a dumping area for waste from the castle. A number of inhumations were revealed within the upper fills of the ditch;

the graves dated from the 16th-18th centuries. From 1531 the castle was used as the County Gaol and it is likely that executed prisoners would have been buried in the partially infilled moat, a short distance from the site of the gallows. A total of 64 inhumations were revealed, the majority of which were young men. There appeared to be three phases of burials; the earliest phase comprised the largest number of individuals. These were mostly aligned SW-NE or NE-SW and respected the orientation of the motte ditch. Some of the individuals appeared to have been casually placed or 'thrown' into their graves whilst others were buried with their arms crossed. Evidence of anatomisation was also evident amongst the earliest phase of burials. Craniotomies had been performed on two of the individuals (6444 and 7023) and their skulls were placed within their chest cavities.

- 3.2.7 The second phase of burials comprised a discrete group within the northern part of the moat. Two rows of either E-W or W-E burials were revealed within shallow graves. One grave contained three individuals although most of the graves were for single burials. The inhumations were a mixture of supine and prone. There was further evidence of dissection and one individual, an adolescent boy (6641), appeared to have had his legs bound up behind him.
- 3.2.8 The final phase of burials comprised a group of three NW-SE aligned graves. The graves were directly over the second phase of burials and were perpendicular to the motte ditch.
- 3.2.9 A large clay lined ditch, dated to the early 18th century, was cut through the upper motte ditch deposits. The ditch may have been part of a programme of landscaping, so that parts of the site could be used as a pleasure garden (OAU 1996).
- 3.2.10 There was little evidence for post-medieval activity within the bailey area, although a large robber cut was revealed (6453). The trench was located in the southern corner of site; it was over 2 m deep and more than 2 m wide and dated to the 18th century. The trench may have represented the robbing of 'Shire Hall', the original castle hall and latterly the Court of Assizes.

Phase 4 - Modern 1769-present day (Fig. 4)

- 3.2.11 Two rows of large square quarry pits were seen along the eastern edge of site. They were dated to the late 18th century and were filled with dumps of gravel, clay and brickearth, material suggestive of re-deposited castle ramparts. They may have been dug to extract gravel for the construction of New Road in 1769. Any existing castle earthworks could have been used to infill the resulting quarry holes.
- 3.2.12 The central area of site comprised one large gravel quarry. The motte ditch defined its north-western edge, the square quarries defined its north-eastern edge and the Saxon cess pits defined its south-eastern edge. The south-western edge was not seen. The quarry was probably dug to extract material for the construction of the prison in the 1780s, it truncated the upper fills of the square quarry pits (see 3.2.11 above).

- 3.2.13 There was also evidence of possible 19th century 'hard labour' pits, dug by the prisoners to keep them busy.

3.3 Areas B and C

Phase 1 (Fig. 5)

- 3.3.1 Between Areas B and C a large earthen rampart was revealed. It was over 1.5 m high, 13 m wide and comprised of dumps of silt and possible turfs. The rampart was of similar dimensions to that seen at St Michael's Street, where it was suggested that the material to create the rampart was obtained from the western part of the town (Dodd A, 2003). Pottery recovered from the upper levels of the rampart comprised St Neots ware (OXR), Cotswold type ware (OXAC) and medieval Oxford ware (OXY). The upper deposits, perhaps later heightenings, could be dated to the 11th century and the bank appeared to form part of the southern defences of the late Saxon burh. Its southern face was revetted by a ragstone wall (Fig. 6), once Oxford's southern town wall. Cotswold type ware was also recovered from the fill of the construction cut of this wall.
- 3.3.2 To the north of the rampart were a number of postholes and beam slots that formed a structure, c 8 m long and 5 m wide. The building may have been a western annex to a late Saxon timber hall, as the western limit of a larger structure was seen at the eastern limit of the excavation; a third structure was revealed to the west.
- 3.3.3 To the north of the structures was a ?10th-century ragstone metalled surface (8185) that may possibly have been an extension of High St/Queen St/Castle Street, before its east-west line was diverted around the Castle. Three deep cess pits were seen to the south of the structures.
- 3.3.4 There was no clear relationship between the rampart and the structures. A cultivation soil, containing 11th-century pottery, overlay the post holes and may have signified a general move towards the centre of the town after the construction of the defences.

Phase 2 (Fig. 5)

- 3.3.5 The south-east part of the Castle moat was revealed within Area B and the earthen rampart separating the bailey from the moat was seen within both areas. The moat was excavated to the level of impact for the new development (c 2 m bgl); medieval deposits were not encountered.
- 3.3.6 The 11th-century rampart survived to a height of over 2 m and was constructed from gravel capped with a thick deposit of clay; the material obtained from digging the Castle moat. The rampart was also constructed from the material generated by digging through the Saxon town defences. The earthwork was constructed in a series of steps, presumably to key material to a slope.
- 3.3.7 To the north of the B-Wing site, on the inner edge of the castle moat, a large limestone footing was revealed. It may have formed the foundation of the east gate

into the castle. A limestone pier base to support the east gate bridge was seen within the moat.

Phase 3 (Fig. 5)

- 3.3.8 A ditch (8761) was revealed at the base of the western side of the Norman rampart. The ditch was *c* 0.50 m deep and *c* 2 m wide; it was lined with postholes on both sides that may have formed part of retaining structures. The trench may have been a 17th century defensive structure, possibly created during the English Civil War, although very little dating evidence was retrieved.
- 3.3.9 Within the north-east corner of Area B a 16th- or 17th-century narrow stone channel was seen at the base of the moat. Cobbled surfaces were seen to the north of the channel that defined the back yards of Castle Street tenements. The channel represented the canalisation of the moat and may have related to a sluice gate seen on Paradise St (OA 2003).

Phase 4 (Fig. 5)

- 3.3.10 Two quarry pits were revealed, dated to the late 18th century, and may have related to the construction of C Wing in the late 1780s.

3.4 Watching Brief Areas

Phase 1 (Figs 7 and 8)

- 3.4.1 To the west of C-Wing (Area F) evidence was revealed for a deep soil filled feature or features, possibly a ditch or perhaps an area of pitting. The feature was overlain by the late Saxon rampart and the pottery recovered was probably 10th century in date. A similar feature was seen during the A wing Terrace excavations and to the south-east during the 2002 watching brief. The feature may have represented an earlier defensive feature within the Saxon burh or perhaps an area of pitting associated with structures to the east. Postholes and beamslots were also revealed.
- 3.4.2 The earthen rampart representing the southern limits of the Saxon burh were seen between C-Wing and possibly as far as the base of St George's Tower (Area F) and beneath D-Wing (Area D). At the base of St George's Tower (Area E) the possible rampart appeared to be revetted with a ragstone wall. The apparent presence of Saxon defences at the base of the Tower adds weight to the theory that the Tower was a late Saxon construction, rather than constructed as part of the Norman castle.
- 3.4.3 Within Area E two burials (4249 and 4238) were seen to cut into the rampart material. The 11th-century revetting wall subsequently truncated these graves. The presence of possible Saxon burials suggests that there may have been a Saxon chapel or possible gate church on the site prior to the founding of the Chapel of St George in the Castle in 1074.
- 3.4.4 Pits of possible late Saxon date were also identified within Area G, to the south of the North Range.

Phase 2 (Fig. 7)

- 3.4.5 Part of the castle curtain wall was revealed at the base of St George's Tower (Area E) where six medieval burials, within the southern limit of the chapel's cemetery, were also seen. The southern foundation of D-Wing (Area D) seems very likely to be the re-used southern wall of St George's Chapel; a large cross-wall was also revealed, again possibly part of the medieval chapel. It is also possible that the cross wall and foundations of D Wing are the remains of post-medieval buildings as seen on Burghers view of the castle (1719).

Phase 4 (Fig. 8)

- 3.4.6 Many sections of wall footings, relating to 18th-century prison structures, were revealed throughout the site. The majority of the footings appeared to be related to walls shown on a number of prison plans.

3.5 Recent Discoveries**General**

- 3.5.1 The following discoveries were made after the post-excavation assessment was started and as such have not been fully interpreted or phased. However, they are significant finds and will form part of any further analysis.

Phase 2

- 3.5.2 A large section of a 12th- or 13th-century limestone castle curtain wall was revealed at the base of the motte, on its south-west side. There was a 4 m wide limestone footing abutting the wall, possibly part of a 13th- or 14th-century gate house. It is possible that the structure formed the inner gate of a western barbican.
- 3.5.3 Four burials, within stone lined graves, were revealed to the north of D Wing. The graves were provisionally dated from the 11th century, but it is possible that they were part of a Saxon cemetery.
- 3.5.4 Within the A-Wing exercise yard a limestone and ragstone cellar structure was revealed. The structure was over 7 m long and over 5 m wide and appeared to have been infilled in the 14th century.
- 3.5.5 Between Area A and County Hall masonry was revealed that may have formed part of Shire Hall.

Phase 3

- 3.5.6 Within the Tidmarsh Lane area of the site, to the south-west of the motte, a postern or sally port was revealed. The structure was 1 m wide and comprised a series of cobbled road surfaces between two large retaining walls. A doorway was seen at the southern end leading to a cobbled road. The surface was revealed in the 2002 evaluation and appeared to be dated to the 16th or 17th centuries. It may have been constructed during, or immediately after, the English Civil War.

- 3.5.7 To the north of D Wing a sequence of three post medieval floor surfaces was exposed and a small number of wall footings were seen.

4 ARTEFACTUAL SUMMARY

4.1 Introduction

- 4.1.1 Summaries of the artefactual evidence by category are included below. The full assessment reports can be found in Appendices 1-13

4.2 General

- 4.2.1 It was apparent that there was a general redeposition of artefacts across the sites, as would be expected in an archaeologically active urban context. The majority of pit fills and other dumped deposits contained a background scatter of material from a variety of previous activities, although provisionally this does not appear to have compromised the integrity of the artefactual assemblages as a whole.

4.3 Artefacts

Pottery

- 4.3.1 The pottery assemblage comprised 8,985 sherds with a total weight of 149,296g. The estimated vessel equivalent (EVE), by summation of surviving rimsherd circumference was 74.36. This is one of the largest groups of Saxon and medieval pottery ever excavated in Oxford, and appears very important in a number of areas. It contains one of the largest groups of early/middle Saxon hand-built pottery ever found in the city, and also some of the earliest late Saxon material, which almost certainly dates to the time of the construction of the *burh*.
- 4.3.2 The medieval and later assemblages are very large, and appear to have a number of differences from other contemporary sites in the city, which are almost certainly due to the status of the site. There is also the potential of some of the pottery to provide chronological information which could prove crucial to our understanding of the pottery used in the city, and in the region as a whole.

Ceramic building material (CBM)

- 4.3.3 A total of 414 fragments of ceramic and stone building material (weighing 29515 grams) and 22 fragments of miscellaneous materials (weighing 1253 gms) were examined. The majority of the assemblage contained examples of medieval brick, floor and roof tile with only a small amount of wasters and underfired material. Smaller assemblages of stone roof tile of medieval date, mortar and plaster were also examined.
- 4.3.4 A significant proportion of the ceramic assemblage showed typical evidence of hand-made brick and tile manufacture. The bulk of the assemblage was of medieval ceramic roof tile that includes pegged tiles and ridge tiles, both plain and glazed. The flat roof tile could be broken down into at least two further types. The exceptionally

small brick assemblage of 28 fragments contained only 6 fragments with diagnostic traits the remainder being non-diagnostic.

- 4.3.5 The material displays typical evidence of dumping with residual evidence of demolished buildings that may have existed within the castle.

Clay pipe

- 4.3.6 The material studied comprised a total of 559 fragments made up of 114 bowl, 437 stem and 8 mouthpiece fragments from a total of 60 different contexts.
- 4.3.7 The majority of the material dated from the 17th or 18th century with barely any 19th century material represented. Within this range, there was very little material dating to before the middle of the 17th century and the majority of the finds appeared to be of an early 18th century date. It may be possible to compare the 17th century material with known Civil War assemblages. Dating of the excavated deposits was hampered by the relatively low incidence of contexts containing bowl fragments and the general lack of marked or decorated pieces amongst this assemblage.

Fired clay

- 4.3.8 A total of 291 fragments of fired clay were recovered from the excavations. These included fragments of daub recovered from the fills of cellar pits. The material has only been quantified at this stage.

Worked animal bone

- 4.3.9 The assemblage comprised 11 worked bone objects and 1 piece of working debris. The majority of the objects were redeposited and recovered from post-medieval quarry pits. The most interesting of these finds was an ornately carved object, possibly a gaming piece. It is carved from a section of a long bone (medium animal i.e. sheep) and appears to represent the head of an animal/bird-a Norman 'beakhead'. The personal items include ice skates, one of which was found within a late 11th century cess pit, beads and the side plates from a comb. An unstratified hammer head was also recovered.

Glass

- 4.3.10 A small, but significant, portion of the assemblage dates to the medieval period and the late 12th-15th centuries in particular. The most distinctive of these are at least two stub bases, which are the lower portions of medieval hanging lamps. Other vessels include the remains of at least two different flasks/urinals and fragments of medieval window glass. However, the majority of the glass is post-medieval in date. A small proportion of this is plain window glass, mainly dating to between the 17th and 19th centuries, however, most of the post-medieval glass comes from vessels.

Stone

- 4.3.11 A preliminary examination of 278 pieces of stone was carried out and 23 different varieties of stone were recorded. A total of 31 objects (35 fragments) and 194 pieces of building stone were identified.
- 4.3.12 The objects included 6 quern fragments, 4 whetstones, c 16 faceted chalk objects, a spindlewhorl, a large stone ball, some fragments of Kimmeridge shale and a possible smoother.
- 4.3.13 The building stone, as might be expected, consists mainly of varieties of Jurassic limestone, most from Corallian beds fairly near Oxford but with some pieces from more distant parts of Oxfordshire and even possibly from further afield. Some 85 mainly rather small fragments are roofing tile, two with a diagnostic hole at one end. These are all made from the same variety of shelly limestone which can be identified as the Pusey Flags from part of the middle Jurassic Corallian beds of Oxfordshire (Arkell 1947 (a), 86). The source may be an old quarry known as the Slat Pit, which is near Buckland and some 19 km (12 miles) south west of Oxford. The nearby river Thames would have provided a convenient transport route for bringing the roofing tile into Oxford.

Slag

- 4.3.14 A total of 5.5kg of material was examined for this report. Not all the assemblage was iron slag; debris from copper alloy working was also present. The assemblage was examined by eye and categorised on the basis of morphology. Each slag type or category of material was weighed, while the smithing hearth bottom was individually weighed and measured for statistical purposes.
- 4.3.15 The assemblage, where diagnostic, had been generated by smithing activity. Some copper alloy waste was recovered from Saxon deposits within area C and this was separated from other slag to be examined by the relevant specialist. A proportion of the vitrified hearth lining present in this area and phase also appears to have been generated by copper alloy working as the surfaces which would have been closest to the heat had copper waste or red copper oxide on them.

Copper alloy and lead

- 4.3.16 The assemblage comprises 187 copper alloy objects and includes material recovered from the earlier evaluation. Only a sample of the total assemblage has been assessed. The sample comprises 149 objects (69%) of which 46% were pins. The copper alloy assemblage comprises personal items, toiletry items, household objects, casket fittings and structural items. The assemblage comprises mostly redeposited finds, either objects dumped in the motte ditch during the late medieval/post-medieval period or within post medieval quarry pits. Most of the assemblage has been x-rayed, except the objects that are obviously identifiable as copper alloy pins. In general the condition of the copper alloy is relatively good.

- 4.3.17 The lead objects comprise a circular disc weight, window came, decorative window tracery and an unworked strip.

Iron

- 4.3.18 The assemblage comprises 527 iron objects (including 222 nails) and includes material recovered from the earlier evaluation. Only a sample of the total assemblage has been assessed. The sample comprises 112 iron objects (including 56 nails), 18.9 % of the total. The majority of the assemblage has been x-rayed the only exceptions are objects that are obviously identifiable as iron nails. The ironwork assemblage comprises knives, keys, horsegear, structural objects and miscellaneous fragments. Like the copper assemblage the ironwork is mostly late medieval or post-medieval in date, and recovered from the fills of the motte ditch or within quarry pits.
- 4.3.19 In general the condition of the ironwork is corroded and unstable (corroding). It is physically weak and breakable.

Coins and tokens

- 4.3.20 The 26 numismatic finds from this site consisted of 2 English silver coins of the 14th-15th centuries, 1 royal farthing token and 2 unofficial tokens of the 17th century, 4 copper coins of the 17th-18th centuries, and 17 jettons.
- 4.3.21 None of the finds could be dated earlier than c 1321. The 2 English jettons may have been deposited in the 14th century, and the 11 French jettons and 2 English silver coins were probably deposited no later than the first half of the 16th century. The 4 Nuremberg jettons were probably deposited between the mid or late 16th century and the 17th century, and 3 tokens can be dated to the 17th century. Finally there were 3 copper coins probably deposited between 1672 and 1817.

Flint

- 4.3.22 The evaluation produced five pieces of worked flint from four contexts and the excavation produced 45 pieces from 30 contexts. Most contexts contained three or fewer pieces of flint, with just one context (8185 from the excavation) containing eight pieces. None of the recovered flint is consistent with historic gun flint manufacture or knapping for building material and therefore the material recovered from the site is assumed to be Prehistoric in date and consequently redeposited.

Leather

- 4.3.23 A representative sample of the leather was examined, coming from 14 of the 36 contexts containing leather. The majority of the leather was recovered from 27 Phase 2 contexts within Area A. A small amount was recovered from Area B, in a trench below D-wing, and during the watching brief. Only material from Area A was seen as part of this assessment.
- 4.3.24 The majority of the leather was recovered from Phase 2 moat fills. It principally comprised shoes of turnshoe construction, of styles dating to the late 11th-early/mid

12th century. Two variations of turnshoe construction were noted that suggest a proportion of the shoes were in the Saxo-Norman (Anglo-Scandinavian-Norman) tradition. Much of this shoe leather was cut up before being thrown away and was mixed with secondary waste; features indicative of cobbling waste. At least eleven individual shoes were represented amongst the shoe leather examined. Adult and child size shoes were present. The majority of the shoes were made of fine sheep/goatskin, at least five with stitching from a decorative embroidered stripe running down the vamp to the toe, and at least two with decorated top bands present. A folded and stitched strap (context 7268), a knotted strap (SF606 context 7174), and thick cattle hide panels from a possible bucket (context 7266) were also noted. In addition, a group of five Victorian shoes, also cobbling waste, were recovered from a prison hard labour pit (context 6065).

5 ENVIRONMENTAL SUMMARY

5.1 Introduction

- 5.1.1 Summaries of the ecofactual evidence are included below. Full assessment reports can be found as Appendices 14-16.

5.2 Ecofacts

Wood

- 5.2.1 A total of 94 wooden objects were examined much of which consisted of roundwood. The material was mostly recovered from the basal deposits within the motte ditch although a 19th century wooden plate was recovered from within Debtor's Tower. There were some interesting finds within the assemblage. These include part of a wooden bowl, a paddle blade, a bung, part of a weaving tablet, a pin and a possible spindle.

Shell

- 5.2.2 A total of 688 fragments of shell were recovered from the excavations and 31 fragments from the watching brief. The material mostly comprised oyster shell but it has only been quantified at this stage.

Human bone

- 5.2.3 A total of 76 articulated burials were identified within the excavation, evaluations and watching brief at Oxford Castle, 16 of which were recovered from the watching brief; three of the burials were left *in situ*. Twelve of the burials were assessed for this report, 16% of the total assemblage. A brief assessment of the charnel remains, within the motte ditch, was made by studying bones from contexts 6264 and 6533.
- 5.2.4 Articulated skeletal remains were recovered from Phase 1, 2 and 3 deposits. For the assessment, two of the Phase 1 burials (100% of the assemblage), two of the Phase 2 burials (20% of the assemblage) and eight of the Phase 3 burials (13% of the assemblage) were examined.

Animal bone

- 5.2.5 A total of 2939 fragments of hand collected animal bone was fully analysed and recorded for this assessment, 13% of the total excavated at the site. A number of these bones had fresh breaks, the re-fitting of which reduced the total fragment count to 2353, weighing 38068 g.
- 5.2.6 A total of 1024 fragments of bone and teeth were identifiable to species, 43.5% of the total number of bones assessed, including sheep/goat, cattle, pig, horse, dog, cat, deer, rabbit, hare and a number of bird and amphibian species. Of the sheep/goat bones thirty three were identified as sheep and one as goat.

- 5.2.7 The good condition, of the majority of the bone, not only allowed for a high percentage of bones to be identified to species, but also for many butchery marks, pathologies and gnawing marks to be observed. Many of the bones could be measured and analysed for age at death information. The butchery evidence indicates that skinning, dismemberment, marrow extraction and horn working was carried out on the animals. Very few articulations were noted, which is not unusual of general domestic waste, with the exception of an articulating rabbit skeleton from Phase 3. It is quite likely that this individual died naturally on the site, as there is no evidence of processing on the skeleton.

Plant remains

- 5.2.8 A total of 208 samples were assessed from Phase 1. The greatest number of samples were from postholes or postpipes. Samples from pits and cess pits, floor surfaces, layers, beam slots, ditches and gullies, hearths, rampart make up and mortar deposits were also assessed. Of the 208 samples assessed 74 produced more than 50 items. Only three samples produced no seeds or chaff.
- 5.2.9 Grain dominated the majority of the samples assessed and was generally well preserved. Free-threshing *Triticum* sp. (wheat) and *Hordeum vulgare* (barley) were most commonly noted, while *Avena* sp. (oats) and *Secale cereale* (rye) were also present. The identification of chaff should enable the refinement of the cereal identification. While weed seeds often seem to be limited there are several samples with significant assemblages which should provide valuable evidence for crop processing activities as well as cultivation conditions. Pulses and some fruit also appear to be represented and identification should further refine and extend the species list. While charcoal was present in many samples the quantities are generally low. Those samples with more abundant charcoal should provide useful indication of both structural wood and fuel wood usage.
- 5.2.10 A total of 29 samples were assessed from Phase 2 deposits, including six samples taken from the moat, five of which were examined for waterlogged remains. The majority of charred assemblages assessed were taken from pits, while samples were also examined from a beam slot, floor deposits, graves, a post-hole and rampart deposits. Charred remains were more limited than for the Phase 1 deposits with six samples only producing more than 50 items (two from pits, one from a posthole and three from rampart deposits). Four samples produced waterlogged plant remains.
- 5.2.11 A total of 28 samples were assessed from Phase 3 deposits. Of the samples assessed, eleven were from burials which were processed by hand for the recovery of bones but had also produced small flots. Other samples were assessed from a beam slot, ditch, moat, pits and postholes.
- 5.2.12 One sample, from a beam slot, produced a grain rich assemblage with over 100 grain and occasional weeds. The remaining Phase 3 samples produced occasional grain and weeds only, and three produced limited chaff. Charcoal was present in small quantities in several samples but in more abundant amounts in only three. The cereal

species noted were free-threshing *Triticum* sp., *Hordeum vulgare* and *Avena* sp. Pulses were noted in one sample and *Corylus avellana* fragments in another. One sample was assessed for waterlogged remains. A large quantity of waterlogged wood was noted including large fragments of branch wood. No weeds were noted.

- 5.2.13 Monoliths and incremental columns samples were taken from the Phase 1 rampart deposits, so as to study soil micromorphology and pollen. Monoliths and incremental column samples were also taken from the Phase 2 and 3 motte ditch deposits, so as to study pollen and snails. The samples will be looked at in full during the next phase of work.

6 STATEMENT OF POTENTIAL

6.1 General

- 6.1.1 The stratigraphic and significant artefactual and environmental assemblages have potential to illuminate the development of the south-west corner of Oxford through the late Saxon period. Identification of activity and consumption patterns should be possible within the late Saxon townscape. Evidence for activity within the medieval period is primarily limited to the area of the motte ditch, although smaller areas of activity were revealed during the watching brief. Apart from gravel quarrying, there is very little evidence for post-medieval activity within the castle, prior to the building of the prison in the later part of the 18th century.

6.2 Stratigraphic

Saxon

- 6.2.1 Evidence was recovered for late Saxon cellar and cess pits to the north of the site, and a timber hall to the south of the site. Evidence for the late Saxon rampart and wall, defining the southern limits of the town, was also revealed. Detailed analysis of the stratigraphic evidence should enable us to refine the provisional understanding of dating and phasing.
- 6.2.2 The evidence for timber structures to the west of the site is sealed by a cultivation soil and is relatively undisturbed. The pits to the north of the site, although truncated by later activity, also merit further analysis. It may be possible to determine whether the settlement evidence and properties lay within the Saxon burh or were extra-mural dwellings.
- 6.2.3 To understand more about the Saxon features revealed during the excavation, comparisons can be made with other Saxon sites within Oxford, such as the Clarendon Hotel and the new County Hall, and elsewhere. By comparing Oxford with other English Saxon towns, the results can be understood in their wider context.
- 6.2.4 The watching brief revealed evidence for a large cut feature, or features, to the south-west of the site. The relationship between this ditch or group of pits and the late Saxon rampart and castle rampart needs further analysis.

Medieval

- 6.2.5 The main evidence for medieval activity within the castle comprises the motte ditch, a limited number of pits, an earthen rampart, limited structural evidence and several burials either side of the Chapel of St George.
- 6.2.6 An analysis of the stratigraphic sequence within the motte ditch may reveal whether the ditch was regularly scoured or cleaned. It may be possible to determine when the ditch ceased to have any defensive function by analysing the sequence of dumped deposits.

- 6.2.7 The profile of the motte ditch bottom should be compared to local river levels, this may shed light on the function of the large sumps and/ at the base or quarries. It is possible that they were linked with a culvert beyond the excavation area.
- 6.2.8 The sequence of dumped deposits may also reveal whether the motte ditch was used for disposing of waste from the town as well as the castle.
- 6.2.9 The medieval pits should be fully analysed so as to determine their functions.
- 6.2.10 The construction methods employed within the castle ramparts can be studied through the stratigraphic evidence. The relationship between the castle defences and the late Saxon town may also be better understood.
- 6.2.11 The understanding of the stratigraphic relationship between the castle structures, ramparts and late Saxon deposits may also be refined.
- 6.2.12 It is possible that some of the burials to the north and south of the Chapel of St George were late Saxon in date. An analysis of the stratigraphic sequence may refine the phasing of these burials.
- 6.2.13 The structures seen below D Wing should be compared to those seen in the 2002 evaluation and understood in relation to the D Wing building recording survey. It may be possible to determine whether all the structures relate to a chapel, or perhaps form part of later buildings.
- 6.2.14 To understand more about the archaeology of the medieval and post-medieval castle, comparisons will be made with other motte and bailey castles, both nationally and internationally. In particular the site should be compared with Wallingford Castle.

The Civil War

- 6.2.15 It is possible that the sally port seen within the Tidmarsh Lane area was constructed during the Civil War. An analysis of the stratigraphic sequence of the area may help refine the provisional understanding of dating and phasing.

Post-medieval

- 6.2.16 There is limited stratigraphic evidence for activity within the Castle in the post-medieval period. Further stratigraphic analysis of the burials within the upper motte ditch fills may provide more accurate dating and phasing for the burials.
- 6.2.17 An analysis of the evidence for pleasure garden features, within the motte ditch, may also help define when the ditch was no longer used as a burial ground.
- 6.2.18 The post-medieval canalisation of the outer castle ditch should be studied. It may be possible to refine the dating of the encroachment of the town into the castle ditch.

6.3 Artefactual

Pottery

- 6.3.1 This group of pottery is one of the largest excavated in Oxford in recent years, being even larger than that produced by recent work at Merton College (Blinkhorn forthcoming). It demonstrates activity within the site from the Roman period to the present day. What is perhaps unique about this site is the drastic change of the status of the occupants in the medieval period: From amongst the highest in the medieval period, to perhaps the lowest from near the end of that period to very recent times.
- 6.3.2 Analysis of the late Saxon assemblage may allow us to refine the date of the structures, the construction of the burh and the possible road surface. We may be able to refine the date of the cultivation soil beneath the castle ramparts.
- 6.3.3 A study of the medieval pottery assemblage from the motte ditch would provide a detailed picture of the changing status of the castle. The assemblage has a high potential, by comparing it with material from other excavations in the city, to show differences in the way pottery was used by different strata of society.
- 6.3.4 The assemblage recovered from the infilled cellar within the bailey area, gives us a snapshot of the status of the Castle in the 14th century. In the medieval period, assemblages such as those from the Beaumont Palace, Eynsham Abbey, Lincoln College and others of a humbler status could prove useful comparators.
- 6.3.5 The post-medieval pottery assemblage was mostly recovered from quarry pits and the upper moat fills. One can not be certain that the material derives from activity within the castle, and much of it cannot be securely linked to activity within the prison. Its potential for further analysis is therefore limited.

Ceramic building material (CBM)

- 6.3.6 Much of the building material was recovered from post-medieval quarry pits and dumped deposits within the upper, post-medieval levels of the motte ditch. Sample sizes are limited, and the material is unlikely to contribute much additional information about the prison. Further analysis would not necessarily shed further light on the types of structures within the castle. However, the analysis of the building material fabrics recovered from the medieval fills of the motte ditch should be undertaken, since it may shed light on patterns of supply to the site and products that may have been manufactured on or close to, the site itself. Further work will focus on material from early and well dated contexts of intrinsic interest.
- 6.3.7 The remaining ceramic and stone building material assemblage should be fully quantified for archival purposes only.

Clay pipe

- 6.3.8 The assemblage has little potential for further study. Material collected during the watching brief should be recorded by the specialist. The most interesting group is likely to be the pipes of Civil War date.

Fired clay

- 6.3.9 The material should be quantified for archival purposes, but since some of the material is daub it will be considered in combination with the structural evidence.

Worked animal bone

- 6.3.10 The possible gaming piece/beakhead and the hammer head are unusual and would benefit from further research.

Glass

- 6.3.11 The assemblage is an interesting and varied one. All the medieval material should be fully catalogued and reported as it is comparatively rare within the archaeological record. The post-medieval material would not shed further light on activity within the castle or prison and as such will be quantified for archival purposes. However, the post-medieval material will be scanned for objects of intrinsic value.

Stone

- 6.3.12 A report could be written putting the finds into context from the point of view of overseas trade, while drawing together the information from earlier excavations in Oxford. The worked stone from the 1965 – 73 work at the Castle might benefit from further examination. It would be interesting to discover the purpose to which the faceted chalk objects were put, although realistically it may only be possible to suggest how they may have been used.

Slag

- 6.3.13 No further work is necessary on the iron slag, although the copper slag should be examined by a relevant specialist.

Copper alloy and lead

- 6.3.14 The sample assemblage that has been looked at for this assessment hopefully reflects the assemblage as a whole. Personal items were well represented, as was seen in the previous excavations of the Castle in the 1960's and 70's (Hassall 1976). Together with this earlier material it represents the largest collection of material from a Castle site in the region. However, much of the material was redeposited and recovered from post-medieval quarry pits and dumped moat fills, therefore it cannot be attributed to specific activity within the castle. The finds will be recorded on a database for archival purposes, any further analysis will concentrate on objects from securely dated contexts and objects of intrinsic interest.

Iron

- 6.3.15 The sample assemblage that has been looked at for this assessment hopefully reflects the assemblage as a whole. Horsegear and knives are all well represented and a brief scan of the x-ray plates of the remaining material reveals many more examples of knives, spurs and horse harness fittings. The assemblage is very similar to the material recovered from the previous excavations of the Castle in the 1960's and 70's (Hassall 1976), in that it contains a wide range of material covering the whole history of the Castle from the late Saxon to the post medieval period. Together with this earlier material it represents the largest collection of material from a Castle site in the region. However, like the copper alloy assemblage, much of the material was redeposited and recovered from post-medieval quarry pits. The finds will be recorded on a database for archival purposes, any further analysis will concentrate on objects from securely dated contexts and objects of intrinsic interest.

Coins and tokens

- 6.3.16 The copper-alloy finds could be conserved for long-term storage, as most of them have deposits of corrosion products. Conservation would probably not lead to substantial enhancements of the identifications in general.
- 6.3.17 The Henry IV halfpenny (520) might be deposited in a museum, as it is an example of a rare type probably not represented in many museum collections. This coin and the Oxford farthing token (100) might be photographed. The Oxford farthing might be suitable for display or publicity after conservation, as it was issued locally.

Flint

- 6.3.18 The flint from Oxford Castle can be broadly dated to the Neolithic and Bronze Age. Its presence implies prehistoric activity occurred within the area. The small assemblage and the lack of any prehistoric features makes further analysis unnecessary. Therefore no further work is recommended. The assessment report should be revised and will form the basis of the final report. Flint recovered from the watching brief will need to be recorded and incorporated into the final report.

Leather

- 6.3.19 The leather comes from well-stratified deposits and can be closely dated. It is of both local and regional interest; little of this date has been published previously from the city. It shows the shoe styles worn by the local population and provides evidence for the repair and manufacture of shoes in the locality during the late 11th-early/mid 12th century period. Of particular interest is the occurrence of shoes in the Saxo-Norman (Anglo-Scandinavian-Norman) tradition amongst this group. Their study will add to our understanding of the transition at this time as reflected in technological change and is of wider, national, interest.
- 6.3.20 The cattle hide panels will require study as non-shoe leather of this date is of particular interest. Should the fragments come from a leather bucket it will be the

earliest dated example known to the author; previous examples coming from late medieval and Tudor contexts.

6.4 Environmental

Wood

- 6.4.1 Much of the wood assemblage consists of roundwood which, though of interest as a group, may be discarded, unless English Heritage consider C14 dating to be necessary. There is insufficient material to justify a tree ring study on this component of the assemblage.

Shell

- 6.4.2 The material should be quantified for archival purposes only.

Human bone

- 6.4.3 There appeared to be evidence for a range of pathological conditions including facial palsy, which may be indicative of syphilis. The discovery of much of the material in the moat ditch was unusual and increases the value of the assemblage. In addition there was considerable evidence for anatomical dissection of a number of skeletons. There is great potential to further study Saxon and medieval pathology and anatomy, and to understand more about the treatment of executed prisoners in the post-medieval period.

Animal bone

- 6.4.4 There is good potential for the animal bones from this site to reveal the importance and use of animals to the local population through time. Even from this assessment changes in the importance of the main domestic species can be seen, with sheep/goat dominating all phases with the exception of Phase 3.
- 6.4.5 Further analysis should concentrate on the material recovered from late Saxon contexts and from the medieval moat and pit fills. Further analysis of this bone will allow us to determine age at death patterns, any changes in size of the animals between the different phases, and any distinct butchery or disposal methods. Analysis of the sieved material may also reveal the presence of small mammals and fish, which will identify any species of fish that were contributing to the diet of the populations present through the phases of the site.
- 6.4.6 An analysis of the material from the post-medieval moat fills would increase our understanding of changes in size of the animals between the different phases, and any distinct butchery or disposal methods. However, this information would not necessarily increase our understanding of diet within the post-medieval castle. The bones may have originated from outside of the castle walls. The bone recovered from the post-medieval quarry pits is likely to be redeposited and cannot be attributed to a single phase. There would be little merit in fully analysing this material.

Plant remains

- 6.4.7 The Phase 1 samples included several grain rich assemblages from possible structural contexts. Such assemblages should provide an informative indication of storage patterns and spatial use as well as crop husbandry practices. The pit samples should conversely provide some information about refuse disposal as well as crop husbandry practices, while the mineralised deposits will provide additional dietary evidence not usually recovered from charred assemblages (such deposits tend to be associated with human sewage). It is therefore recommended that a selection of samples are sorted and analysed in full for charred plant remains from both structural deposits (postholes, beam slots, floors etc) and from secondary deposits (pits, ditches, hearths, rampart deposits). While it is important that all the richer samples (>100 items) are sorted it is also important to include a randomly selected range (at least 50%) of the smaller but still useful samples (>50 items) so as to reduce bias during the analysis and to ensure a representative range of samples have been examined. As the assemblages do appear to be fairly repetitive it is not necessary to sort all the samples with useful numbers of remains. The seven deposits which produced mineralised remains should also be sorted.
- 6.4.8 The Norman/early medieval period is an important one for arable development and crop introductions. As such charred plant remains are important in establishing the extent and date of new introductions and of establishing to what extent new cultivation systems impact on the archaeological record. While the remains from Phase 2 are much more limited than for the previous phase there is scope for useful information from several assemblages, particularly from pit deposits. It is recommended that the six samples with larger assemblages (>50 items) are sorted and analysed in full as well as two waterlogged deposits (contexts 7283 and 7294)
- 6.4.9 The range of material and the number of samples with useful quantities of seed and chaff is limited for Phase 3. One sample from a beam slot did produce a large amount and grain and it is worth while sorting this sample, although it is difficult to assess how representative of a phase a single sample is. The remaining samples, including those from the graves are likely to be dominated by redeposited material or 'background' noise and as such they have limited use. The grave samples did not produce any material which could be interpreted as derived from stomach contents. To provide a bit more representative cover for this phase it is however recommended that some time is spent sorting a selection of samples.
- 6.4.10 It is also recommended that some time is allowed for a charcoal specialist to assess and examine charcoal from a selection of samples for each phase, and time is allowed for analysis of the monoliths and incremental samples.

7 RESEARCH AIMS

7.1 General aims

- 7.1.1 To elucidate the full sequence of settlement and other activity on the gravel terrace on which Oxford is located.
- 7.1.2 To characterise the late Saxon occupation of the site and place this in the context of late Saxon urban development in Oxford and the wider region.
- 7.1.3 To examine the impact of the imposition of the castle on the earlier settlement both in terms of urban topography and socio-economic consequences.
- 7.1.4 To elucidate the physical appearance of the castle and its development sequence and to consider this in relation to royal castles generally and to other castles in the region.
- 7.1.5 To consider the late medieval/post medieval development of the castle in terms of broad patterns of changing functions of castles.
- 7.1.6 To establish the extent and significance of refortification of the castle during the civil war.
- 7.1.7 To consider the role of the castle in its urban context from the later 17th century.
- 7.1.8 To identify any other post medieval features, in the light of the north-south ditch found in Area A in 1999 and in Trench 19 in 2002.
- 7.1.9 To further consider the effect that the construction of the prison had on the castle and its underlying deposits.
- 7.1.10 To consider the evidence for the last surviving medieval buildings around St George's Tower in the 17th-18th centuries.
- 7.1.11 To consider the character of the 18th and 19th-century prison buildings in the light of changing fashions in penal practice.

7.2 Specific research aims

- 7.2.1 To recover evidence for pre-Saxon levels and deposits. Within Oxford City limits the gravel terrace, on the western edge of which the castle is sited, saw intensive activity at least from the Bronze Age, with a number of ring ditches located (for example in the University Parks and in the Sackler Library extension to the Ashmolean Library). Probable Iron Age settlement is also known in The Parks and Roman finds are widespread across the city centre. Direct evidence of Roman occupation has been recovered recently from Mansfield College and comparable evidence could occur anywhere on the gravel terrace.
- 7.2.2 To examine the earliest evidence for Saxon occupation, and to elucidate, if possible, phases of occupation within the Saxon period. Does the evidence suggest an urban

character, or is there a period of 'rural' settlement prior to the development of the Saxon burh? The castle site covers the west side of the pre-conquest (Saxon) town; neither the road system nor the western defences have been mapped with any certainty, though it is possible that St. George's Tower represents the west extent of the Saxon town. Further information relating to the layout of houses in relation to a main east-west road or minor side roads will be critical in analysing the pre-castle town layout.

- 7.2.3 What can the evidence of ceramics, artefacts and ecofacts tell us about the economic status of the west part of the Saxon town; can it enhance the understanding of the 'Norman transition' when the castle was imposed on the town?
- 7.2.4 To gather evidence for the layout of the earliest castle – initially for the location and nature of the likely earthworks defining the bailey associated with the castle mound and also for any timber buildings, which may have belonged to the first phase(s). The question of whether the motte and bailey earthworks were contemporary or of different phases can also be considered here.
- 7.2.5 To identify the extent and line of the motte where it extends around the base of the castle mound. To recover dating for the earliest deposits in the motte ditch, and to compare this dating with the earliest deposits in the moat ditch. To consider the management of the feature in terms of cleaning and re-cutting of the ditch. Particular attention will be given to environmental analysis of the ditch fills. Some excavated and documentary evidence suggests that the parts of the defences were reworked at least into the 17th century. It may be possible to start to define the extent of such activity.
- 7.2.6 The likelihood that there was a bridge across the motte ditch (in both primary and later phases) will be considered once again, in the light of the suggested clay causeway identified in Area A in the 1999 evaluation. The location of such a bridge, or a causeway would be a considerable advance in reconstructing the internal layout of the castle.
- 7.2.7 To investigate the relationship to these features of the later curtain wall that surrounded the castle. To recover evidence for the line of the north curtain wall, including consideration of negative evidence.
- 7.2.8 To enhance understanding of the internal layout of the medieval castle, about which almost nothing is known. The location of Shire Hall remains elusive but may still survive partly in the area of Area A. Other medieval structures are indicated in documentary information, but their whereabouts remain uncertain. Their location will be critical in understanding the layout of the castle. The post medieval use of the castle can be illuminated by the location of other structures related to its judicial and prison functions, such as the gallows and any additional ancillary buildings.
- 7.2.9 Evidence will be sought for the enhancement of the defences in the 1640s at the time of the Civil War and their subsequent demolition.

7.2.10 In the post medieval period the growth of the town of Oxford gradually encroached on the castle site – evidence will be sought for buildings surrounding or within the grounds of the castle, as they will be crucial when compared to the historic maps.

7.2.11 In the prison phase, the character of the prison yards and punishment buildings will be analysed in relation to the numerous historic plans that exist of the site. The first Governor's House actually lay within the prison grounds.

7.3 Research aims for human skeletal assemblage

7.3.1 While mass graves containing victims of plague are relatively common in the archaeological record, e.g. East Smithfield, London (Hawkins 1990) and Hereford Cathedral (Shoesmith and Stone 1995, 403), examples from scenes of conflict, or, in the case of Oxford Castle, possible executions, are very unusual. Towton is broadly comparable in date with the remains from Oxford Castle though differs in that all the burials therein had died during the Battle of Towton in AD 1461 (Fiorato *et al* 2000). Indeed, virtually all the examples referred to in that publication are from further afield, for example from France (King 1992) and Canada (Thomas and Williamson 1991). The material from Oxford Castle is therefore extremely rare.

7.3.2 The following research aims have been identified.

7.3.3 to isolate individual skeletons in the course of excavation (by using excavators competent in the excavation of human remains)

7.3.4 to estimate age, sex and stature

7.3.5 to identify and record skeletal pathology

7.3.6 to place particular emphasise on recording the presence and cause of any traumatic lesions present on the skeletons

7.3.7 to attempt to identify cause of death

7.3.8 to produce a detailed written and photographic record of all skeletal remains with particular emphasis on traumatic lesions

7.3.9 to date the skeletal remains, by means of high resolution Carbon 14 dating

7.3.10 to attempt, by means of primary historical research, to place the burials in an historical context

7.3.11 to compare aspects of the assemblage with the material from Towton

7.4 Revised aims

7.4.1 In the light of the provisional results of the excavation, the original research aims are still valid. However, in some respect the questions to be considered can be more precisely defined:

Prehistoric

- 7.4.2 Residual Neolithic and Bronze Age flints were recovered from the excavations. These finds should be discussed in relation to the other prehistoric evidence of Oxford. A Beaker burial was found at the Hamel, to the west of the site, and flint and a Beaker sherd were found at Church St and Littlegate.

Roman

- 7.4.3 The pottery and CBM assemblages need to be fully recorded to further confirm the absence/presence of Roman evidence.

Early to mid Saxon

- 7.4.4 The early to mid Saxon pottery assemblage should be discussed in the context of finds from elsewhere in the town.

Saxon

- 7.4.5 There was evidence for late Saxon occupation within the site; late Saxon cellar pits and cess pits were seen to the north (Area A) and a timber hall was revealed to the south (Area C). Do these structures represent suburban dwellings outside the town's defences, or were they within the burh?
- 7.4.6 The cellared buildings can be associated with similar results from Jope's and Hassall's excavations. Elsewhere in the town buildings of this type tend to be present on the main street frontages and are thought to be associated with trade. There does appear to be an absence of late Saxon features between the two identified cellared buildings and this may represent the location of a main street heading towards the town's western gate. It may be possible to determine whether there was a major river crossing on the west side of Oxford.
- 7.4.7 It may be possible to identify property boundaries from a spatial analysis of the pits within Area A and determine the density of occupation in this part of Oxford. Is it possible that the buildings originated in the 9th or early 10th century?
- 7.4.8 The late Saxon timber hall revealed within Area C is unique within Oxford. It should be fully studied and comparisons made with similar structures, both regionally and nationally. It may be possible to determine whether any particular industry was associated with the cellar pits and the timber hall by a comparison of the material remains, and particularly the environmental evidence.
- 7.4.9 It is unusual in late Saxon Oxford to have an apparently elaborate hall building without a large cellar underneath. The building does not appear to be the result of 11th century commercial build-up, unlike the buildings within Area A. It may be possible to find other sites with parallels of good late Saxon building preservation.
- 7.4.10 The post holes and beam slots were filled with deposits that contained a large quantity of cereal grain and it may be that cereal was stored on the premises. The

structure may have formed an annexe to a larger building and it is possible that grain was stored in the roof space where smoke would have kept it relatively free from insect infestation and relatively dry.

- 7.4.11 A possible road structure was exposed to the north of the timber hall; an accurate plot of the road should be made to determine whether it is the continuation of the Saxon Castle St. The road appeared to be very similar to a surface seen at Church St, to the east of the site. The road should be directly compared to this section of Church St and other known surfaces.
- 7.4.12 There is evidence for postholes that pre-date the gravelled road and beam slots that post-date the road. It is possible that the origins of the hall pre-date the construction of the rampart, the road may have been formalised during or after this construction. The buildings may have continued to expand after the construction of the road.
- 7.4.13 A composite plan should be produced projecting the known streets of the burh out to the castle site. The excavated buildings should then be plotted.
- 7.4.14 It appears likely that the earthwork seen along the southern limits of the site represented a rampart at the southern limit of the Saxon burh. The date of the rampart at Oxford has never been established, although the defences are assumed to date from as early as 911-912 when Oxford is first mentioned in the *Anglo-Saxon Chronicle*. However, a few sherds of Romano-British and 11th century pottery were recovered from the feature during the investigations. Monoliths taken from fixed points along the length of the earthwork should be compared. It may be possible to establish the construction sequence and any construction methods employed, specifically in the use of turfs.
- 7.4.15 The earthwork should be compared with evidence from elsewhere, especially the rampart seen at St Michael's St and St Michael's Church. The earthwork evidence seen at Cricklade and Wallingford should also be compared.
- 7.4.16 There is evidence for a large 10th century cut feature or features to the west of C Wing. The feature may represent the original western limits of the Saxon burh before it was extended in the later 10th or 11th centuries. It is also feasible that the deposits represent the fills of rubbish pits to the south of late Saxon dwellings. The feature may also define a first castle ward, although its alignment (though far from clear) appears to define an area to the east.
- 7.4.17 The deposits were overlain by the Saxon defensive earthwork but it is not clear whether the features were separated by a layer of ploughsoil. Monoliths were taken from the section of ramparts to the west and east of this ditch, the samples should be compared so as to establish whether the western part of the earthwork was a later addition from that seen to the east; specifically the sections of rampart seen at the base of St George's Tower (Area E) and below D Wing (Area D).

- 7.4.18 Large deposits of clean free-threshing wheat (probably bread wheat *T. aestivum*) barley, oats and rye were recovered from the rampart deposits. The range of crops are a good indicator of a Saxon date for the rampart. Redeposited Roman cereal would probably have been spelt wheat (*T. spelta*), as bread wheat is only present as a minor crop in the Roman period. It may be possible to obtain C14 dates from the charred grain. The large levels of processed grain also suggest that area was not just arable land before the construction of the rampart. It may be that the timber hall predated the rampart and may have been associated with large scale grain processing. It is also possible that the nearby Castle Mill may have been in existence before the Norman Conquest. The evidence from Old Windsor (unpublished) shows the establishment of a very substantial mill at a Royal centre on the river in the 9th century.
- 7.4.19 Two sections of wall were seen to retain the rampart. The wall to the east (Area C) appeared to have three different mortars within it; the wall to the west (Area D), although greatly truncated, had only one mortar type. It is possible that the different mortar types are indicative of repairs to an earlier wall. The mortar types should be compared, specifically to establish whether the mortar used to construct the wall to the east matched the western section of wall. This may indicate whether the retaining wall was present before the burh was extended to the west. The mortar types should also be compared with that seen within the town wall at St Michael's St.
- 7.4.20 If the westernmost rampart and wall are of a late Saxon date it is possible that St George's Tower is similarly dated. Although there is no direct relationship between St George's Tower and the rampart and retaining wall, these structures were seen directly below the tower, not some distance away from it and they are likely to be associated.
- 7.4.21 The presence of late Saxon burials at the foot of the tower is also significant. They might suggest the presence of a chapel or church before the foundation of the Chapel of St George. This would point strongly to the tower and an associated chapel forming part of the western gate into the burh, much as St Michael's formed the north gate. However, it is possible that the tower was constructed as part of the 11th-century castle and that it was constructed on existing earthworks, utilising the town's southern defences. The 'chancel' arch and imposts at the foot of the tower are of Norman design, the possibility of Norman craftsmen influencing Saxon construction techniques prior to the Conquest should be fully investigated.
- 7.4.22 The skeletal remains dating from the late Saxon period should be radio-carbon dated so as to confirm the date of their burial and the date of any Saxon chapel or possible gate church.
- 7.4.23 Careful examination of the pottery sequence, in conjunction with the stratigraphy, may aid in re-evaluating the current chronology of late Saxon pottery in Oxford.
- 7.4.24 The animal bone and environmental assemblages from this phase are likely to be some of the most important from Oxford and should be looked at in some detail. Detailed analysis at Lincoln College and 113-119 High St has been very informative.

Medieval

- 7.4.25 It has not been proved that the motte and its ditch were constructed in 1071. A careful analysis of the dating evidence from the basal fills of the motte ditch may give an accurate construction date for the motte. This will allow us to examine how the local populace was affected by the impact of the Norman Conquest. Was the Castle originally constructed with a large motte and bailey, thus causing the displacement of a large quarter of Oxford? Or was it built gradually with relatively small scale displacement of the local population? What was destroyed to make way for the castle.
- 7.4.26 Can the dating of the pottery that Joep recovered from beneath the motte be refined through our dating evidence?
- 7.4.27 From an analysis of the dating of the Saxon plough soil it may be possible to accurately date the construction of the castle rampart around the bailey. Can we determine the sequence in which it was built?
- 7.4.28 If it does appear that the motte, ditch and bailey rampart date from the 11th century, what was the form of the castle? Is it comparable to other excavated or well-preserved sites?
- 7.4.29 The deposits within the motte ditch, revealed within Area A, should be fully studied to determine the extent of any scouring of the ditch. The earliest deposits do appear to be of an 11th century date and it may be that the ditch was allowed to silt up fairly rapidly. Within the latest phase of watching brief work, on Tidmarsh Lane, it was noted that the motte ditch might have not continued all the way round the motte. Was the ditch short lived as a defensive structure? It is likely that the motte was located at the edge of the gravel terrace (Norton forthcoming) so there may not have been a need for a ditch to the south of the motte.
- 7.4.30 It is likely that the Saxon buildings were levelled to make way for the Castle, is there any evidence for this?
- 7.4.31 The material and environmental remains discarded within the moat and bailey may give an indication whether the occupants of the castle had a different diet, or material culture, to that of the late Saxon populace. It may be possible to determine what industry occurred within the castle. There was an abundance of leather shoes within the lower ditch fills. Did shoe manufacturing take place within the castle?
- 7.4.32 There appears to be an absence of military related artefacts. If the castle had a military function the moat should have produced large quantities of weapons, such as the 11th century moat fills at the Chateau de Mayenne (Early 1999). Where is the evidence for military activity during the Anarchy?
- 7.4.33 The functions of the pits within the bailey area should be fully explored. The material remains should be compared with remains within other bailey areas, both regionally

and nationally. The material remains should be studied to see if a change in role of the castle can be established.

- 7.4.34 A number of castle walls were revealed. Within Area A the northern curtain wall and a buttress/tower base were seen. A small bridge abutment was also revealed. The curtain wall was also revealed within Area E and sections of the east gate bridge were revealed within Area B. It may be that the walls represent various phases of building within the castle; contrasting the types of construction materials may aid in dating the builds. The structures should also be compared with those of other castles both regionally and nationally. This may determine whether the Area A curtain wall was buttressed or had a tower constructed over it.
- 7.4.35 A revised topographic plan of the Castle should be made. All known structures should be added. It is likely that the large robber cut and walls revealed within the watching brief to the south-east of Area A represented a large medieval building, possibly Shire Hall.
- 7.4.36 The cellar revealed within Area F lay beneath a large medieval building. The possibility that this was Shire Hall should also be investigated. If there were two large halls within the Bailey area one of the structures may have had a separate function such as a residence or garrison.
- 7.4.37 The burials within Area E were probably people of relative wealth, buried close to a chapel within a castle. It may be possible to determine whether they had a high standard of living, such as a rich diet, from their osteological records.
- 7.4.38 Some of the burials within Area E were within stone built graves or cysts. A high percentage of the burials were also children. Comparisons from other chapel graveyards should be sought; it may be determined that this area of child graves is due to topographic reasons rather than ecclesiastical trends. The angle of the chapel and the castle curtain wall would have created a narrow corner within the cemetery.

The Civil War

- 7.4.39 The possible sally port seen in the recent watching brief on Tidmarsh Lane should be compared with other examples such as Bristol Tower Harratz (Brian *Durham pers. Comm.*). It may be possible to determine whether it was a pre-existing castle structure or whether it was built during the English Civil War.
- 7.4.40 Apart from the work in Area H little evidence was found for archaeological features associated with the Civil War. Further examination of the material remains may shed light on the castle's changing role in the urban context.

Post medieval

- 7.4.41 How the castle's role was changing can also be studied through an examination of the post medieval structures. These should be compared with those shown on historic maps and drawings, particularly Loggan's 1675 map of Oxford. The level of

encroachment onto the castle ditch should be studied. It should be possible to identify property boundaries on the edge of the castle moat (within Area B) and compare them with those shown on historic maps.

- 7.4.42 A reconstruction of the ground plan of the buildings that occupied the site, immediately before its redevelopment in the 18th century, will be made through an analysis of existing paintings and drawings. This evidence will be compared with the evidence of the standing buildings and excavated remains.
- 7.4.43 The levelling of the ramparts and outer earthworks for the construction of New Road and the quarrying of gravel for the construction of the prison also need further examination.
- 7.4.44 The executed prisoners buried within the moat should be studied in more detail particularly for any evidence for anatomical dissection.

The Prison

- 7.4.45 The 18th-century prison buildings were a pioneering effort in building a new kind of prison. The evidence for the buildings and their use will be considered, especially in relation to their ancillary structures
- 7.4.46 The prison structures identified throughout the works should be plotted and compared with known plans. It may be possible to identify early prison outbuildings and walls.
- 7.4.47 The 19th-century prison buildings were part of a standard design applied to many prisons. The evidence for the character and use of the Oxford buildings will be considered, and the changes that were made to 18th-century buildings. Particular attention will be given to the 1840s boiler revealed within C Wing.

Paradise St

- 7.4.48 It is the intention that the results of detailed investigation of the castle moat during the recent excavation on Paradise Street (carried out by OA in 2004, on behalf of Ambroseden Court Ltd and St Peters College in advance of the construction of student accommodation) should be incorporated into the study. The assessment of the results of that excavation is nearing completion; once complete and the report issued, discussions between all interested parties will ensue as to the most practical means of publishing the results jointly (see Section 9.2 below).

8 METHODOLOGY

8.1 Stratigraphic

- 8.1.1 Matrices and digitised plans exist, in areas of clear stratigraphic sequences phasing will be established through detailed examination of the stratigraphy. Where the stratigraphic sequence is ambiguous, phasing will be established through spatial analysis and detailed examination of finds assemblages. Descriptions of groups of features and structures will be generated. Drawing briefs will be prepared.

8.2 Artefactual

- 8.2.1 In a category where no further analysis is recommended, the assessment report will be published, subject to any necessary adjustments. However, the ongoing watching brief has produced a large quantity of artefactual evidence, which will need reporting.

Pottery

- 8.2.2 The assemblage will be fully recorded for archival and dating purposes and compared to other relevant Oxford sites. Vessel reconstruction and cross-fit analysis will be carried out if appropriate. It may be necessary to adjust the dating of context-specific pottery groups from the evidence provided by the stratigraphic matrix. The report will follow the structure outlined in the publication synopsis (Section 9.2), with an appropriate selection of material for illustration.

Ceramic building material (CBM)

- 8.2.3 The ceramic and stone building material assemblage will be quantified for archival purposes. Analysis will be carried out on material from secure medieval contexts, and any items of intrinsic interest.

Clay pipe

- 8.2.4 The Civil War group should be compared to other assemblages and the material recovered from the watching brief should be catalogued for archival purposes.

Fired clay

- 8.2.5 The material will be quantified for archival purposes. Material of interest will be discussed in the stratigraphic narrative, as most of the assemblage is daub of structural origin.

Worked animal bone

- 8.2.6 The assemblage will be fully recorded for archival purposes. A publication report with illustrations will be prepared for items from securely dated contexts, and items of intrinsic interest.

Glass

- 8.2.7 The material will be fully quantified for archival purposes. The medieval assemblage and items of intrinsic interest will be reported and illustrations made.

Stone

- 8.2.8 The material will be fully quantified for archival purposes. Items of intrinsic interest will be reported and illustrations made.

Slag

- 8.2.9 The copper slag should be recorded and reported, the iron slag should be quantified for archival purposes.

Copper alloy and lead

- 8.2.10 The whole assemblage will be entered into a database for archival purposes. A report will be prepared on all securely dated Saxon and medieval material, and objects of intrinsic interest. Any post-medieval groups likely to derive from the prison or of intrinsic interest will also be reported. The report will follow the structure outlined in the publication synopsis (Section 9.2), with an appropriate selection of material for illustration.

Iron

- 8.2.11 The whole assemblage will be entered into a database for archival purposes. A report will be prepared on all securely dated Saxon and medieval material, and objects of intrinsic interest. Any post-medieval groups likely to derive from the prison or of intrinsic interest will also be reported. The report will follow the structure outlined in the publication synopsis (Section 9.2), with an appropriate selection of material for illustration.

Coins and tokens

- 8.2.12 Selected coins should be conserved and photographed.

Flint

- 8.2.13 The flint assessment will be revised and incorporate a brief overview of the Neolithic and Bronze Age evidence from elsewhere in Oxford. The flint, including any material from the watching brief, will be quantified for archival purposes. Objects of non-Prehistoric origin will be reported.

Leather

- 8.2.14 The assemblage needs to be conserved and catalogued for archival purposes. Further analysis will be carried out on well dated groups of items of intrinsic interest. A report will be prepared following the structure outlined in the publication synopsis (Section 9.2), with an appropriate selection of material for illustration.

Environmental

- 8.2.15 In a category where no further analysis is recommended, the assessment report will be published, subject to any necessary adjustments.

Wood

- 8.2.16 A brief report will be produced on all objects of interest, which should be drawn and then conserved to be retained for future study, archive or display. The remainder of the assemblage requires no further recording and unless required for other purposes, may be discarded.

Shell

- 8.2.17 The material will be quantified for archival purposes. The presence of shell will be noted in the description of relevant features.

Human bone

- 8.2.18 The assemblage should be fully recorded and reported.

Animal bone

- 8.2.19 The material from well dated Saxon or medieval contexts will be fully recorded and reported. The post-medieval material will be scanned for objects of intrinsic interest and quantified for archival purposes. The report will follow the structure outlined in the publication synopsis (Section 9.2).

Plant remains

- 8.2.20 A selection of samples will be fully sorted and analysed for charred, waterlogged or mineralised remains. Samples for charcoal analysis will be selected if appropriate. The monoliths and incremental samples will be processed and analysed. The report will follow the structure outlined in the publication synopsis (Section 9.2).

Radiocarbon dating

- 8.2.21 Expert advice will be sought from English Heritage on a programme of radiocarbon dating of samples from the late Saxon rampart, late Saxon building and late Saxon/early post-Conquest burials.

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APPENDIX 1 POTTERY*by Paul Blinkhorn*

The pottery assemblage comprised 8,985 sherds with a total weight of 149,296g. An additional 483 sherds were recovered after the assessment had commenced. The estimated vessel equivalent (EVE), by summation of surviving rimsherd circumference was 74.36. This is one of the largest groups of Saxon and medieval pottery ever excavated in Oxford, and appears very important in a number of areas. It contains one of the largest groups of early/middle Saxon hand-built pottery ever found in the city, and also some of the earliest late Saxon material, which almost certainly dates to the time of the construction of the *burh*.

The medieval and later assemblages are very large, and appear to have a number of differences from other contemporary sites in the city, which are almost certainly due to the status of the site. There is also the potential of some of the pottery to provide chronological information which could prove crucial to our understanding of the pottery used in the city, and in the region as a whole.

Fabric

The pottery was recorded utilizing the coding system and chronology of the Oxfordshire County type-series (Mellor 1984; 1994), as follows:

- F100: OXR: St. Neots Ware type T1(1), AD850-1100. 925 sherds, 7,990 g, EVE = 9.26.
 F101: OXB: Oxfordshire Shelly Ware, 9th – 11th C. 31 sherds, 541 g, EVE = 0.76.
 F200: OXAC: Cotswold-type ware, AD975-1350. 1,914 sherds, 28,159 g, EVE = 20.88.
 F202: OXBF: North-East Wiltshire Ware, AD1050 – 1400. 821 sherds, 10,962 g, EVE = 7.07.
 F205. OXZ: Stamford ware, 850-1100. 73 sherds, 526 g, EVE = 0.72.
 F300: OXY: Medieval Oxford ware, AD1075 – 1350. 1,412 sherds, 22,338 g, EVE = 13.95.
 F330. OXBK: Medieval Shelly Coarseware, AD1100-1350. 3 sherds, 98 g, EVE = 0.12.
 F352 OXAM: Brill/Boarstall ware, AD1200 – 1600. 2,149 sherds, 41,125 g, EVE = 15.37.
 F353: OX68: Potterspury ware, Late 13th - 17th century. 3 sherds, 95 g, EVE = 0.
 F355: OXBB: Minety ware. Early 12th - 15th century. 5 sherds, 123 g, EVE = 0.
 F356. OXBG: Surrey Whiteware, M13th – M15th C. 124 sherds, 2,415 g, EVE = 1.02.
 F403: OXBN: Tudor Green Ware, late 14th century - c. 1500. 117 sherds, 334 g, EVE = 1.09.
 F404: OXCL: Cistercian ware, 1475-1700. 50 sherds, 733 g, EVE = 0.34.
 F405: OXST: Frechen Stoneware, AD1550 – 1700. 88 sherds, 2,569 g, EVE = 0.64.
 F407: OXST: Langerwehe stoneware. c. 1350-1500. 1 sherd, 72 g, EVE = 0.
 F410: OXAM: Brill/Boarstall Tudor Green 'type, c. late 15th - 16th century. 198 sherds, 1,661 g, EVE = 2.43.
 F413. OXST: Westerwald stoneware. c. 1590-1800. 9 sherds, 171 g.
 F414. OXBEW: Staffordshire manganese wares. c. 1700-1800. 1 sherd, 14 g.
 F416. OXRESWL: Polychrome Slipwares, 17th century. 13 sherds, 663 g.
 F417: OXCE: Tin-glazed Earthenware, 1613 – 1800. 42 sherds, 599 g.
 F418: CRM: Creamware, mid 18th - early 19th C. 82 sherds, 657 g.
 F425: OXDR: Red Earthenwares, 1550+. 483 sherds, 19,172 g.
 F428: OXFI: Chinese Porcelain, c1650+. 8 sherds, 36 g.
 F429: OXEST: London stoneware. c. 1680 plus. 19 sherds, 559 g.
 F438: OXEST: Later English stonewares. c. M18th-19th. 4 sherds, 441 g.

F443: OXFM: Staffordshire White-glazed English Stoneware, 1720 – 1800. 57 sherds, 613 g.
 F445: OXNOTTS: Nottingham stonewares. c. 1690-1800. 6 sherds, 92 g.
 F446: OXBEWSL: Staffordshire-type slipwares. c. 1650-1800. 10 sherds, 265 g.
 F451: OXFH: Border wares, 1550 - 1700. 106 sherds, 3181 g.
 F1000: WHEW: Mass-produced white earthenwares, mid 19th - 20th C. 146 sherds, 1,634 g.

The following, not included in the Oxford type-series, were also noted:

F2: *Early-middle Saxon handmade wares*, AD450 – 850. 21 sherds, 272 g, EVE = 0.30.
 F102: *Thetford-type Ware* (Rogerson and Dallas 1984). Wheel-thrown sandy ware. c AD 900-1150. 8 sherds, 510 g, EVE = 0.2.
 F361: *London ware*, c. 1150-1350. 3 sherds, 128 g, EVE = 0.21.
 F1001: Misc. RB wares.
 F1002: Prehistoric

Chronology

At this stage, all the pottery assemblages have been given spot-dates based solely on the range of ware and vessel types present, with no account taken of the stratigraphy. This will be taken into account at the report stage, and dating adjusted accordingly.

Each context was given a seriated ceramic phase date, based on the wares present, as shown in Table A1.1.

Table A1.1: Ceramic Phase Chronology and Defining Wares

Phase	Date	Defining Fabric
E/MS	M 5 th – M 9 th	F2
LS	10 th – 11 th C	OXR
CP 1	E – L 11 th C	OXAC
CP 2	L 11 th – 12 th C	OXY, OXBF
CP 3	13 th – 14 th C	OXAM, OXBG, OX68
CP 4	14 th C	OXAM
CP 5	15 th – late 15 th C	OXBN
CP 6	L 15 th – M 16 th	OXCL, OXAM, OXST
CP 7	M 16 th – 17thC	OXDR, OXFH
CP 8	17 th – M 18 th C	OXREWSL, OXCE
CP 9	M – L 18thC	OXFM, CRM
MOD	19thC	WHEW

The pottery occurrence per ceramic phase is shown in Table A1.2. It indicates that there was activity at the site during the early or middle Saxon period, and then from the late Saxon period onwards. The range of late Saxon pottery types suggests fairly strongly that some of this activity dates from the very beginning of that period (see below).

Table A1.2: Ceramic phasing: pottery occurrence per phase by number and weight of sherds and EVE, all fabrics (including residual material)

Phase	No Sherds	Wt. Sherds	EVE
E/MS	4	48	0.07
LS	378	3677	4.26
CP 1	375	5477	4.67
CP 2	2928	39164	29.05
CP 3	1002	18293	10.57
CP 4	74	1888	0.89
CP 5	257	3315	2.45
CP 6	2385	39162	20.84
CP 7	274	6510	-
CP 8	441	12194	-
CP 9	441	10725	-
MOD	424	8838	-

Vessel Types

Table A1.3: Vessel occurrence per phase, expressed as a percentage of the EVE per Late Saxon and Medieval phase

	LS	CP 1	CP 2	CP 3	CP 4	CP 5	CP 6
Jars	3.95	3.60	24.75	6.81	0.41	0.86	5.51
Bowls	0.31	1.07	2.42	1.40	0.13	0.10	2.37
Jugs	0	0	1.44	2.36	0.35	0.76	9.66
Lamps	0	0	0.44	0	0	0	0
Skillets	0	0	0	0	0	0	0.13
Cups/Mugs	0	0	0	0	0	0.21	3.06
Bottles	0	0	0	0	0	0.52	0.11
Phase Total	4.26	4.67	29.05	10.57	0.89	2.45	20.84

The significance of the data is dealt with below.

Cross-fits

The following cross-fits were noted during the initial processing:

7159 = 7162, F300, both CP2.

8517 = 8420, F100, both CP2.

8517 = 8420, F202, both CP2.

In addition, a number of vessels were noted which appear to have sherds in different contexts, although they were not checked for cross-fitting at the processing stage. Limited cross-fit analysis will be carried out at the report stage, and will concentrate on distinctive vessels only. It has the potential to enhance the understanding of the taphonomy of the site.

Assessment

This group of pottery is one of the largest excavated in Oxford in recent years, being even larger than that produced by recent work at Merton College (Blinkhorn forthcoming). It shows the

importance of the area where the castle was constructed, from the earliest years after the Roman occupation to the present day. What is perhaps unique about this site is the drastic change of the status of the occupants in the medieval period: From amongst the highest in the medieval period, to perhaps the lowest from near the end of that period to very recent times. Thus, the assemblage has a high potential, by comparing it with material from other excavations in the city, to show differences in the way pottery was used by different strata of society in and around Oxford throughout the post-Roman period. In the medieval period, assemblages such as those from the Beaumont Palace, Eynsham Abbey, Lincoln College and others of a humbler status could prove useful.

Summary

Early/Middle Saxon

The small assemblage of early/middle Saxon handmade pottery from this site (21 sherds, 272 g, EVE = 0.30) is one of a number which have come to light in recent years, and appears to be one of the largest. Such material is a rare find in central Oxford. The first group of pottery of this period to be found in the city came from a ditch at St. Ebbe's (Mellor 1989, 198), and included three stamped sherds. The site also produced small groups of other redeposited hand-built early/middle Saxon material, (ibid. 201). Later excavations in the St. Ebbe's area produced another three sherds of such pottery (Blinkhorn in archive). A small number of organic tempered early/middle Saxon sherds were noted during the excavations in the cloister of St. Frideswide's church (Mellor 1988, 34). More recently, a group of five fairly large sherds (87g, EVE = 0.05), including two decorated examples of early Saxon date, were noted amongst the assemblage from excavations at Merton College (Blinkhorn forthcoming).

Late Saxon (LS)

The stratified late Saxon assemblage comprises 378 sherds (3,677 g, EVE = 4.26). It produced a number of sherds of interest. Two sherds of red-painted Stamford ware were present which must date to the time of the construction of the *burh* at Oxford in AD 911 or, at the latest, the earliest years of its occupation. Red-painted Stamford ware was manufactured at the Castle kiln in the town, and the site produced a series of associated dates for the end of production of the material (Kilmurry 1980, 32): an archaeomagnetic date of AD850 +/- 50; a radiocarbon date of AD837 +/- 77; and a coin of Alfred with a date range of AD890–925, with the main period of circulation most likely to be in the earlier part of the range. The Stamford ware assemblage also includes small jars, some with rouletted decoration, which tend to date to the earlier part of the production, and were present in quantity as wasters at the Castle kiln at Stamford. This assemblage is perhaps the earliest pottery associated with the *burh* of Oxford.

The assemblage of Thetford ware is also of note. Two sherds were noted at Lincoln College (Blinkhorn 2002, 235), another at Merton College (Blinkhorn forthcoming) and a single example from St. Ebbe's (Blinkhorn in archive), but this assemblage is larger than all the known finds from the rest of the city put together. The group includes the rim of a large handled storage jar, and shows the importance of Oxford in the late Saxon period, as this appears to be one of the most westerly finds of such pottery ever made.

Six sherds of early/middle Saxon handmade pottery were present in LS assemblages. Mellor (1994) has suggested that this tradition may have continued into the earlier part of the late Saxon period in some areas of Oxfordshire. The rest of the assemblage appears fairly typical of late Saxon sites in Oxford, comprising mainly St. Neots ware, along with small quantities

of Oxfordshire Late Saxon Shelly ware, but comparison will be made with other contemporary groups from the city to see if this is indeed the case.

Saxo-Norman (CP1)

This group comprised 375 sherds with a total weight of 5,477 g (EVE = 4.67). In theory, it dates to the period up to the construction of the first castle in AD1071, for it was previous work at this site which provided crucial dating evidence for much of the Saxo-Norman and early medieval pottery in use in the city (eg Mellor 1994, 71). This allows the first opportunity since then to confirm or enhance the known chronology of the period. At present, these groups from this site are solely dated by seriation; the stratigraphic evidence from these excavations will be crucial.

The bulk of the assemblage comprises Cotswolds wares (303 sherds, 4,742 g, EVE = 4.08), along with a smaller quantity of St. Neots types (68 sherds, 609 g, EVE = 0.51) and a few sherds of Stamford ware. This is a fairly typical pattern for the city. The range of vessel types appears fairly unremarkable, comprising jars and a few bowls. Jug rims are entirely absent, which is not entirely surprising as such vessels were not common at that time. Comparison with other sites in the city will confirm this or otherwise.

Early Medieval (CP2)

These groups should date to the period immediately following the construction of the castle, but as with the CP1 groups, this will need to be confirmed with reference to the stratigraphy of the site. It is a large group of pottery, comprising 2,928 sherds with a total weight of 39,164 g (EVE = 29.05). Around 30% of the material is fabric OXY, 35% OXAC, 20% OXBF, and 5% OXR, along with small quantities of Oxford Shelly ware, again a fairly typical pattern for Oxford. Regional imports in the form of Stamford, Thetford, Minety and south-east midlands Shelly ware are also present in small quantities, however. As with the Saxo-Norman pottery, analysis of groups which can be related to strata from the construction of the castle are potentially of the utmost importance to our understanding of the pottery of Oxford and the surrounding region. It may also be possible to confirm or enhance the known chronology of the period. The lack of imported continental wares needs further investigation.

The complete lack of jug rims from this phase, as with the preceding one, is somewhat unusual. One of the staples of the Oxford ware (OXY) industry was the tripod pitcher, and although bodysherds of such vessels were noted, the lack of rims seems a little unlikely to be due to the vagaries of archaeological sampling given the size of the assemblage. This was a pattern that was noted at the Sackler Library site (Blinkhorn 2001), the site of Beaumont Palace, and appears to be a trait of high-status sites; metal and glass, rather than pottery, serving vessels appear to have been the norm. However, fragments of lamps and a fire-cover were noted, showing that more mundane pottery was in use in some parts of the castle.

Beaumont Palace served as a Royal Residence between c 1132 and 1318 and it is presumed that Stephen resided there during the Anarchy, whilst Matilda was based at the castle. A comparison between the pottery assemblages should be made.

High Medieval (CP3 – CP4)

Around 30% of the pottery is Brill/Boarstall types, but a further 30% is OXY, 20% OXAC, and 10% OXBF. Regional imports are again present in the form of Minety wares and Surrey Whiteware, and a few sherds of Stamford ware, although the last-named may be residual.

A wide range of vessel types were noted, with bodysherds from bunghole cisterns and bottles being relatively common, although jugs still appear to be somewhat under-represented, despite being present. This is perhaps a significant trait, as it has been noted at sites such as Eynsham Abbey (Blinkhorn 2003), and appears to be a pattern of medieval institutions where catering and related activities are practised on a large scale. What is also perhaps of note is the complete lack of pottery relating to the storage, preparation and consumption of food. This is primarily because the bulk of the assemblage was recovered from the fills of post-medieval quarry pits, or dumped deposits within the motte ditch. As such the assemblage cannot be associated with any known activity within the castle.

Late Medieval (CP5)

About 70% of the pottery from this phase is OXAM types, with over 10% residual earlier types. German Stoneware and Surrey 'Tudor Green' types and whitewares are also present in small quantities. The assemblage has a relatively large number of cups and bottles, and the proportion of jugs is more in keeping with an assemblage of this date. The comments relating to the lack of pottery related to food with the preponderance of drinking vessels noted in the previous phase also applies here, and will be given appropriate consideration at the report stage.

Latest Medieval (CP6)

The end of this phase sees the Castle first used as the County Gaol. Brill/Boarstall wares still make up over 70% of the assemblage, but over 15% of the pottery is residual medieval material. Brill/Boarstall 'Tudor Green' types are relatively common, representing over 10% of the identifiable vessels. Nearly 10% of the assemblage is made up of Surrey Whitewares, the largest assemblage from the city of Oxford, and Cistercian wares, German Stonewares and Surrey 'Tudor Green' types are also present in reasonable quantities.

The Brill/Boarstall 'Tudor Green' types were most likely made at Ludgershall in Buckinghamshire, where a large group of kiln wasters was recently excavated (Blinkhorn in press). The material from the manufacturing site was only dated on stylistic grounds, so the stratigraphic evidence from this excavation has the potential to refine the chronology of this important ware type. Unfortunately much of the castle assemblage was redeposited within post-medieval moat fills.

A large amount of drinking pottery was noted from this phase, particularly Brill Tudor Green mugs. Many are highly decorated, with applied plastic faces, and some of the German Stoneware mugs are more decorated than is usual. Jugs are also very common, and bodysherds from a number of cisterns and drinking jugs were noted, indicating that the main role of pottery at the site at that time was related to the storage and consumption of drink. Again, the comments relating to the lack of pottery related to food with the preponderance of drinking vessels noted in the previous phase also applies here, and will be given appropriate consideration at the report stage.

Early Post-Medieval (CP7)

This assemblage, which covers the early period of use of the castle as the County Goal is dominated by utilitarian wares, with red earthenwares accounting for nearly 50% of the pottery, Brill wares nearly 15%, German stonewares around 15%, with around 20% of the group being residual medieval wares, and the rest small quantities of Border wares and Cistercian and Tudor Green types. Perhaps significantly, Brill Tudor Green types are entirely absent from this phase.

Late Post-Medieval (CP8)

Around 20% of the pottery from features of this date is residual. The rest is again made up of largely utilitarian pottery. Border wares and Red Earthenwares account for around 60% of the assemblage, with fine-wares such as Cistercian wares (2.5%), Tin-Glazed Earthenware (3%), white salt-glazed stoneware (<1%), Staffordshire slipwares (<1%), early English Stonewares (3%), polychrome slipwares (<2%) and Chinese Porcelain (two small sherds) are very under-represented, which is perhaps to be expected given the use of the Castle at the time. German stonewares comprise around 9% of the assemblage. This appears very different to the proportions of ware types normally encountered at domestic settlements of the period, and the report will deal with this.

Early Modern (CP9)

Nearly 20% of the pottery from this phase is residual, and, as with the preceding wares, most of the assemblage comprises cheap, utilitarian pottery. Red Earthenwares and Border wares make up 60% of the assemblage, with Creamware comprising 5%, white salt-glazed stoneware 4%, Nottingham Stonewares <1%, English Stonewares 6%, and small quantities of other wares making up the assemblage. As before, this is a different pattern to that normally encountered, and will be taken into consideration at the report stage.

Modern (MOD)

This period still sees the pottery assemblage dominated by Red Earthenwares (around 45%), with mass-produced white earthenwares making up less than 20% of the group and a very high residual content, over 30%. Some of the contemporary pottery is marked as 'prison issue', and will be looked at in detail at the report stage. Comparison with other sites in the city should also show differences, and their significance will be discussed.

It is therefore suggested that the following work will be necessary for the completion of the final report.

Specific*Early Saxon:*

Fabric definitions and discussion of the finds in the context of archaeology in the city of Oxford.

Late Saxon

Analysis of the assemblage and comparison with other sites in and around the city

Saxo-Norman and Medieval

Analysis of Saxo-Norman and early medieval groups in relation to the site stratigraphy, particularly in relation to features which have a relationship with strata from the construction of the castle.

Analysis of the assemblage, particularly in regard to vessel types and comparison with other sites in and around the city

Post-medieval

Analysis of the assemblages and comparison with other sites in and around the city

Modern

Analysis of the assemblages and comparison with other sites in and around the city

General

Adjustment of the dating of context-specific pottery groups from the evidence provided by the stratigraphic matrix, and generation of data tables.

Cross-fit analysis

Report writing and discussion of the significance of the assemblage in the context of the city of Oxford and the surrounding region.

Selection of sherds for illustration and , catalogue, and preparation of drawing briefs.

Editing, proofing, illustration checking and general administration

APPENDIX 2 CERAMIC BUILDING MATERIAL (CBM)

by J.Tibbles BA (Hons); AIFA

Summary

This report represents the results of an assessment undertaken on six boxes of ceramic and other building materials from within the moat at Oxford Castle. There are a total of c. 30 boxes of material but the material has not been fully quantified. The boxes were selected so as to represent all the phases of deposits within the moat.

The majority of the assemblage contained examples of medieval brick, floor and roof tile with only a small amount of wasters and underfired material. Smaller assemblages of stone roof tile of medieval date, mortar and plaster were also examined. The earlier material may have derived from buildings within the castle, but it is possible that the assemblage originated from buildings outside the castle, within the town.

A significant proportion of the ceramic assemblage showed typical evidence of hand-made brick and tile manufacture. The bulk of the assemblage was of medieval ceramic roof tile that includes pegged tiles and ridge tiles, both plain and glazed. The flat roof tile could be broken down into at least two further types. The exceptionally small brick assemblage of 28 fragments contained only 6 fragments with diagnostic traits the remainder being non-diagnostic.

The material displays typical evidence of dumping with residual evidence of demolished buildings that may have existed within the castle.

The Building Materials*Introduction & Methodology*

A total of 414 fragments of ceramic and stone building material weighing 29515 grams were submitted for examination. A further 22 fragments of miscellaneous materials weighing 1253 gms were also submitted for examination. All the fragments were retrieved from 81 contexts and were visibly examined using a 15x-magnification lens. Information regarding the dimensions, shape and fabric of the material was recorded and catalogued accordingly. It should be noted that the diversity of size and colour within the tile caused during the manufacturing process must be taken into consideration when comparing examples within collected assemblages and local typologies. The varying sizes and colours can be attributed to the variation in the clays used, shrinkage during drying, firing within the kiln or clamp and the location of the tile within the kiln.

*The Assemblage***Table A2.1. Assemblage Quantification.**

Form	No. of Fragments	Weight (g)
Brick	25	2327
Flat roof tile	318	22133
Ridge tile	12	1250
Floor tile	6	1190
Slate	27	515
Stone tile	15	1545
Stone	3	460
Unidentified CBM	8	95
Miscellaneous	22	1253
Totals	436	30768gm

The Brick*The Assemblage*

An assemblage of 25 fragments of brick, with a combined weight of 2327gms was submitted for examination. Only 8% retained evidence characteristic of their method of manufacture (i.e. moulding sand) suggesting that the slop-moulded method may have been an alternative method of manufactured.

Bricks: Hand-made manufactured bricks were made by the insertion of a wad of prepared clay into bottomless moulds, moistened and often covered in sand to facilitate the removal of the formed clay. The excess clay would be struck off, the form tipped out onto a palette board and removed to a prepared area of ground until partially dried, ready for firing. Early machine manufactured bricks were formed by hand presses which were eventually superseded by steam powered machinery.

Bricks were manufactured to the required shape as per their intended use within construction. The standard rectangular brick was for common usage, the more specialised shapes to form architectural features around arches, doors, windows and vaults.

The dimensions of bricks have been subject to periods of legislation. At York in 1505, bricks were standardised at 10" x 5" x 2 ½". Parliament decreed in 1571, that the size of a brick should be 9" x 4 ½" x 2¼", in 1725 the size should be 9" x 4 ½" x 2" and by 1777 8 ½" x 4" x 2 ½". By 1850 the size of bricks were generally 9 x 4 ½ x 3" (Dobson 1850,33) although by the turn of the 20th century this size varied slightly throughout the country (Rivington 1919).

Brick Discussion

Dating of bricks is highly contentious due to their re-use nature as a valuable building commodity. The standardisation of bricks by Parliament over the centuries helped to create a more uniform brick and better architecture.

All the brick fragments within the assemblage, with the exception of three joining fragments from context 7174, two joining fragments from context 6332 and one fragment from context 7262, were non-diagnostic and no further work is necessary. The three diagnostic fragments

displayed thicknesses of 38mm, 56mm and 42mm respectively. Only one fragment displayed more than one diagnostic trait (6332) which displayed a width of 124 mm and a thickness of 56mm (5" x 2 ¼"). Dating from thickness alone is tenuous, however, all the thickness identified were of a size contemporary with either medieval or early post-medieval manufacture. (Lloyd 1925, Brunskill 1990)

Of the 25 fragments examined 13 fragments (52%) displayed mortar stains or adhesions and 2 fragments (8%) moulding sand. Brick fragments from contexts 6332 and 7262 displayed evidence of burning suggesting either demolition material or elements of a brick hearth. Three fragments from context 7372 exhibited mortar on all faces and edges and are probably filler or course levelling pieces.

Four different fabrics were provisionally identified (F1, F16, F19, F20), of which 36% represented F1 and 36% F20, 24% F19 and 4% F16. At this stage of the assessment the source of the clay has not been attempted.

A single fragment of brick from context 7255 was identified as of mid 20th century manufacture and is therefore is likely to be an intrusion

The Ceramic Tile

Assemblage Description

An assemblage of 332 fragments of ceramic tile, total weight 23383 gms was recovered within which flat roof tile, ridge tile, hearth tile and floor tile were identified.

Roof tiles: Positions of the nibs and peg holes are usually described from the nib side of the tile, i.e. the underside as hung, not necessarily as made. Demand normally dictated the size and quality of flat roof tile which often varied until a statute was instigated in 1477 (17 Edward IV, c iv) that dictated the size. A flat tile was fixed at 10 inches by 6 inches by 5/8 inch (255 mm x 153 mm x 16mm), a ridge tile 13 inches long by 1/2 inch thick and a hip tile 10 inches in length with a convenient width and thickness (Celoria et al 1967,218). Early flat roof-tiles were suspended by projecting nibs or by peg/nails Alternately flat tiles were often secured by iron nails, as were ridge and hip tiles. Each layer of tiles overlapped the layer below and to make them weatherproof were bedded on moss. The lowest layers, and sometimes all the layers, were often pointed or rendered with mortar (Salzman, 1952. 233)

Flat Roof Tile

Three hundred and eighteen fragments of flat roof tile were identified of which fourteen fragments (4.5%) displayed means of suspension by pegholes ranging between 12mm-15mm in diameter. Thicknesses varied between 8mm - 18mm (mean thickness 13.8mm). Thirty-five fragments (11%) of the assemblage were classed as non-diagnostic.

Eighty-five fragments (27%) displayed mortar stains or adhesions and 181 fragments (58%) moulding sand and or moulding lips. A total of 83 fragments displayed glazes ranging from very dark brown (10YR/2/2) to yellow (5Y/7/8).

Five fragments from contexts 6261,6291,6778,7110, 7123 were heavily abraded, four fragments from contexts 7273,7255,7261,7096 displayed evidence of burning and two fragments from contexts 6291 and 6533 were of crude manufacture.

Seventeen different fabrics were provisionally identified (see table) of which 216 fragments (69%) represented F1 fabric.

Table A2.2: Fabric types x quantity

Fabric Type	Fragments
F1	216
F2	5
F3	3
F4	14
F5	1
F7	4
F8	25
F9	4
F10	1
F11	6
F13	10
F14	11
F15	2
F16	7
F17	3
F18	5
F21	1
Total	318

Ridge Tiles

Ridge tiles are specifically made for covering a roof ridge and according to Scott's description (1964), vary in shape between half-round (a semicircle of 7 ¾" diameter), hogback (half-round tiles with a raised centre), segmental (flattened half-round tiles) and angle (sharp angle bend with flat surfaces). Ceramic ridge tiles are generally either half-round or hogback in shape. They would be held in place by mortar and/or nails and overlap the adjacent tile, although in some cases may be butted up end to end.

Twelve fragments of ridge tile were identified within the assemblage from nine contexts (6266, 6291, 6584, 6832, 7151, 7252, 7256, 7258, 7261). Their thickness varied between 14mm-23mm (mean 18.25mm). Of the 12 fragments examined 6 fragments (50%) displayed mortar stains or adhesions and 5 fragments (42%) moulding sand and 6 fragments (50%) moulding lips. A total of eight fragments displayed glazes ranging from Dark yellowish brown (10R/5/8) to olive (5Y/4/4). The glaze and shape of the tile fragment from 6266 suggests that a finial aperture may have existed directly beyond the broken edge.

Five different fabrics were provisionally identified (F1, F8, F12, F15, F17), of which 66% represented F1 fabric.

Ventilator Ridge Tile?

A single fragment of ventilator ridge? tile 20mm thick was identified within the assemblage from context 6584. Its upper surface exhibited a dark yellowish brown (10YR/4/6) glaze.

The side ventilator was formed by cutting a simple rectangle within the sides of a ridge tile and folding the resulting flaps outward. Examples have been recorded from late 13th century contexts at Hull, east Yorkshire (Armstrong 1992).

Floor Tile

Six fragments of floor tiles were recovered from five contexts (6359, 7021, 7123, 7151, 7178). Thicknesses ranged between 18mm-30mm (mean thickness 26.3mm).

Where visible the tile sides displayed a 60° bevel and the underside keyholes. Mortar adhesions were identified on two fragments (6359, 7151) and a dark olive/dark brown/yellow glaze on a further three fragments (7021, 7178, 7251). The fragment from 7178 was heavily abraded.

Two different fabrics were provisionally identified (F6, F12), of which 83% were of F6 fabric.

Hearth tile

A single fragment of a hearth tile was recorded within context 6584. Underside displayed 8 skewered holes and mortar adhesions. It had 60° bevelled sides.

Unidentifiable

Within the assemblage, eight non-diagnostic ceramic fragments from contexts 6435, 7147 and 7267) were unidentifiable by form.

Ceramic Tile Discussion

The deposition of flat roof tile appears to be, albeit small, fairly evenly spread throughout the dumps. None of the contexts could be positively identified as demolition dumps although a few fragments may show evidence of demolition.

The contextual deposition of the ceramic tile assemblage is of limited interpretative value, although it does reflect a variety of forms and their use within construction. The material provides evidence for the architecture of buildings that may have had flat-tiled roofs capped with ridge tiles. The presence of the flat roof tile can be attributed to the dumping of the residual elements of the buildings known to have existed within or near to the castle

Although a few fragments from contexts 6533 and 6291 were of a crude manufacture and may represent repair pieces the majority of the assemblage was of good condition. Several fragments were heavily abraded and may represent casual deposition before their terminal dumping within the moat.

One fragment from 6604 displayed a 15mm square suspension whilst the remainder of the assemblage were all circular ranging in diameter between 12mm-18mm. The majority of suspension hole fragments (7) were 15mm diameter). Peghole tiles were in manufacture by the 12th century in Beverley, East Yorkshire (Tibbles *Forthcoming*) and generally 13th century elsewhere. The style continued through to the 17th century (Dunning 1987). A single fragment from context 7251 displayed a 15mm diameter round peghole at the top left-hand corner of the tile whilst the remainder were of insufficient size to determine the position of the peghole. Tiles with similar suspension methods have been recorded within 12th-13th century deposits at Beverley (Tibbles *op cit*).

Hearth tiles of a similar type to the fragment from context 6584 have been recorded at Southampton within 13th century contexts (Platt & Smith 1975).

Stone roofing tiles.

Stone slates were often called stone tiles and were common throughout the medieval periods. They went under various names such as sclatestone (1286), thakestone (1368) and Collywestons. Their popularity waned outside of their locality as transport costs rose. Stone tiles occurrence in areas of ceramic tile dominance may be the result of importation at times of low clay tile output (Armstrong 1987).

At Collyweston the limestone was of a fissile nature and quarried in large blocks that were allowed to weather over the winter exposing the bedding planes to the vertical. The action of water penetration and freezing within the planes would naturally split the stone into sheets suitable for tile making (Davey 1976).

Stone tiles were hung in the same manner as ceramic tiles by the use of wooden pegs placed through a hole close to the top of the tile. They were then hung over a wooden lath, partially overlapping the tile below. To prevent the rain from entry between the tiles they would be bedded on moss or rendered with mortar. A single hole was bored through the tile close to the upper edge often from both sides which gave a slight hour glass shape to the perforation. Battering of the tile was undertaken to thin down the upper edge of the tile to facilitate the overlap more closely (Salzman 1952). Smaller tiles were usually fish scale or lozenge in shape, however, stone tiled roofs close to their quarry source were often much larger.

All, bar one, of the roof tile fragments within the assemblage were of Jurassic Limestone, the exception being Micaceous sandstone, possibly a floor paver. Thickness of the tiles ranged between 6mm-20mm, but because of the fissile nature of the material a significant part of the assemblage is likely to represent laminae fragments of broken tile. A thickness range of between 10mm-20mm is closer to the true thickness of the original tiles.

The small assemblage of fragments suggests that none of the contexts contained sufficient material within their associated assemblages to represent a complete or even partial roof of stone tile. The material is therefore likely to be residual in nature and no further work is necessary.

The assemblage contained fifteen fragments of tile of which five display mortar adhesions/stains, and two displayed evidence of bored suspension holes ranging between 11mm-12mm. A further tile from context 7123 retained its full width of 115mm and displayed battered edges. Only one example exhibited evidence of burning within context 6659.

The lack of stone roofing tiles in comparison to clay tiles suggests that alternate methods of roof material were employed i.e. thatch, ceramic tile or wooden shingles. However, it is possible that the eaves of thatched or shingled buildings may have incorporated reclaimed stone tile. The value of building material cannot be overstated and both ceramic building material and stone tiles were re-usable commodities and therefore any demolished structure was likely to have been robbed and the materials used elsewhere.

Individual Finds of Intrinsic Interest (Medieval)

Three crudely carved discs in varying stages of production were recovered from within the ceramic building material assemblage, two manufactured from re-used flat roof tile fragments and one from glazed floor tile.

All the discs ranged in diameter between 45mm-60mm, each weighing 50gm. The fragments appear to be *chipped* at a 45° - 80° angle from one surface and completed from the reverse side resulting between 5 to 7 facets. None of the examples show wear or abrasions on any surface or edge.

Flat roof tile was generally the accepted raw material possibly because of its standard thickness of between 12mm -16mm and could be easily chipped to the desired diameter. Occasionally an alternate raw material was utilised such as stone (Watkin. 1993, Watkin. 1987). Discs shaped from potsherds also appear with assemblages but are generally much smaller in diameter (Moorhouse *et al*, 1992)

Although discs have been recorded within Roman contexts (Ottaway & Rogers 2002, Cool & Philo 1985) they generally appear from the 13th century and continue through to the post-medieval period where they are likely to be of a residual nature. Objects of a similar nature have been recorded at Beverley, Hull (Tibbles forthcoming) York, (Ottaway & Rogers 2002) Lincoln and Coventry (Woodfield 1981).

Their exact use is still arguable but previously they have been recorded generally under the generic terms of '*pot lids*', *counters* or tally markers. They are more likely; however, to have been used as gaming counters for the game of *Tabula* or *Tables*.

Roofing Slate

The Assemblage

Slate tiles have been found to vary considerably in colour and uniformity. It is generally found in Wales, the south-west of England and the Lake District. Within areas of quarrying, slate has not only been utilised for roofing but paving, steps, stairs, window sills and surrounds, copings, chimney pieces shelves, water tanks, gravestones and later damp proof courses (Clifton Taylor 1987, 158)

The fissile character of Welsh slate enabled it to be split into finer laminae than sandstone or limestone slates (6mm compared to 13-26mm) therefore significantly reducing the total roof weight and subsequently reducing the roof timber size. Welsh slate was initially exported to other parts of England by sea and later by canal and railway.

Slates were often preferred roofing material to ceramic tile as they were generally 33% lighter over the same area permitting smaller timber scantlings and required a less steeply pitched roof

It is debatable whether the colour of a slate can determine quality. Mitchell states that a good roofing slate should be uniform in colour and free from patches, compact, hard and rough to touch. Those, which are found to be greasy and purple in colour are usually inferior for roofing purposes (Mitchell 1919). However, others argue that the colour of slate is not much of a guide to quality (Rivington 1919, 25).

The practice usually denotes that the steeper the pitch the smaller the slate. On roofs where mixed sizes are incorporated the smaller slates were generally along the ridge and the largest along the eaves.

Table A2.3: Slate Thickness

Context	Fragments	Thickness mm
6375	1	5
6506	3	4-8
7177	5	3-8
7342	2	3
7344	7	1-8
7358	1	4
7372	8	3

The majority of the slate assemblage (22 fragments = 82 %) displayed a thickness of <5mm and represented thin laminae of broken slate. The remainder was of a thickness that fell within the 5-10mm range ($\frac{1}{4}$ "- $\frac{3}{8}$ "). No evidence of part or complete suspension nail holes.

Slate Discussion

Ten fragments of slate bore residual mortar adhesions/stains suggesting use as roofing material; however, three fragments displayed mortar adhesions either over one or all of the broken edges. These fragments may represent either *filling* pieces within the roof construction or damp coursing from within the lower brick wall courses.

Based upon the manufacturing and geological characteristics all of the slate assemblage appeared to represent Welsh slate from the post-medieval periods. When based upon thickness, the slates do not appear to represent other aspects within a building such as sills, thresholds, floors etc, but are the residual elements of roofing material. The overall quality of the slate was good with no evidence of laminating. No further work is necessary.

Stone

The Assemblage and Discussion

The exceptionally small stone assemblage of three fragments may suggest possible residual elements of stone floor or roof tile. The fragment from context 7261, which displays burning, may represent demolition burning or possible hearth fragment.

The Mortar

The Assemblage and Discussion

Scotts dictionary of building describes "*mortar*" as a mixture of Portland cement, lime putty and sand in the proportions of 1:1:6 or 1:2:9 for the laying of bricks and stones. Until the manufacture of cement became general, lime-sand mortars were universal. The natural limes and cements that are used to build structures are produced by the natural calcination of limestone or other calcareous minerals. Materials such as limestone from which the production of limes and cements is extracted differ greatly within their composition which range from carbonate of lime (calcium carbonate) such as chalk, to stones that can contain between 10-30% clay (Rivington 1919).

Early mortars were composed of 1 part lime to 2 or 3 parts sand within which the Romans often mixed pounded tile in an attempt to render exterior walls impervious to rain (Rivington 1919, 149). By the medieval period lime could be purchased ready burnt or burned in kilns especially constructed in the neighbourhood. If sea or shore sand was to be mixed with the lime it was preferred to have been extracted in the winter months when rains washed out some of the salt which made it unsatisfactory for building purposes (Salzman 1952.152). Ideally mortar should not contain dirt, silt or vegetable matter (Brunskill 1990, 59-60) although within the 19th century attempts were made at matching mortar with brick colours. A black mortar was obtained by mixing 1 of lime to 3 of ash, ground clinker or black moulding sand from the foundry or blacksmiths shop. In the belief of obtaining greater strength iron filings and foundry scale was mixed with the lime (Brunskill 1990, 60).

No scientific analysis of the material has been undertaken, however all the mortar samples have been visibly examined using a 10x-magnification lens and described accordingly. Of the six fragments within the assemblage, five were identified as a fine mortar whilst a sixth fragment from context 7123 was of a coarser fabric. The material was similar in colour, grey/white (2.5YR/8/1) with occasional inclusions to <2mm. All were subjected to testing with dilute hydrochloric acid. The results showed that all the samples were composed of lime and sand.

Plaster

The Assemblage and Discussion

Plaster is the term more often given to calcareous compounds the base of which is calcium sulphate (Mitchell, 1919). It is often used in both external and internal plastering and is applied to ceilings and walls whilst plastic which later hardens.

A single fragment of wall plaster was identified from context 6244 weighing 30gm. Fabric colour was a very pale brown (10YR/8/2) with a single smooth surface. The fine fabric and the smooth surface suggest an internal use.

Recommendations

It is recommended therefore that the ceramic and stone building material assemblage from the site is fully quantified. A published report on the early medieval assemblage, including any illustrations should be produced outlining its main characteristics, discussing its significance in local and regional terms. The architectural function of the materials should also be discussed, with a view to enhancing our understanding of the structure and appearance of the buildings which existed within the castle. It is more likely that the early medieval assemblage, recovered from the motte ditch, derived from structures within the castle. The castle waned in importance towards the end of the medieval period and the site may have been used for dumping town waste.

The analysis of fabrics from well dated contexts should be undertaken, to identify patterns of supply to the site and to detect the possible products that may have been manufactured on or close to, the site itself. However, these fabrics are likely to be those recovered from the basal fills of the motte ditch. Selected fabric analysis is recommended on fabric groups especially where glazed roof and floor tile are included as this would be a valuable insight for the Oxford region ceramic building material production in the medieval period. Selected

illustration should be considered where photography is insufficient. Specialist analysis of any fabric imprints might be considered of anecdotal interest.

APPENDIX 3 CLAY PIPE*by Dr D A Higgins***Introduction**

This note deals with the clay tobacco pipes recovered by the Oxford Archaeological Unit during excavations on the site of Oxford Castle (OXCAST 02.97). In September 2003 the pipes were examined and a detailed catalogue of the material prepared so as to provide accurate dating and phasing information for the excavated deposits. The pipe fragments have been individually examined and details of each fragment logged on an Excel worksheet. The layout of the worksheet has been based on the draft clay tobacco pipe recording system, which has been developed at the University of Liverpool (Higgins & Davey, 1994). A context summary has also been prepared on a similar Excel worksheet. This provides the overall numbers of fragments and the latest date represented by the pipes from each context. This lists the number of bowl (B), stem (S) and mouthpiece fragments (M) from each context and provides an easily accessible way to see the pipe date evidence from each context and how many fragments this dating is based on.

Bowl forms have been recorded with reference to the London typology established by Atkinson & Oswald (1969) although the dating has been modified according to the form and attributes of the individual fragments. Variants of the basic London shape illustrated in the typology have had the letter 'v' placed after the type number. The pipes had not been marked with context numbers and so to facilitate comparison of the diagnostic pipe fragments the context number has been added to these pieces in pencil. In addition to the context number a unique reference letter (A, B, C ... AA, AB, etc) has been added to provide a means of identifying individual fragments. These start from A within each context group. Mould analysis has also been carried out for some of the early eighteenth century groups and a column added to the full catalogue to identify the types present, which have been numbered 1-23.

An assessment of the likely date of the stem fragments has been provided. The stem dates should, however, be used with caution since they are much more general and less reliable than the dates that can be determined from bowl fragments or marked/decorated pieces.

General notes

Although no formal report or illustrations of this material have been commissioned, it is still possible to make some general observations about the pipes that have been recorded. The material studied comprised a total of 559 fragments made up of 114 bowl, 437 stem and 8 mouthpiece fragments from a total of 60 different contexts. A further 75 fragments have yet to be assessed.

The majority of the material dates from the seventeenth or eighteenth century with barely any nineteenth century material represented. Within this range, there is very little material dating to before the middle of the seventeenth century and the majority of the finds appear to be of early eighteenth century date. Dating of the excavated deposits has been hampered by the relatively low incidence of contexts containing bowl fragments and the general lack of marked or decorated pieces amongst this assemblage.

One of the notable features of Oxford pipes is the use of a distinctive fabric containing numerous fine sand inclusions. This appears to have come into use during the late seventeenth century and remained in use until sometime in the mid- to late-eighteenth century. A more accurate dating of the period when this fabric was in use would greatly assist the dating of plain

stem fragments of this type. The same applies to dating the changes in the associated manufacturing and finishing techniques, for example, the size of the stem bore, the use of bottering on the rim and burnishing of the surface. There is also a general problem with the identification of makers in Oxford. Maker's marks are always rare in the town and, when they do occur, they are hard to match with known manufacturers. It seems likely that many local makers have yet to be identified from the documentary sources and this would greatly assist the dating of marked pipes from the town.

Having said that, it is still possible to use the pipes as good dating evidence and to make some reasonable assumptions about the periods when these pipes were produced. Many of the deposits contain eighteenth century bowls in this local fabric. Most of the excavated examples have burnished surfaces and bottered rims. Both of these characteristics would be expected to die out during the eighteenth century and so it seems likely that these represent early eighteenth century groups of, say, 1700-1730. Likewise, mould flaw analysis has identified a number of the moulds used to produce these early eighteenth century pipes and shown that they are represented in different context groups, for example 6287, 6288, 6289 and 6358 (the upper fills of the motte ditch and the fills of the pleasure garden feature). These groups must all have been deposited at much the same time, when these types would have been in production. There may be merit in publishing this group of pipes.

At the time of writing, no site matrix was available and only a single section of the Castle moat from which to examine the stratigraphy. From this section it is clear that some of the largest pipe groups came from a series of tip lines within the moat; 6287, 6288, 6289 and 6358. These are the deposits containing very consistent looking early eighteenth century groups that share common mould types. It is probable that all these tips were contemporary, being deposited about 1700-1730. There was just one piece of stem below these tips in the moat, and that was a single stem of c1640-1700 from 6359, immediately below 6358. The absence of pipes from below this level strongly suggests that the underlying deposits date from before c1610, when pipes would have come into common use.

From elsewhere on the site 3603 and 3613 both produced good mid-seventeenth century groups of pipes, that could well date from the Civil War or Commonwealth periods. The deposits overlay the Norman rampart and may indicate later refortification. There may also be merit in publishing this group of pipes. Context 6077 produces some later eighteenth century spur forms and another single example of this type with traces of maker's initials was recovered from 6087. The only decorated piece was part of a bowl decorated with a Turk's head from 6066. This dates from c1810-50 and is an interesting example of this particular pipe form, which has not been previously recorded from Oxford.

Table A3.1 Contexts producing clay pipes

Cxt	B	S	M	Tot	Latest Date	Marks	Decoratio n	Comments
3603	6	8		14	1640-1670			Consistent looking group, which could well date from the Civil War or Commonwealth periods.
3613	7	7		14	1640-1670			Consistent looking group, which could well date from the Civil War or Commonwealth periods.
3620	2	2		4	1700-1750			Material ranges from c1640-1750 but latest pieces date from first half of C18th.
3700	1	5	1	7	1780-1900			Mixed finds ranging from c1610-1900 but with latest looking stem of c1780-1900 type.
3702		10	1	11	1700-1770			Mixed C17th and C18th stems, about half-and-half. The latest types all appear to be local fine sandy fabric and so probably not later than c1770 and perhaps earlier.
3704	2	10		12	1700-1770			Bowls are both C17th (1610-1660) but the two latest stems are of C18th type.
6031		2		2	1700-1800			One C17th stem fragment and one other that looks C18th or later. It appears to be of a local fabric (and so probably before c1770). However, the section is rather oval, which is more characteristic of later C18th or C19th pipes.
6036		2		2	1770-1850			Joining fragments (fresh break) from a long-stemmed pipe with quite a thin, oval section - appears to be straight. Imported fabric.
6038		1		1	1700-1770			C18th stem in a local fabric.
6040		2		2	1750-1850			
6042		2		2	1770-1850			
6048		1		1	1660-1720			Local fine sandy fabric.
6049	2			2	1700-1770			Latest piece is a small C18th bowl fragment, dated to c1700-1770 but could well be early C18th and contemporary with the other fragment of c1660-1720.
6065		1		1	1780-1860			Fragment from a long-stemmed pipe with a curve in it. Imported fabric.
6066	2	5		7	1700-1750	P? C?	Turk's Head	Mixed finds of C17th to C19th date. These include a spur form of c1700-1750 with rather faint and crudely formed initials on it, which are most likely to read PC, although the Christian name initials could also be read as E or F and the surname as G. The latest piece is part of a bowl of c1810-50 decorated in the form of a Turk's head.
6077	4	2		6	1740-1800			Latest pieces are two C18th spur bowls of c1740-1800.
6084		13		13	1610-1710			Mixed C17th and C18th stems - latest are certainly C18th.
6087	1	13	1	15	1720-1780	...T??		Mainly C18th material including a fragmentary spur bowl of c1720-80 in a local sandy fabric. Maker's initials chipped but the surname could possibly read T (uncertain). One very small stem fragment looks c1750-1900 range, but could be intrusive.
6090	1	1		2	1720-1780			
6091		1		1	1700-1780			
6094		1		1	1700-1780			
6097		7		7	1700-1780			
6103		2		2	1770-1900			Latest stem is rather a late looking fragment, most likely C19th in date. Imported fabric.
6107		1		1	1700-1780			Quite a thin, cylindrical looking stem, but presumed to be before c1780 due to use of burnished surface.
6108	1	5		6	1700-1800			Includes two thin and fairly cylindrical stems that look later C18th and could even be C19th - although they appear to be straight and not curved.
6109		3		3	1700-1800			Two C17th stems plus one C18th.
6110		2		2	1700-1780			One C17th stem and one C18th.

Cxt	B	S	M	Tot	Latest Date	Marks	Decoratio n	Comments
6129	1	6		7	1760-1850			Mixed material, which certainly includes C18th stems. Odd stem with a very deep, oval section, could be as late as 1760-1850 but this is not certain and deposit could be C18th.
6137		7		7	1700-1780			
6147		8		8	1700-1800			Two pairs join, both fresh breaks. The original fragments were quite large, 80-85mm, suggesting quite a fresh deposit.
6148		2		2	1680-1750			
6151		1		1	1660-1700			Very battered fragment, suggesting that it may be residual in this context.
6154		1		1	1760-1900			
6158		1		1	1640-1700			
6159		2		2	1680-1780			
6160		1		1	1610-1700			
6161		3		3	1650-1700			
6175		1		1	1760-1820			Long (99mm) fragment from a curved pipe with quite a cylindrical stem.
6190		1		1	1640-1700			
6205		1		1	1640-1700			
6220		1		1	1750-1820			
6221		1		1	1700-1780			
6224		1		1	1700-1820			Burnt fragment, most likely C18th or early C19th but could be later C19th.
6244	2	14		16	1780-1830	WT		Mixed material of C17th-C19th date. Latest diagnostic piece is a heel marked WT, possibly for William Tuckwell of Wallingford, recorded in 1796. A couple of stems are of less specific C19th date and so the deposit could be even later.
6246	1			1	1640-1660			
6260		2		2	1770-1900			
6262		3		3	1680-1770			
6263	2	1		3	1680-1770			
6284		1		1	1610-1700			
6286		1			1670-1750			
6287	3	3		6	1700-1750			Bowls range from c1660-1750 in date - may well be an early C18th deposit of c1700-30.
6288	5	30		35	1690-1730			Four of the bowls are c1690-1730 types. Most likely date of deposit c1700-30.
6289	46	148	5	199	1690-1730	EC or EG		One or two residual C17th bowls but all the rest form a very coherent group of c1690-1730 with most likely date of deposition c1700-30. Includes one neatly designed local variation of a London Type 25 bowl with the maker's initials EC or EG moulded on the sides of the heel. Mark previously recorded in Oxford but maker unknown.
6299		1		1	1620-1700			
6324	1	2		3	1660-1690			
6325	5	48		53	1740-1840			The bowl fragments all range from c1660-1750 but they are all rather battered and some of the stems look as late as c1740-1840. Looks like a mixed deposit with final deposition sometime in C18th or even C19th.
6358	16	30		46	1690-1730			Three residual C17th bowls but all the rest form a very consistent group of c1690-1730, which was probably deposited c1700-1730.
6359		1		1	1640-			

Cxt	B	S	M	Tot	Latest Date	Marks	Decoratio n	Comments
					1700			
6584	3	2		5	1690-1750			Most likely an early C18th group.
6919		3		3	1680-1750			
Total	114	437	8	559				

APPENDIX 4 WORKED ANIMAL BONE

by Rose Grant

Introduction

A total of 12 worked bone objects were recovered from the archaeological excavations at Oxford Castle. Table A4.1 below describes each of the objects and gives a parallel where available.

Table A4.1 Incidence of worked bone objects by context

Object	Context No	Phase	Small find No	Length (mm)	Description	Parallel
Bead	8106	1		6mm	Small round bead with circular section. A hole has been drilled through the centre from both sides.	Margeson 1993, 5, Fig.1, No 12.
Gaming piece	6448	3	196	28mm	Worked bone gaming piece carved from a section of a long bone (medium animal i.e. sheep). The piece is carved into a face which looks animal/bird like.	
Knife Handle	6584	3	333	67mm	Polished scale tang knife handle with iron shaft through the centre. There is a single decorative line down each edge of the handle on both sides of the knife. Three holes for tubular rivets are visible.	
Bead	6584	3	337	19 mm	Round flat bead with rounded edges. There is a hole drilled through the centre.	
Antler pin or peg	6584	3	356	96mm	Antler pin or peg with a circular section shaft which tapers to one end and a square head.	
Bead	6871	3	396	9 mm	Round flat bead with rounded edges. There is a hole drilled through the centre.	
Ice skate	6924	1	450	251mm	Ice skate made from a horse metacarpal (right). Slightly up turned at the front with a hole drilled transversely through the tip.	Macgregor A 1990, 708, fig.199, No 2251.
Hammer head	4046	4	473	127mm	Hammer head made from shed antler of Red Deer. There is a hole drilled through one end longitudinally which stops half way into the hammer head. Another hole has been drilled obliquely through in which the handle would have been inserted. There is some iron present in one end of the hole which could be where the handle was attached. The smallest end of the hammer head is worn. The largest end has been battered smooth through use. The surface has cut marks present.	Macgregor A 1990, 172, fig.90,a.

Object	Context No	Phase	Small find No	Length (mm)	Description	Parallel
Comb side plates	6929	1	497	78mm	Comb side plates made from animal rib (possibly cow). The rib has been split lengthways. There are three rivets visible making this example a Type B comb as described by Patricia Galloway.	Galloway P 1990, 688, fig.189b, No 2189.
Ice skate	6000	4	549	242mm	Ice skate made from a horse metacarpal (right). Slightly up turned at the front end. Unlike SF 450 this example has no perforation.	Macgregor A 1990, 708, fig.199, No 2248.
Worked antler	6000	4	580	109 mm	Piece of worked Red deer antler. The largest end has a hole made longitudinally and cut marks round the edge. Possible handle.	
Counter	8784	1	707	19 mm	A plain circular bone disc. Possible counter or button.	

Statement of potential

The assemblage comprises 11 worked bone objects and 1 piece of working debris. The most interesting of these finds is SF 196 an ornately carved object, possibly a gaming piece. It is carved from a section of a long bone (medium animal i.e. sheep) and appears to represent the head of an animal/bird. The top and bottom are highly polished through use. The personal items include ice skates (SF 450 and 549), beads (SF 337, 396 and Ctx 8106) and the side plates from a comb (SF 497). Bone skates are common in the late Saxon/medieval period, they were attached to the foot using a thong threaded through a hole in the front of the skate (see Small Find 405). The skater would propel themselves along using a long stick. The assemblage also includes tools; SF 333 is a hammer head burred through use. Hammers heads are not a common find in Britain with only five examples published to date, four of which are unstratified. All of the examples are similar to the one found at Oxford Castle. SF 473 is the handle from a scale tang knife decorated with a single incised groove running longitudinally down each scale.

Further work

More research needs to be done on the possible gaming piece (sf 196) and the hammer head (sf 473)

Resources

- Catalogue entries
- Preparation of drawing Brief for Small Finds 196, 450, 473, 549.
- Discussion with reference to local parallels

APPENDIX 5 GLASS

by Dr Hugh Willmott

Introduction

A reasonable sized assemblage of glass was recovered from the excavations at Oxford Castle (summarised by context at the end of this assessment). A total of 57 sherds were recovered from the latest phase of works and have not been assessed. Most is relatively stable and requires no further specialist treatment. However, it must be noted that all the glass is unwashed, making initial identification more time-consuming. For the purpose of this assessment the glass can be said to fall into two chronological periods; medieval and post-medieval.

The Assemblage

Almost all the fragments can be positively identified, and although an exact quantification and dating of all the material has not been undertaken at this stage, the character of the assemblage can be summarised. A small, but significant, portion dates to the medieval period and the late 12th-15th centuries in particular. Medieval glass is relatively rare, a factor probably exaggerated by the fact it is prone to total decay in certain soil conditions. Nevertheless, fragments from a number of vessels of this date were recovered. The most distinctive of these are at least two stub bases, from contexts [6266] and [7021], which are the lower portions of medieval hanging lamps. Other vessels include the remains of at least two different flasks/urinals from [6221] and [7103]. There are also some fragments of medieval window glass. Most of these, such as from [2619], [6108] and [9204], are plain although there is a small fragment from [6759] which has a small element of painting.

However, the majority of the glass is post-medieval in date. A small proportion of this is plain window glass, mainly dating to between the 17th and 19th centuries, although there are a few pieces of modern material. However, most of the post-medieval glass comes from vessels. By far the most common of these is the wine bottle, and there is a good sequence of types running from the earliest, the shaft & globe, dated to 1650-80, in [9225] through to the early 19th century. Likewise there is quite a good series of late 17th- and early 18th-century phials. There are also some later press-moulded bottles, mainly 19th century in date, and some modern intrusive material.

The number of post-medieval tablewares is, perhaps, lower than might be expected. However, there are a number of interesting vessels that can be identified. These include fragments of several late 16th- to early 17th-century pedestal beakers from a variety of contexts, such as [6147] and [6871]. Also present in [6077] is a moulded human head wearing a tricorne hat (possibly supposed to represent the Duke of Marlborough) that actually formed the top of an 18th-century bird feeder. Other more unusual items include a 17th- to 18th-century mirror plate [6077] and a spectacle lens [3503].

Recommendations for Further Work

The assemblage is an interesting and varied one, and as such requires further work and publication. All the material from medieval contexts should be fully catalogued and discussed, as should the post-medieval vessel glass from secure contexts. The redeposited medieval material and post-medieval window glass should be quantified, and this data presented in tabular format for brief analysis. All this work, which will result in a fully contextualised report, can be undertaken at the University of Sheffield.

Table A5.1 Brief Summary of the Glass (by context)

<i>Context</i>	<i>Description</i>	<i>Other</i>
1709	Wine bottle base and body	17th-19th century
1710	Window glass, wine bottle base and body	
1715	Window glass, body of small phial, bottle neck and rim	
1806	Wine bottle	17th-19th century
1911	Wine bottle	17th-19th century
1913	Wine bottle base and body	17th-19th century
1917	Bottle	
1923	Wine bottle neck and rim	17th-19th century
1975	Shoulder of small wine bottle	17th-19th century
1994	Bottle	
1998	Two wine bottle bases, one neck	17th-19th century
2018	Wine bottle	
2111	Bottle	
2206	Window glass	
2221	Wine bottle	
2223	Wine bottle base	17th-19th century
2609	Wine bottle body	17th-19th century
2610	Window glass, early wine bottle	
2612	Wine bottle base, small phial base	17th-18th century
2618	Window glass	
2619	Grozed window glass, wine bottle rim	Medieval
2620	Bottle	
2622	Wine bottle, phial shoulder	18th century
2627	Window glass, wine bottle	
2633	Body of squat wine bottle, wine bottle base	17th-early 18th century
2705	Window glass	
2719	Window glass	
2722	Window glass, wine bottle	17th-19th century
2740	Smaller wine bottle	
2801	'K' cider bottle	Modern
2806	Bottle	
3108	Wine bottle	17th-19th century
3110	Wine bottle	17th-19th century
3348	Small bottle neck and rim	
3358	Wine bottle	17th-19th century
3386	Bottle	
3388	Bottle	
3391	Window glass	
3402	Wine bottle	17th-19th century
3405	Wine bottle	17th-19th century
3501	Wine bottle	17th-19th century
3503	Window glass, phial with lettering, oval spectacle lens	19th century
3511	Wine bottle	
3524	Window glass	
3525	Oil lamp globe	19th century
3530	Bottle	
3532	Window glass, wine bottle	17th-19th century
3533	Bottle	
3535	Wine bottle	17th-19th century
3538	Cylinder window glass, bottle	
3543	Wine bottle	17th-19th century

<i>Context</i>	<i>Description</i>	<i>Other</i>
3603	Ribbed window glass	Modern
3611	Wine bottle	17th-19th century
3620	Wine bottle	17th-19th century
3700	Bottle	
3704	Bottle, window glass	
3717	Wine bottle base	17th-19th century
3728	Wine bottle base and body	
3912	Wine bottle	17th-19th century
6021	Bottle	
6038	Bottle	
6040	Wine bottle, base of small phial	18th century
6042	Large bottle	17th century
6044	Bottle	
6046	Wine bottle	
6066	Wine bottle base and body, base of phial	19th century
6067	Bottle	
6077	Base of flask, bottle, window glass, section of mirror	Mirror has bevelled edge
6077	Figural top from conical bird feeder	Small find no: 150
6082	Bottle	
6087	Wine bottle base and body, cylinder window glass	17th-19th century
6091	Wine bottle	
6094	Window glass, beaker with blown ribbing	16th -17th century
6097	Wine bottle neck and rim	
6101	Bottle	
6103	Bottle	
6107	Wine bottle	17th-19th century
6108	Wine bottle, older window glass	17th-19th C, ?medieval
6109	Bottle	
6110	Wine bottle base, bottle shoulder	17th-19th century
6121	Window glass	
6129	Window glass, wine bottle	
6137	Body of smaller bottle, wine bottle	17th-19th century
6145	Bottle, window glass	
6147	Window glass, wine bottle base and body, ribbed beaker	Beaker early 17th century
6148	Window glass, wine bottle base and body	
6175	3 x wine bottle bases and bodies	17th-19th century
6205	Wine bottle, window glass	17th-19th century
6220	Cylinder window glass	
6221	Bottle/flask	Medieval
6226	Wine bottle	17th-19th century
6244	Wine bottle, window glass	
6260	Wine bottle base and body, cylinder window glass	17th-19th century
6262	Window glass, wine bottle neck and base	17th-19th century
6263	Window glass, wine bottle base	17th-19th century
6266	Base of hanging lamp	Medieval
6281	Wine bottle neck	
6288	Wine bottle	
6289	Window glass, wine bottle, small phial	17th-18th century
6299	Window glass, bottle	
6325	Wine bottle body and neck	17th-19th century
6358	Bottle	
6383	Wine bottle base	17th-19th century
6393	Wine bottle neck, base and body	17th-19th century
6397	Bottle	
6400	Window glass	

<i>Context</i>	<i>Description</i>	<i>Other</i>
6412	Wine bottle base and neck, window glass	
6432	Wine bottle, window glass	
6433	Wine bottle base and body, initialled wine bottle seal	17th century?
6506	2 x wine bottle base and neck, window glass, phial neck	
6507	Window glass	
6511	Window	
6569	Wine bottle	
6573	Wine glass merese (lower)	Late 16th/ early 17th C
6584	Window glass	Small find no:247
6584	Pedestal beaker	16th-17th C SFN:399
6608	Small bottle, phial base	
6630	Window glass	Modern
6678	Window glass	
6758	Wine bottle, small bottle body	
6759	Window glass with painted detail	Medieval
6858	Wine bottle base	
6871	Base of pedestal beaker	Early 17th Century
6985	Portion of green bead	
7019	Wine bottle base	
7021	Hanging lamp base	Medieval SFN:575
7030	Wine bottle base	17th-19th C SFN:527
7103	Flask	17th-19th C SFN:554
7344	Wine bottle body	
7358	Wine bottle	
7372	Phial	Late 17th-18th century
7429	2 x wine bottle base	
8015	Window glass, wine bottle	
8103	Squat wine bottle base, neck and body. Relatively complete	Early 18th century
8157	Wine bottle	
9010	Wine bottle	
9035	Square-based phial, bottle	
9179	Mould blown pedestal beaker	Early 17th century
9203	Modern window glass	
9204	Window glass	Medieval
9210	Window glass	
9212	Window glass	
9223	Wine bottle neck, body and base, glass handle	
9225	Shaft and globe wine bottle, window glass	1650 - 1680
9250	Wine bottle neck and rim	
9254	Green bottle body, jar shoulder	17th-19th century

APPENDIX 6 STONE*by Fiona Roe*

A preliminary examination of 278 pieces of stone was carried out, using a x8 hand lens and referral to stone samples collected during fieldwork. The assemblage included material recovered from earlier evaluation work. A further 11 pieces of stone have not been assessed. These are all listed in an Excel file. In all, some 23 different varieties of stone were recorded and are summarized in Table A6.1. One large item, ST 17, still remains to be seen. Thirty one objects were identified (35 fragments) and have been listed in a provisional catalogue. The main part of the assemblage consists of 194 pieces of building stone, including shaped, architectural items and roofing tile fragments. It is likely that the four fossil fragments occurred naturally in the local river gravels. Another 45 pieces were found to be unworked, 10 of them being also burnt.

Table A6.1: Summary of stone types

Stone	Source area	Uses	Totals
Bath stone	Bath area, Great Oolite	architectural/building	7
black slate	uncertain	whetstone	1
chalk	south Oxon	facetted objects, unworked	19
clay	local	burnt, unworked	3
Coral Rag	local, Corallian	building	5
flint	local gravels	unworked	9
fossil	local gravels	unworked	4
Kimmeridge shale	Dorset	bracelet, object	5
Limestone, fine-grained	Oxon, Jurassic	spindlewhorl, smoother	2
Limestone, miscellaneous	Oxon, Jurassic	building, burnt, unworked	64
Lower Calcareous Grit	Oxon, Corallian	building, burnt	7
Niedermendig lava	Germany, Rhineland	querns	5
Norwegian Rag	Norway, Telemark area	whetstones	3
Pusey Flags	Oxon, Corallian	roofing tiles	85
quartzite	local gravels	burnt, unworked	4
quartzitic sandstone	local gravels	burnt, unworked	3
Reigate stone	Surrey	quern, architectural/building	7
sandstone	local	building, unworked	4
shale	Oxon, Jurassic	burnt	1
slate	Lake District or Wales	roofing tile	1
Taynton stone	Oxon, Jurassic	architectural details	13
vein quartz	local gravels	unworked	1
Wheatley limestone	local, Corallian	building	25
Total			278

Objects

The objects amount to 6 quern fragments, 4 whetstones, about 16 facetted chalk objects, a spindlewhorl, a large stone ball, some fragments of Kimmeridge shale and a possible smoother. The materials used for these are not all entirely as expected. Five of the quern fragments are Niedermendig lava from the Rhineland, a material regularly found on Saxon and Medieval sites. However another, burnt, quern fragment appears to be Reigate stone from

Surrey. Three of the whetstones are made from Norwegian Rag or Eidsborg schist from the Telemark area of Norway and again these are frequently found on Saxon and Medieval sites. One (1813) was found in an eleventh century pit. A further complete whetstone is made from black slate. This is unusual and parallels are not at present known, while the source area is uncertain, but a provenance in Belgium is being considered. Facetted chalk objects have been recorded elsewhere, often from Saxon contexts, but 16 or so came from the most recent excavations at Oxford Castle, a much larger number than is usually the case. It is not known how these were utilised. The large ball, possibly for a *trebuchet*, is made from Taynton stone and this is likely to be re-used building stone. Fine-grained Jurassic limestone was used for a spindlewhorl and a possible smoother, while the assemblage is completed by fragments of Kimmeridge shale from two contexts.

Building stone

The building stone, as might be expected, consists mainly of varieties of Jurassic limestone, most from Corallian beds fairly near Oxford but with some pieces from more distant parts of Oxfordshire and even possibly from further afield. Some 85 mainly rather small fragments are roofing tile, two with a diagnostic hole at one end. These are all made from the same variety of shelly limestone which can be identified as the Pusey Flags from part of the middle Jurassic Corallian beds of Oxfordshire (Arkell 1947 (a), 86). The source may be an old quarry known as the Slat Pit, which is near Buckland and some 19 km (12 miles) south west of Oxford. The nearby river Thames would have provided a convenient transport route for bringing the roofing tile into Oxford.

Shaped items of architectural stone, amounting to 23 larger pieces, are described in more detail by Julian Munby (see below). Most of the stone used for construction now lacks working traces and much of it now consists of quite small fragments. However, taking all the building stone together, a number of different varieties of stone can be identified and part of the picture is beginning to emerge. The original wooden castle was probably refortified in stone in the late 12th century and locally obtained Coral Rag is likely to have been used (Arkell 1947 (a), 33). St George's Tower, which is still extant, is made from this rubbly limestone, although the date of the tower is uncertain. Some Lower Calcareous Grit, another material from the Corallian, was also used in the tower (*op cit*) and a few pieces, mostly burnt, were retrieved from the excavations. In later Medieval times the main building stone is likely to have been the Wheatley limestone, which was obtained from Corallian beds first at Wheatley and later at Headington (Arkell 1947 (b), 94). Limestone from Wheatley is first recorded in use for building in Oxford at the end of the thirteenth century (Arkell 1947 (a), 37). However it was less well suited for use as a freestone, and Taynton stone from the Great Oolite near Burford was probably used for dressings such as the stone surrounding doors and windows. For example a shaped piece of Taynton stone [5613] came from the sally port which provided an entrance into the castle from Tidmarsh Lane. The presence of small amounts of Reigate stone from Surrey at the castle is less easily explained. However it is known that Wheatley stone was used at Windsor Castle during the fourteenth century, a period when Reigate stone was also being used here (Arkell 1947 (a), 39), so it seems possible that there was some reciprocal trade in stone back up the Thames at about this time, or for all royal works. The appearance of small amounts of Bath stone at the castle may be of later date, since this was first used in bulk at Oxford from around 1820 (Arkell 1947 (a), 95).

Documentation

The report by Martin Jope on his 1952 excavations under the Castle Mound (1953, 98) was well in advance of its time and contained details of finds of Niedermendig lava, Norwegian Rag and facetted chalk objects from the Castle and Canal Wharf (now under Nuffield

College). Comparable finds were then made by Jope at the Clarendon Hotel in the Cornmarket (Jope 1958, 73-4) and again by Tom Hassall during his 1965 – 73 excavations at the Castle (1976, 266). Later excavations both in and around Oxford have provided further examples of lava querns and schist whetstones, demonstrating that these are not unusual and indeed they are also to be found on Saxon and Medieval sites elsewhere in England. Facetted chalk objects, however, have been less frequently recorded. Less is known about building stone from excavations in Oxford, though W.J. Arkell's classic 1947 book provides useful information from documentary sources (1947 (a)).

Future work

A report could be written putting the finds into context from the point of view of overseas trade, while drawing together the information from earlier excavations in Oxford. However, the stone objects were mostly recovered from dumped fills within the motte ditch and post-medieval quarry pits. As such their provenance is uncertain. The worked stone from the 1965 – 73 work at the Castle might benefit from further examination. It would be interesting to discover the purpose to which the facetted chalk objects were put, although realistically it may only be possible to suggest how they may have been used. The finds from the OXCAST 02.97 assemblage can be further reviewed once phasing becomes available for the objects and selected pieces of building stone.

Illustrations

It is suggested, pending phasing information, that the following items might be illustrated:

Box	Ctx	SF	Description	Stone
ST.07	6566	239	Facetted chalk object	Chalk
ST.08	6584	343	Whetstone with sharpening groove	Schist
ST.08	6630	260	Complete spindlewhorl	Limestone
ST.08	6841	387	Facetted chalk object	Chalk
ST.09	7047	534	Complete whetstone	Black slate
ST.14 open store	7287	656	Segment from quern	Lava

Building stone for illustration has been selected by Julian Munby (see below).

Architectural Stone

By Julian Munby

Some 15 items of worked stone have been recovered from excavations in the castle, mostly of fine limestone likely to be of local provenance. One of the more significant architecturally is a ?door jamb with a chamfer, rebate and roll moulding [3546], but it was unstratified, as was a possible window jamb with a carefully carved Star of David.

From the moat fill came a large stone ball, presumably a projectile from a siege engine, two rebates likely to be from doors [499/6252, 579/7166], and a plain ashlar block (6373). An irregular block of burnt limestone with a roughly carved 'neck' (6366) was also recovered from the moat.

Associated with the gatehouse were two blocks of ashlar with one sloping face (as if from a plinth offset) [5519/5746, 5510/5613], while from the sallyport there were two squared blocks with a tapering profile, found in situ [5508/5699, 5509/5699].

None of these finds are very informative for the architectural history of the castle, and only the first and last of these should be drawn, while the stone ball should be investigated further for parallels.

APPENDIX 7 SLAG*by Lynne Keys***Introduction and methodology**

A total of just over 5.5kg of material was examined for this report. Not all the assemblage was iron slag; debris from copper alloy working was also present. The assemblage was examined by eye and categorised on the basis of morphology. Each slag type or category of material was weighed, while the smithing hearth bottom was individually weighed and measured for statistical purposes. Details are given in the table below.

Table A7.1 Incidence of slag occurrence by context

cont.	identification	wt	len	br	dep	comment
1715	undiagnostic	6				
1716	undiagnostic	23				with coal embedded
2024	ferruginous concretion	237				with tiny pebbles; fired; surface?
2028	ferruginous concretion	285				
2036	ferruginous concretion	1225				with tiny pebbles; surface?
2210	undiagnostic	286				
3503	burnt coal	93				
3503	cinder	95				
3503	coal	161				
3503	hammerscale	0				some broken flake & very tiny spheres
3503	undiagnostic	1170				
3503	vitrified hearth lining	157				furnace lining?
3532	cinder	4				
3532	undiagnostic	165				
3620	crucible?	0				
4432	undiagnostic	282				
6099	ceramic building material	47				
6099	clinker	1				
6291	smithing hearth bottom	217	85	70	40	
6360	coal	35				
6360	undiagnostic	59				
6383	Cu waste	29				
6566	undiagnostic	38				
8087	iron	8				
8101	Cu waste	520				
8102	vitrified hearth lining	27				
8104	cinder	6				
8104	Cu waste	13				
8104	vitrified hearth lining	92				Cu specks on surface some pieces
8105	undiagnostic	51				
8107	undiagnostic	4				oily?, burnt
8149	iron	10				
8159	Cu waste	31				
8159	vitrified hearth lining	53				Cu specks on surface
8185	run slag	24				
8185	undiagnostic	3				
8185	undiagnostic	26				iron rich

cont.	identification	wt	len	br	dep	comment
8186	vitrified hearth lining	10				Cu specks on surface
8242	undiagnostic	10				
8242	vitrified hearth lining	8				
8545	undiagnostic	11				
	total wt. = 5522g					

Explanation of terms and discussion

Some types of iron slags are diagnostic of smelting or smithing, while others are not. Slag may be considered undiagnostic because it could have been produced by either process; which one can only be determined in the light of diagnostic evidence from the site. Slags may be broken up during deposition, re-deposition or excavation and may have to be assigned to the undiagnostic category as a result. Other types of debris sometimes encountered in slag assemblages may be the result of a variety of high temperature activities - including domestic fires - and cannot be taken on their own to indicate ironworking was taking place. These include fired clay, vitrified hearth lining, cinder, and fuel ash slags.

The Oxford Castle slag, where diagnostic, had been generated by smithing activity. Some copper alloy waste was present in Saxon layers in area C and this was separated from other slag to be examined by the relevant specialist. A proportion of the vitrified hearth lining present in this area and phase also appears to have been generated by copper alloy working as the surfaces which would have been closest to the heat had copper waste or red copper oxide on them.

Recommendations for further work.

Unless further excavation is to be carried out no recommendations are made for further work on the slag assemblage.

The copper alloy should be examined by a specialist.

APPENDIX 8 COPPER ALLOY*by Leigh Allen*

The assemblage comprises 213 copper alloy objects (including 26 coins/tokens) and includes material recovered from the earlier evaluation. A sample of the total assemblage has been assessed, the sample was selected from a range of features and phases within Area A. The sample comprises 149 objects (69%) of which 46% were pins. Most of the assemblage has been x-rayed, except the objects that are obviously identifiable as copper alloy pins. In general the condition of the copper alloy is relatively good (see conservation assessment below).

The copper alloy assemblage comprises personal items, toiletry items, household objects, casket fittings and structural items.

Personal items (110)

The personal items include buckles (9), buttons (3), fasteners (2), hooked tags (2), mounts (4), strap-ends (3), pins (68) and lace tags (16). Most notable among the buckles is the folded rectangular buckle plate (SF 359) decorated with repousse decoration. Similar examples have been recovered from Abingdon Vineyard (Leigh Allen *pers comm.*) and from Norwich where they are dated to the 15th century (Margeson 1993 28, fig. 14, No.147). A second frame (SF 273) from context 6758 is circular and could be from an annular brooch or a buckle frame. They are distinguished from each other by the presence of a constriction for the pin but unfortunately the frame is broken at one point and this could have been where the constriction was. The frame is decorated with a cable design (Egan and Pritchard 1991, 248) and dates to the late medieval period. The remaining buckles are simple circular and D-shaped frames of utilitarian form and double-oval shoe buckles. The buttons are all plain discoidal buttons of post medieval date. The wire loop fastener would have been used to secure light clothing and is late medieval/post medieval in date. The more elaborate fastener (SF 369) is a double hooked wire fastener with a decorative wire work design at the centre, similar examples from Norwich date from the 16th-17th century (Margeson 1993, 19, fig.9, No.88). The two hooked tags (SF 388 and SF 273) are of different shapes (triangular and oval) but they are decorated with the same circular perforations surrounded by a concentric groove. They would probably have been sewn into position and the curvilinear top on the triangular example would have helped to hold the thread in place. They were probably used to secure clothing, a pair from Winchester was found at the knees of a skeleton and may have been used to secure garter ribbons. Hooked tags have a long span of use beginning in the 7th century up until the 11th century (Hinton 1990, 548). Bar mount SF 157 consists of a plain bar with fan shaped terminals a similar example from Winchester dates to the 14th-15th century (Hinton 1990, 544, Fig.144, No.1383). The four components from strap ends include two pieces, a forked spacer (SF 112) and a tongue shaped plate (SF 113) from a composite strap-end. This form of strap-end was not introduced until the late 13th/early 14th century and goes out of use by the early 15th century (Egan and Pritchard 1991, 145). By far the largest groups of finds assigned to this category are the pins and lace tags. Pins are a common find in late medieval/post medieval contexts and are often found in association with large numbers of lace tags. The fashion for tighter fitting garments in this period led to a great demand for laces (Egan and Pritchard 1991, 284).

Table A8.1 Incidence of personal items by context

Object	Context	SF.No.	Description
Buckle frame	6759	301	A double oval buckle frame with an expanded pin rest
Buckle frame	6758	292	Double oval buckle frame with pin
Buckle frame	6758	273	Cast circular buckle decorated with cable design
Buckle frame	6266	331	D-shaped buckle frame with expanded ends to the bar
Buckle frames	6085	152	Two simple circular buckle frames
Buckle plate	6584	359	A rectangular buckle plate decorated with 4 open-work circles each with 4 circular perforation in them
Button	4721	704	Plain discoidal button with integral attachment loop
Button	5375	701	Slightly dished circular button with integral attachment loop
Button	6332	238	Plain circular discoidal button with integral attachment loop
Decorative fitting	6584	279	A curved decorated plate with two arms each perforated with 2 circular holes for attachment
Fastener	6866	369	A fastener with a twisted wire decoration at the centre
Fastener	1919	104	Simple loop fastener with the ends twisted around each other
Hooked tag	6860	388	Oval hooked tag with 4 perforations through it each with concentric grooves around them
Hooked tag	6668	274	A triangular hooked tag with a scalloped upper edge and decorated with 2 holes with concentric grooves around them
Mount	6763	496	Domed sheet metal mount with a perforation through the centre
Mount	6763	498	Circular mount with an ogival shaped opening at the top and two rivets for attachment
Mount	6618	257	Circular sheet metal mount with a circular perforation at the centre and 2 smaller rivet holes either side
Mount	6358	157	Bar mount with fan shaped terminals
Pin	6266	327	Large pin with a simple flat head
Strap End	1941	112	Forked spacer from a composite strap-end
Strap end	6584	346	A folded sheet metal strap end decorated with an open-work heart and 4 embossed floral motifs

Strap end	6584	528	A tongue shaped plate from a strap end with a pointed knop at the base and three rivets for attachment
Strap end	1943	113	A tongue shaped plate from a composite strap end with a knop at the end

Toiletry items (3)

The toiletry items are all earscoops/toothpicks of the same form they are made from copper alloy wire, bent double and S-twisted leaving one end of wire slightly longer than the other (Egan and Pritchard 1991, 380, type IV). These fairly flimsy items would have been cheap and easy to produce and date from the 13th century onwards. Two examples were recovered from context 6758 and one from 6266.

Household objects (5)

The domestic objects comprise 4 vessel fragments and a thimble. Fragments from cast and sheet metal vessels are both represented in the assemblage. The thimble is a domed hemisphere with hand applied indentations, it is late medieval in date (Egan and Pritchard 1991, 266-267, Fig.206, No.824).

Table A8.2 Incidence of household objects by context

Object	Context	SF.No.	Description
Thimble	6266	216	Domed thimble with hand applied indentations
Vessel fragment	6678	266	Rim fragment from a cast metal vessel
Vessel fragment	6584	-	Rim fragment from a cast metal vessel
Vessel fragment	6584	361	A large fragment from a sheet metal vessel with a slightly flattened rim.
Vessel fragment	6758	493	Rim fragment from a cast metal vessel

Casket fitting (1)

A cast strap-mount (SF 635) possibly used to decorate a chest or casket was recovered from context 6000. The strap measures 391mm and has a D-shaped section, it is forked at one end and the terminals are circular and perforated. Although incomplete there are the stubs remaining where other arms would have branched off along the length of the strap. This form of decorative strip is of a well-known type commonly found on castle and manorial sites of the 12th and 13th centuries (Goodall 1982, 235, fig.43, No.6-8).

Structural (6)

The structural items include a possible handle, a drape ring for use in the suspension of drapes or tapestries; a tack possibly used for upholstery and 3 copper alloy nails.

Table A8.3 Incidence of structural items by context

Object	Context	SF.No.	Description
Drape ring	6584	364	Complete ring with a flattened hexagonal section and casting flashes on both faces.
Dome headed tack	6038	151	Small circular, dome headed tack with a short rectangular sectioned shank
Nails (3)	6121	-	Three nails with flat circular flanged heads and circular sectioned shanks
Handle	6077	-	Circular sectioned shank with a domed head with a raised central boss, possibly draw or cupboard handle.

Miscellaneous (24)

The miscellaneous category includes fragments of sheet and strip (possible off-cuts from sheet metal working), lengths of wire and irregularly shaped miscellaneous fragments.

Lead objects (5)

The lead objects comprise a circular disc weight, window came, decorative window tracery and an unworked strip.

Table A8.4 Incidence of lead objects by context

Object	Context	SF.No.	Description
Window came	6432	-	Fragment of window came with an 'H-shaped' section
Window came	4612	-	Lengths of window came with an 'H-shaped' section
Disc weight	6432	-	A circular disc weight
Window tracery	6678	269	Decorative window tracery in the form of a scale representation of a multi-light window.
Strip	7096	565	A rough cut strip

The small fragments of possible lead window tracery are notable. Fragments recovered from excavations at Eynsham Abbey of a more elaborate scale representation were interpreted as part of a ventilator that would have been set in a window. The Eynsham example was dated stylistically to the 14th century (Cropper 2003, 270-271).

Statement of potential

The sample assemblage that has been looked at for this assessment hopefully reflects the assemblage as a whole. Personal items were well represented, as was seen in the previous excavations of the Castle in the 1960's and 70's (Hassall 1976). Together with this earlier material it represents the largest collection of material from a Castle site in the region. However, much of the material was recovered from the upper fills of the motte ditch and fills of post-medieval quarry pits; the material does not necessarily originate from castle contexts.

Further work

The whole assemblage should be catalogued with a tabulated list of the pins and lace tags. A discussion of the parts of the assemblage from well dated secure contexts, will be written with reference to assemblages from other sites in the vicinity including the previous Oxford Castle excavations, the work at Paradise Street and Tidmarsh Lane. A number of objects will be selected for illustration.

Resources

- Full cataloguing of the assemblage
- Discussion of the assemblage
- Library time
- Preparation of drawing briefs
- Checking drawing and editing text

Assessment of conservation and archive requirements for copper alloys

by Esther Cameron

Quantities

A total of 195 bags of copper alloy and 1 of lead were received for assessment. X-rayed items include mounts and flat plates (17), sheets (4), coins and tokens (28), wire and fragments (12), buttons (3), a lock-plate, a fork-tine, funnel/tubes (2), lace tags (18), fittings (8), pins and rods (17), rings and finger rings (4), buckles (8), a strip, a thimble, a stud, dress fittings (3), vessel fragments (3), lumps (6) and a fragment of chain.

Method of assessment

The objects were examined in the conservation laboratory and 136 were x-rayed (x-ray numbers 1351–7). The remaining 60 were multiples of pin and wire fragments and lead.

Comments

- Decoration: two of the mounts and flat plates are decorated (sf.346 & 279) and another from context 6036 (x-ray 1353) looks as if it has part of letter from an inscription on its surface.
- Other metals: the fork-tine (sf.112) has a white metal coating; the mount (sf.701) is probably tin/lead alloy.
- Organic remains: a pair of buckles (sf.152) have textile and mineral preserved organic remains attached.
- Cast metal: vessel fragments (sf. 493, 266 and context 6584) may be flawed castings with many air-bubbles.

Condition

The condition of the copper alloy is relatively good. It can be handled, and surface detail is quite well defined so further cleaning can be done quickly if required. Some of this metalwork is unstable.

Potential for further work

- Clean individual items as required
- Investigate organic remains attached to the buckles (sf.152)
- X-ray all pins and wire if required

Recommendations for archive

- Present packaging is good. Maintain silica gel to keep relative humidity low to stabilise metalwork.

APPENDIX 9 IRON*by Leigh Allen*

The assemblage comprises 527 iron objects (including 222 nails) and includes material recovered from the earlier evaluation. A sample of the total assemblage has been assessed, the sample was selected from a range of features and phases within Area A. The sample comprises 112 iron objects (including 56 nails), 18.9 % of the total. The majority of the assemblage has been x-rayed the only exceptions are objects that are obviously identifiable as iron nails. In general the condition of the ironwork is corroded and unstable (corroding). It is physically weak and breakable (see conservation assessment below).

Iron Objects

The ironwork assemblage comprises knives, keys, horsegear, structural objects and miscellaneous fragments.

Knives (8)

A total of 8 knives were identified in the sample, the assemblage comprises 2 examples with whittle tangs, 3 with scale tangs, a penknife and 2 blade fragments. The two whittle tang knives are incomplete and the blades are very damaged SF 102 from context 1919 has a bolster or widening at the junction of the blade and tang, this is a 16th century introduction (Goodall 1990, 839). The scale tang knives are also very damaged SF 111 from context 1941 has a copper alloy shoulder plate and 3 rivet holes through the tang, there is no trace of the scales. The example from context 1940 also has a copper alloy shoulder plate and 2 perforations through the tang. There is a cutlers mark on the blade in the form of a three-horned crescent. The fragment from context 6087 is from the handle it is broken at both ends but there are 2 perforations through the tang. Scale tang knives were not introduced until the end of the 13th century (Goodall 1990, 838). The remains of a folding knife were recovered from context 6397; these were first introduced in the post medieval period and evolved into the modern day penknife (Goodall 1990, 839).

Table A9.1 Incidence of knives by context

Object	Context	SF.No.	Description
Scale tang knife	1940	-	Short section of the tang survives with a copper alloy shoulder plate at the junction of the tang and the blade and 2 copper alloy rivets through the tang. There is a cutlers mark in the form of a 3 horned crescent on the blade
Scale tang knife	1941	111	Scale tang knife with a copper alloy shoulder plate and 3 rivet holes through the tang
Whittle tang knife	1919	102	A whittle tang knife the blade and tang are incomplete. There is a bolster at the junction of the tang and the blade
Whittle tang knife	6289	-	Small fragment of the blade and tang of a whittle tang knife
Scale tang knife	6087	-	Small fragment from the handle of a scale tang knife with 3 circular rivet holes through the tang
Blade fragment	6145	-	Possible blade fragment (very damaged), tang missing
Blade fragment	6406	170	Possible blade fragment (very damaged) tang missing
Penknife	6397	-	Highly corroded folding knife

Horsegear (8)

A number of objects associated with horses and harnesses were identified in the sample assemblage; three large iron buckles, a fragment from a snaffle bit, a horseshoe and a spur. The iron buckle frames from contexts 1940, 6265 and 6299 are all of different forms but they are all large and are likely to be associated with harness rather than dress. The cheek piece from the snaffle bit (SF 106) recovered from context 1924 is an example of one of the most common forms of cheek piece found in both the post conquest and post medieval periods (Goodall 1990, 1044, fig 334, No.3891). The horseshoe from context 6358 with its lobate profile and circular nail holes set in rectangular countersinkings is of a type that predominates throughout the 12th century until it was replaced by a heavier form of shoe during the 13th century (Clarke 1995, 96). The rowel spur (SF 107) from context 1933 with its long neck and deeply curved arms dates to the 15th-16th century when the fashion for long pointed footwear and spurs was at its height (Ellis 1990, 1038, Fig 331, No.3869).

Table A9.2 Incidence of horsegear by context

Object	Context	SF.No.	Description
Buckle frame	1940	-	Large rectangular buckle frame
Buckle frame	6265	197	Large D-shaped buckle frame
Buckle frame?	6299	-	Large circular frame with heavy corrosion at one point, could be the remains of the pin
Snaffle bit	1924	106	Cheekpiece and mouthpiece link from a snaffle bit.
Horseshoe	6358	-	Fragment from a horseshoe with narrow web and slightly lobate profile. There are 3 circular holes in the arm set in rectangular countersinkings
Spur	1933	107	A rowel spur with a long neck and arms that curve deeply to fit under the wearers ankle, one arm is broken, the other terminates in a figure of eight shaped terminal. The eight pointed rowel is still in place

Lock Furniture (2)

The two keys recovered from the excavations are of the same form although the bow of one is missing. They are both keys for mounted locks and they have stems that protrude beyond the symmetrical bits. They are a late medieval/post medieval form (Goodall 1990, 1007).

Table A9.3 Incidence of keys by context

Object	Context	SF.No.	Description
Key	1933	108	Key for a mounted lock , the bow is missing the stem protrudes beyond the symmetrical bit
Key	6266	-	Key for a mounted lock with and oval bow and a stem that projects beyond the symmetrical bit.

Structural objects (62)

A total of 62 structural items were identified in the sample assemblage, 56 of these were nails. The remaining items are wall hooks and brackets, parts of hinges and a staple.

Table A9.4 Incidence of structural objects by context

Object	Context	SF.No.	Description
Wall hook	3503	-	A wall hook with the hook projecting beyond the end of the shank
Wall bracket	2722	-	A wall bracket with a long tapering shank and an ogival shaped plate with a central perforation at 90 degrees to the shank
Hinge pivot	6145	-	Hinge pivot with a broken pintel
Hinge Strap	6267	465	A hinge strap with 3 perforations along its length and curved over at the end
Hinge Strap	6432		Triangular shaped hinge strap with a fan shaped terminal there are 3 perforations along the length of the strap
Staple		6291	Rectangular staple with one damaged arm

Miscellaneous (23)

The miscellaneous category includes irregularly shaped fragments of sheet and strip, washers, ferrules, rods and screws.

Statement of potential

The sample assemblage that has been looked at for this assessment hopefully reflects the assemblage as a whole. Horsegear and knives are all well represented and a brief scan of the x-ray plates of the remaining material reveals many more examples of knives, spurs and horse harness fittings. The assemblage is very similar to the material recovered from the previous excavations of the Castle in the 1960's and 70's (Hassall 1976), in that it contains a wide range of material covering the whole history of the Castle from the late Saxon to the post medieval period. Together with this earlier material it represents the largest collection of material from a Castle site in the region. However, much of the material was recovered from the upper fills of the motte ditch and fills of post-medieval quarry pits; the material does not necessarily originate from contexts within the castle.

Further work

The whole assemblage should be catalogued with a tabulated list of the nails. A discussion of the parts of the assemblage from well dated secure contexts, will be written with reference to assemblages from other sites in the vicinity including the previous Oxford Castle excavations, the work at Paradise Street and Tidmarsh Lane.

A number of objects will be selected for illustration.

Resources

- Full recording of the assemblage
- Discussion of the assemblage
- Library time
- Preparation of drawing briefs
- Checking drawing and editing text

Assessment of conservation and archive requirements for ironwork*by Esther Cameron***Quantities**

A total of 497 iron objects were received for assessment. The material includes objects recovered from the first phase of evaluation.

X-rayed items include horse bridle-fittings (4), spurs (2), horse shoes (6), keys (7), knives (19), buckles (7), sheet iron (14), strips and bands (29), fittings (16), tools (9), rod (1), thimble (1), wire mesh or grill (2), billets and bars (7), nails (83), other (28). Items of copper alloy, silver or tin found amongst the ironwork are a buckle still threaded with its leather strap (sf.321), decorative edging strips (context 4824), spoon fragment (sf.521) and 4 coins (sf.198, and 709).

Method of assessment

Finds were briefly examined in the conservation laboratory and 242 were x-rayed (x-ray numbers 1326–1345). The remaining 255 were obvious nails (with heads).

Comments

This group contains several finds that would benefit from partial cleaning at least. These include the bridle-fittings (sf.106, decorated fragments from context 8188 and others), spurs, keys, knives, buckles, and some of the fittings and tools (such as sf.341 and 397). X-rays show that four buckles, the spurs, two horse-fittings and a few finds from other categories, including sf.171 and 284, are tinned.

Some of the sheet iron which is seamed and tinned may be box fragments (sf.394 and contexts 6832, 8018, 4612 and 4728)

There are also organic remains of knife handles, including some with silver or copper rivets. A few knife blades have a metal band at the junction of the blade and tang, and cutler's marks.

Condition

The ironwork is corroded and unstable (corroding). It is physically weak and breakable. Only the larger pieces, and some of the knife-blades, are preserved enough for metallurgical analysis.

Potential for further work

- Selectively clean ironwork to reveal construction, dimensions, inlay or coatings
- Arrange for analysis of decorative metals by XRF
- Investigate knife handles (clean, identify materials, clarify construction where necessary)
- Investigate possible metal box (context 8018)
- Re-assemble a few items such as the decorated bridle-fitting from context 8188, the thimble (sf.700), decorative edging (context 4824) and others.
- Separate and clean three coins (sf.198) for identification.
- Investigate buckle (sf.321) and comment on the leather strap.
- X-ray all nails if required

Recommendations for archive

- Improve general packaging for archive
- Recommended levels of relative humidity for iron is less than 20% and for copper alloy less than 35%.
- Improve packaging of composite and fragile items (knives with organic handles; spurs, etc).

APPENDIX 10 COINS AND TOKENS*by Martin Allen*

The 26 numismatic finds from this site consist of 2 English silver coins of the 14th-15th centuries, 1 royal farthing token and 2 unofficial tokens of the 17th century, 4 copper coins of the 17th-18th centuries, and 17 jettons. The assemblage includes 2 finds from the first phase of evaluation.

None of the finds can be dated earlier than *c.* 1321. The 2 English jettons may have been deposited in the 14th century, and the 11 French jettons and 2 English silver coins were probably deposited no later than the first half of the 16th century. The 4 Nuremberg jettons were probably deposited between the mid or late 16th century and the 17th century, and 3 tokens can be dated to the 17th century. Finally there are 3 copper coins probably deposited between 1672 and 1817.

The copper-alloy finds might be conserved for long-term storage, if resources are available, as most of them have deposits of corrosion products. Conservation would probably not lead to substantial enhancements of the identifications in general.

The Henry IV halfpenny (520) might be deposited in a museum, as it is an example of a rare type probably not represented in many museum collections. This coin and the Oxford farthing token (100) might be photographed. The Oxford farthing might be suitable for display or publicity after conservation, as it was issued locally.

Table A10.1: Post-Roman coins, tokens and jettons

No.	Context	Material and type	Date	Weight	Condition	Comments
287	6638	silver penny, York archiepiscopal mint, (?Richard II (1377-99), local dies)	1353-1489 (1377-99?)	0.82 g	heavy wear; clipped	wear indicates that this coin was deposited no earlier than the 15th cent.; coins of this type were finally eliminated from circulation in the early 16th cent.
520	7054	silver halfpenny, London mint, Henry IV (1399-1413), heavy coinage. Withers 2003 p. 21, type 4	1399-1412	0.43 g	moderate-heavy wear	probably a 15th-cent. loss, although coins of this type may have circulated until the debasement of 1544
329	6266	copper royal farthing token, Charles I (1625-49), Rose type 2a, privy mark crescent	1636-44	0.80 g	chipped	probably deposited no later than the introduction of a copper coinage in 1672
100	3511	copper farthing token, Oxford, Nicholas Orum, 1659, Thompson and Dickinson 1993 no. 3711; cf. Williamson 1889-91, Oxfordshire no. 158	1659/60	1.06 g		as 329
192	3636	copper halfpenny token, unidentified issuer	1649-72	2.05 g		as 329
117	3384	copper farthing, Charles II (1660-85), 1674	1674/5	5.88 g	light wear	probably a late 17th-cent. or early 18th-cent. loss
193	6454	copper farthing, William III (1694-1702), 1697	1697/8	5.29 g	moderate wear	18th-cent. loss
105	2619	copper halfpenny, William III, type 1, date illegible	1695-8	7.75 g	heavy wear	18th- or early 19th-cent. loss, probably no later than the withdrawal of pre-1797 copper coins in

No.	Context	Material and type	Date	Weight	Condition	Comments
						1817
705	4721	copper farthing, illegible	1672-1775	4.67 g		probably deposited no later than 1817
357	6377	copper-alloy jetton, England, obv. Edwardian bust, class 15c-d, saltire crosses by neck, border of crowns, crosses and rosettes, rev. cross pattée with quatrefoil-in-circle in each angle, border of pellets, rev. cf. Mitchiner 1988 no. 162	c.1321-1340s	1.97 g		probably a 14th-cent. loss, after c.1321
522	7054	copper-alloy jetton, England, obv. Edwardian bust, class 15c-d, rev. tribach with crown in each angle, Mitchiner 1988 no. 130	as 357	0.95 g		as 357
208	6291	copper-alloy jetton, France, obv. crown, rev. triple-stranded cross fleuretty in tressure, 'Par amour' legend both sides, Mitchiner 1988 no. 439	mid to late 14th cent.	0.92 g		probably a mid 14th cent. to 15th cent. loss
518	7054	copper-alloy jetton, France, obv. standing king under canopy, 'Ave Maria' legend, rev. triple-stranded cross fleuretty in tressure, Mitchiner 1988 nos 400-6	mid 14th cent. to early 15th cent.	2.83 g	chipped	as 208
516	7035	copper alloy-jetton, France, obv. Pascal Lamb, 'Mouton sui: de Beri' legend, rev. triple-stranded cross fleuretty in tressure, Mitchiner 1988 nos 497-503	mid 14th cent. to early 15th cent.	2.05 g		as 208
519	7054	copper-alloy jetton, France, obv. shield of France ancient with six lis and crown, in six-arched tressure, 'Ave Maria' legend, rev. arcuate cross fleuretty, 'Ave Maria' legend, Mitchiner 1988 nos 427-31	mid 14th cent. to early 15th cent.	2.83 g		as 208
467	6377	copper-alloy jetton, France, obv. 'Moor's head', 'Ave Maria' legend, rev. arcuate cross fleuretty, Mitchiner 1988 nos 370-8	mid 14th cent. to 15th cent.	1.15 g		as 208
286	6584	copper-alloy jetton, France, obv. crown, rev. triple-stranded cross fleuretty in tressure, illegible legends	late 14th cent. or 15th cent.	1.07 g		probably a late 14th cent. or 15th cent. loss
509	6584	copper-alloy jetton, France, obv. crown, 'Ave Maria' legend, rev. triple-stranded cross fleuretty in tressure	late 14th cent. or 15th cent. 286	1.41 g		as 286
242	6573	copper-alloy jetton, France, obv. shield of France modern, 'Ave Maria' legend, rev. triple-	15th cent.	3.06 g		probably a 15th-cent. of early 16th-cent. loss

No.	Context	Material and type	Date	Weight	Condition	Comments
		stranded cross fleuretty in tressure				
291	6584	copper-alloy jetton, as 242	15th cent.	8.08 g		as 242
241	6573	copper-alloy jetton, France, obv. shield of France modern, fictitious legend, rev. triple-stranded cross fleuretty in tressure	15th cent.	5.95 g		as 242
433	6763	copper-alloy jetton, France, obv. three lis, rev. triple-stranded cross fleuretty in tressure, 'Ave Maria' legend both sides, obv. cf. Mitchiner 1988 nos 568-72	15th cent.	1.32 g	slightly chipped	as 242
195	6448	copper-alloy jetton, Nuremberg, anonymous Rose/Orb type	c. 1550s - 1580s	1.52 g		mid-16th cent. to 17th-cent. loss
271	6377	copper-alloy jetton, Nuremberg, Hans Schultes I (1553-84), Rose/Orb type, Mitchiner 1988 nos 1356-8	1553-84	2.14 g		as 195
243	6584	copper-alloy jetton, Nuremberg, Hans Krauwinckel II (1586-1635), Rose/Orb type, 'Gottes gaben' legend, Mitchiner 1988 nos 1534-9	1586-1635	0.84 g		late 16th-cent. or 17th-cent. loss
155	6290	copper-alloy jetton, Nuremberg, Hans Krauwinckel II, Rose/Orb type, 'Gotes segen' legend, Mitchiner 1988 nos 1553-73	1586-1635	1.23 g		as 243

APPENDIX 11 FLINT*by Rebecca Devaney*

A total of 50 pieces of struck flint and 33 fragments (351 g) of burnt unworked flint were recovered from the evaluation and excavation at Oxford Castle (*Table A11.1*). The assemblage can be broadly dated to the Neolithic and Bronze Age.

Table A11.1. Summary of flint by type and area

Category	Evaluation	Excavation	Total
Flake	3	26	29
Blade		9	9
Blade-like flake		1	1
Irregular waste	2	5	7
End scraper		1	1
Retouched blade		1	1
Retouched flake		2	2
Total	5	45	50
Burnt unworked (No.)	7	26	33
Burnt unworked (g)	95	256	351

Methodology

The flint was catalogued according to a broad debitage, core or tool type. Information about burning and breaks was recorded and where identifiable raw material and technological characteristics were also noted. Where possible dating was attempted. In addition burnt unworked flint was quantified by count and weight. The data was entered into an MS Access database.

Provenance

The worked flint was spread between 34 contexts, deriving from two phases of archaeological work. The evaluation produced five pieces of worked flint from four contexts and the excavation produced 45 pieces from 30 contexts. Most contexts contained three or fewer pieces of flint, with just one context (8185 from the excavation) containing eight pieces. Features at the site date from the Anglo-Saxon to the post medieval periods. None of the recovered flint is consistent with historic gunflint manufacture or knapping for building material and therefore the material recovered from the site is assumed to be prehistoric in date and consequently redeposited.

Raw material

Where identifiable, the most predominant raw material is gravel flint. In general these pieces have a thin, abraded and often stained cortex and are likely to derive from local sources. There are also two pieces of Bullhead flint. This is found in the Bullhead Bed at the base of the Reading Beds (Dewey & Bromehead 1915:18-19) and is identified by a green cortex with an underlying orange coloured band. The closest source to the site is between Reading and Newbury, about 35 km to the south.

Condition

The condition of the assemblage is fairly good. A total of 11 pieces of flint were recorded as being in a fresh condition and 28 pieces show slight post-depositional damage. Just six pieces exhibit moderate post-depositional damage and one piece is heavily damaged. Unretouched edges are most frequently damaged and implies the presence of post-depositional disturbance. Surface alteration affects about half of the assemblage (22 pieces). Light, moderate and heavy cortication was seen on 11, five and six pieces respectively. These pieces are spread between 14 contexts. Just two pieces are affected by iron staining. A total of 14 pieces suffer breaks and none show signs of burning.

Technology and dating

Unretouched debitage dominates the assemblage (46 pieces). Of this total, 29 pieces are flakes, nine are blades and one is a blade-like flake (*Table 1*). The proportion of blades is high (26%) and suggests the presence of early Prehistoric material (Ford 1987:79, table 2). Many of the blades have technological characteristics associated with this period, five pieces have dorsal blade scars and one has platform edge abrasion. The blades are quite small in size and six are broken. The blade-like flake has dorsal blade scars suggesting that it has been removed from a core used for blade production. It also has a hinge termination, which indicates that it may have truncated too early and therefore formed a flake rather than a blade. One of the flakes is worthy of particular mention, it is made from Bullhead flint, is side trimming and has usewear on its distal right. The piece is reminiscent of those seen in Neolithic contexts elsewhere. Three of the pieces of irregular waste have dubious knapping scars and are possibly natural.

The retouched element of the assemblage consists of four pieces (*Table 1*). The end scraper, which is made on a secondary flake, has direct retouch along its distal end. The retouched blade has abrupt direct retouch along its right edge and the left edge has possibly been utilised. The larger of the two retouched flakes has irregular direct retouch along the right edge, which creates a sharp cutting implement backed by cortex on the left edge. The other retouched flake has inverse retouch along its right edge. It is smaller and in poorer condition than the other retouched flake. The tools are chronologically undiagnostic, but are consistent with a broad Neolithic to Bronze Age date.

Discussion and potential

The flint from Oxford Castle can be broadly dated to the Neolithic and Bronze Age. Its presence at the site implies prehistoric activity in the area. The small assemblage and the lack of any prehistoric features make further analysis unnecessary. Therefore no further work is recommended and this assessment report will form the basis of the final report. Any flint recovered from the watching brief will need to be recorded and added to this report.

APPENDIX 12 LEATHER*by Quita Mould***Methodology**

The following assessment is based on a scan of a sample of the leather recovered from the excavations. A representative sample of 44 bags of a total of 77 has been examined, coming from 14 of the 36 contexts containing leather, and comprising two of nine boxes. The information gathered was then correlated with the available contextual information. An assessment (2-8) with timings and costing (9) for the necessary work is provided along with recommendations for conservation (7).

Condition of the material

The leather was wet and washed when examined. Some of the surrounding soil adhered to a small number of pieces and heavy iron staining was also noted on a number of objects. It will be necessary to clean a small number of the leather objects prior to conservation. Much of the leather is delicate, tears easily and is liable to fragment. The material is currently packed wet in double, self-sealing polythene bags within air-tight storage boxes

Quantification and provenance

The majority of the leather (72 bags) was recovered from Area A in 27 contexts attributed to phase 2 (medieval). A small amount was found in Area B, in a trench below D-wing, and during the Watching Brief. Only material from Area A was seen as part of this assessment. In addition, a bag SF199 context 6435 said to contain fabric was sent but has not been included in this assessment.

It is estimated that a little under half of the leather assemblage has been scanned for this assessment (Leigh Allen pers. comm.). The vast majority of the leather seen comes from medieval moat fill. It is summarised below in table 1 and 2. A small amount of leather was found in a grave fill (context 6435) of post-medieval date and a modern pit (context 9254); this was not seen during the assessment.

Table A12.1: medieval shoe parts seen

Shoe parts	quantity
Shoe soles	5
Sole fragments	20
One-piece uppers	11
Vamp fragments	10
Upper fragments	70
Upper inserts	6
Tongue	1
Heel stiffener	1
Top bands	2
rands	2
Clump repairs	7

Table A12.2: waste and scrap leather seen

Waste leather type	quantity
Intersectional cutting pieces	3
Secondary waste, other	52
Trimmings	19
Hide edges	6
Other unusable areas	2
scrap	27

Range and variety

The leather examined from the moat fill was remarkable consistent comprising principally of shoes of turnshoe construction of styles dating to the late 11th-early/mid 12th century. Two variations of turnshoe construction were noted that suggest a proportion of the shoes are in the Saxo-Norman (Anglo-Scandinavian-Norman) tradition. Much of this shoe leather was cut up before being thrown away and was mixed with secondary waste; features suggesting that the shoe leather is cobbling waste. The medieval shoe parts are itemised in table 1 above. It is estimated that at least eleven individual shoes are represented amongst the shoe leather examined. Shoes of both adult size and to fit small children are present. The majority of the shoes are made of fine sheep/goatskin, at least five with stitching from a decorative embroidered stripe running down the vamp to the toe, and at least two with decorated top bands present. A folded and stitched strap (context 7268), a knotted strap (SF606 context 7174), and thick cattle hide panels from a possible bucket (context 7266) were also noted. In addition, a group of five Victorian shoes, also cobbling waste, were recovered from a prison hard labour pit (context 6065).

Comparative material

Shoes from previous excavations of the Castle Moat, the Barbican Ditch and associated features are of later date (Jones in Hassall 1976, 275-296). Shoe styles in this assemblage are comparable with a small number of shoes found amongst a group in a large cess-pit at the Clarendon Hotel, Oxford (Sturdy in Jope 1958, 75-7, 1-5). Groups of shoes of this date have been found at London (Grew and de Neergaard 1988, 9-13; Pritchard in Vince 1991, 220-238), Winchester (Thornton in Biddle 1990, 591-617), York (Mould, Carlisle and Cameron 2003, 3314-3319), Beverley (Atkinson and Foreman in Evans and Tomlinson 1992, 176-7, 179-182) and Durham (Thornton in Carver 1979, 26-36). Single shoes of this date have also been found at other cities for example Norwich and Lincoln. Shoes made using a tunnel stitched turnshoe construction as found here are limited to London, York and Winchester, with a small number of shoes of significantly earlier date from St. Aldates, Oxford (Thornton in Durham 1977, 155-160).

Potential for further research

The leather comes from well-stratified deposits and can be closely dated. As so little of this date has been published previously from the city, it is of some interest both locally and regionally. It probably shows the shoe styles worn by the inhabitants of the castle and provides evidence for the repair and manufacture of shoes in the locality during the late 11th-early/mid 12th century period. Of particular interest is the occurrence of shoes in the Saxo-Norman (Anglo-Scandinavian-Norman) tradition amongst this group. Their study will add to our understanding of the transition at this time as reflected in technological change and is of wider, national, interest.

The cattle hide panels will require study as non-shoe leather of this date is of particular interest. Should the fragments come from a leather bucket it will be the earliest dated example known to the author; previous examples coming from late medieval and Tudor contexts. The leather from grave fill (context 6435) may relate to the burial or be residual in the fill; the relationship is unknown at present.

Conservation requirements

The majority of this assemblage is of sheet/goatskin and, being thin, is particularly fragile and prone to tearing and fragmentation when wet. Some of the leather is folded; the larger pieces of shoe upper would benefit from being flattened out during the conservation process, if possible, to aid subsequent study, illustration and eventual storage.

The leather cannot be stored wet indefinitely. Without conservation the leather will deteriorate and is potentially hazardous to health being liable to fungal and bacterial infection. Wet leather presents difficulties with short-term storage, transportation, study and illustration (English Heritage Guidelines 4, 6). The eventual repository of the leather should be consulted regarding their discard and retention policy for wet organic material. It is usual for this to follow that recommended in the SMA Guidelines and unlikely that they will accept wet leather. It is recommended that the assemblage be conserved. Once conserved the material can be safely stored and will come to no harm in the event of delay or postponement of any stage of the projected work. Features of construction, decoration and species identification, not visible when the leather is wet, are revealed when the leather is dry. The necessary work can also proceed more quickly when the leather is dry. I will be happy to discuss the conservation requirements further with you and curatorial and conservation staff of the receiving museum.

Work required

A basic record (as defined in RFG & FRG Guidelines 1993) of the entire assemblage is needed, to include measurement of complete soles and other relevant dimensions, and species identification where possible. A proportion of the leather has several individual items contained within a single bag. The leather needs to be separated out into individual objects (and associated components) where necessary and allocated a unique identifying number by which they can be identified during recording, illustration and publication. This re-bagging and numbering can be undertaken during the recording process. The basic record should be entered onto an excel database to form part of the site archive. The contextual information can then be correlated and the assemblage quantified by functional category within each stratigraphic group and site phase. This information will inform those studying the stratigraphic sequence and may provide useful independent dating to compliment the ceramic and numismatic evidence. It will be necessary to examine the cattle hide panels in detail to enable identification. It may also be necessary to study the leather from grave fill (6435) and a small provision should be made for this. The leather assemblage should be summarised for inclusion in the publication of the site narrative. This will require a brief description of the shoes, other items and waste leather recovered. The shoes will require a brief description of the construction and styles represented, with a diagram of the shoe styles found, as appropriate. The question of the Anglo-Norman transition and technological change will be briefly considered. An example of each style of shoe, and any significant variants, and other objects will be selected for drawing and will be catalogued for publication. Additional information will be presented in tabular form wherever possible.

Sketches will be provided to guide the illustrator as to views and details required, conventions to be used etc. Alternatively, pencil drawings for digitising can be provided by prior arrangement.

Further work

- Task 1: re-bag, renumber and compile basic record
- Task 2: input onto database
- Task 3: correlate with site data
- Task 4: quantification
- Task 5: study Saxo-Norman transition/technological change
- Task 5: study cattle hide panels
- Task 6: study leather in grave fill
- Task 7: prepare summary for publication
- Task 8: sketch leather for illustration, prepare diagrams
- Task 9: check illustrations/edit text

APPENDIX 13 WOOD*by S J Allen***Objectives**

This report aims to meet the requirements of MAP2, Phase 3, Assessment of Potential for Analysis, (English Heritage, 1991). The work carried out has been the cleaning and examination of the finds submitted. This report is an identification of the finds where possible and an assessment of their condition. An evaluation of the potential of each group of material for further investigation is included, with recommendations for long term stabilisation. No analysis of the assemblage or the artefacts have yet been undertaken and any conclusions at this stage are provisional.

Procedures

The objects were delivered to the Wet Wood Laboratory wet packed. The smaller pieces had been double bagged, some in self seal plastic bags, others in plastic bags secured with plastic coated wire ties. The latter had not been sufficient to prevent some drying out of the finds between lifting and assessment and it is suggested that the experiment not be repeated. Larger pieces had been wrapped black polythene secured with adhesive tape.

Each object was in turn removed from its packaging, washed under cold running water to remove adhering burial deposits and returned to its packaging after examination and species identification. No repackaging has been carried out.

It needs to be noted that the wood had generally been bagged and labelled by context rather than as individual pieces and not all had been sorted. Fragments of leather were found in bags with wood from contexts 9225 (x2) and 7294 (x1) with a large group from context 7260 (also 1x bone fragment). Four pieces of pottery including body and rim sherds were spotted packed with wood from context 7294. These ought to be brought to the attention of the relevant specialist.

Condition

The wood was in a generally good state of preservation. Waterlogged anoxic conditions were maintained in all contexts in which the material survived up to the time of excavation. Heavy mineral staining and concretions were noted on several artefacts which may be partly due to storage conditions after lifting but would argue for a very high mineral content in the burial context to start with. Several pieces were waterlogged but had large longitudinal shrinkage cracks.

Many pieces had suffered from abrasion or wear, obscuring surface information which would once have been there. The absence of woodworm damage suggests that this material was deposited directly into waterlogged contexts in which some degree of movement or disturbance of the finds took place during and immediately after burial.

Listing and Recommendations

The recorded data has been placed in a Microsoft Access database which includes the currently recorded information from the artefacts and their labels. No wood record sheets had been produced and no additional information from the site records has been added. It is

therefore a provisional statement for assessment purposes only. All species identifications follow Schweingruber (1982).

Little of the material is suitable for dendrochronology. The one sample recorded as such has less than 50 rings and unless there is a very good local chronology, it may not date. That said, there is nothing to preclude its submission for analysis. One of the larger pieces (Context 549, SF 709) might be suitable for dendrochronology and a saw cut for such has indeed been started. Unfortunately this piece has an interesting piece of technology in the form of an impression made by a timber 'dog', a large staple used to anchor a timber whilst it is being worked on the ground. Consideration should be taken as to whether to preserve this piece or sample it for dendrochronology. A suitable compromise might be to take a core sample rather than a slice, but this would need to be done by the dendrochronologist. .

Much of the assemblage consists of roundwood which, though of interest as a group, may be discarded unless C14 dating is considered necessary. There is insufficient material to justify a tree ring study on this component of the assemblage.

There are some interesting small finds from the site. These include part of a wooden bowl (context 7294, SF664), a paddle blade (context 7262), a bung (context 1951), part of a weaving tablet (context 7266), a pin (context 9225), a plate (context 5756) and a possible spindle (context 7262). All of these objects should be drawn and retained for future study, archive or display. The remainder of the assemblage requires no further recording and unless required for other purposes, may be discarded.

APPENDIX 14 HUMAN BONE*by Dr Peter Hacking*

The remains of 75 articulated burials were seen during the excavation, evaluations and watching brief at Oxford Castle, 16 of which were recovered from the watching brief; two of the burials were left *in situ*. Twelve of the burials were assessed for this report, 16% of the total assemblage. A brief assessment of the charnel remains, within the motte ditch, was made by studying bones from contexts 6264 and 6533.

Articulated skeletal remains were recovered from Phase 1, 2 and 3 deposits. For the assessment two of the Phase 1 burials (100% of the assemblage), two of the Phase 2 burials (20% of the assemblage) and eight of the Phase 3 burials (13% of the assemblage) were assessed.

Phase 1 (Saxon-1071)

4238. Bones present: Both lower fibulae and feet (except L. mid-tarsus), in good condition. Adult, sex & stature indeterminate.

4249. Bones present: Both tibiae, fibulae and feet, except for R. phalanges & 2 cuneiforms. Small adult, probably female, 1.53m tall. Enthesopathy (lipping) of both calcanea at insertion of Achilles tendons, probably activity related.

Phase 2 (1071-1485)

4225. Much of skeleton present, in good condition, but lower legs and left forearm missing and skull fragmented. 5 year old child. Caries of left upper 1st deciduous molar but no other abnormality.

4240. Much of skeleton present, in good condition, but left femur, both tibiae and feet and left hand missing. Female, 20 years old, c.1.55m tall. Minor wedging of body of TV8, probably healed adolescent osteochondritis, but of more interest is gross dental calculus, confined to the right maxillary & mandibular teeth, and suggesting R. facial palsy.

Phase 3 (1485-1769)*NE-SW burials*

6444. Bones present: Incomplete skull, 1st-4th CV, 4th-12th TV, 1st LV, and Rt. upper limb, all well preserved. An 18 year old male with several post-mortem craniotomies:

1: horizontally through frontal, parietals and occipital (vault cap missing)

2: vertically through parietals and temporals

3: obliquely through base of left mastoid process.

Dental hypoplasia, caries & calculus.

6774. Bones present, in poor condition: Fragments of cranial vault; 15 loose teeth, 2nd-6th CV, thoracic & lumbar neural arches; long bones of upper & lower limbs, hands & feet. Male, 45-50 years old, 1.73m tall. Moderate lipping and a widespread patchy periostitis involving all the major long bones, suggesting chronic inflammation or infection, possibly syphilitic. There is also an incompletely united fracture of the left scaphoid.

6827. Near complete skeleton of a 25 year old male, 1.66m tall. The limb bones, cervical & lumbo-sacral vertebrae are well preserved; the skull and thoracic vertebrae are fragmented. Fusion of the left sides of the bodies of CV 4 and 5; localised angular deformity suggests occurrence while growing. Mild dental hypoplasia and caries.

7023. Bones present: Skull fragments; upper limbs, vertebrae, pelvis and femora, in good condition; the lower leg bones and feet are missing. A 20 year old male, height approx. 1.56m. There are several craniotomies:

- 1: horizontal through occipital and temporals
 - 2: vertical through frontal, midline
 - 3: vertical through L. temporal anterior to T M Joint
 - 4: vertical through R. petro-mastoid
 - 5: oblique through R. mastoid process
- Left cribra orbitalia (anaemia)

The left femur is normal; the right femoral neck is short and anteverted with marked varus deformity (coxa vara) but with no evidence of previous fracture or Perthes Disease, so cause of deformity is unknown. There are Schmorl's nodes in TV 8,9,11,12 and LV1.

W-E burials

6441. Near complete skeleton of a male, 50+ years old, 1.77m tall. The limb bones are in good condition; the skull, vertebrae & ribs are poorly preserved. Widespread degenerative osteophytic lipping but no arthritis or ankylosis. Stenomic R. femur (AP thickening) ?cause. Dental caries & calculus; fused, malaligned L. upper 7 & 8.

6641. Near complete skeleton of 13 year old adolescent. Long bones in good condition; skull & vertebrae considerably fragmented. Dental hypoplasia and flecks of calculus, but no other abnormality.

NW-SE burials

6434. Bones present: Lower lumbar vertebrae, pelvis, sacrum, parts of arm long bones, all poorly preserved; both lower limbs, feet, & hands in good condition. Adult male, 20-25 years old, 1.68m tall. Healed fracture of left upper tibial shaft and osteochondritis dissecans of left medial femoral condyle. An asymmetrical transitional lumbo-sacral vertebrae is either LV5 sacralised on R. or SV1 lumbarised on L.

6883. Bones present: Skull (partly fragmented), most of the vertebrae, upper limb bones, pelvis and feet, but the femora, tibiae & fibulae are missing. 22 year old male, c.1.66m tall. Schmorl's node in TV 9 and small exostoses on each talus, both of doubtful significance, but no other abnormality is seen.

Charnel

6264. (Charnel). Bones present: 2nd, 3rd, & 4th lumbar vertebrae, right femur and left humerus from a late adolescent (c18yrs); right humerus, 2nd metacarpal, 3rd & 4th metatarsals and 1st PP from an adult, probable female, c.1.56m tall. No abnormality shown. N.B. At least 2 individuals.

6533. (Charnel). Bones present: Right medial cuneiform and 5th metatarsal, adult.

Further work

A total of 12 out of the 75 skeletons have been fully recorded for the purposes of this assessment. It is recommended that the entire assemblage merits full analysis and publication. The discovery of much of the material in the moat ditch is unusual and increases the value of the assemblage. There would seem to be evidence for a range of pathological conditions including facial palsy which may be indicative of syphilis. In addition there is considerable evidence for anatomical dissection of a number of skeletons.

Analysis of 63 skeletons (some of which are fragmentary)

Library research and report writing

Recording and reporting of charnel bones

Recording and reporting of burials recovered from the watching brief

Following consultation with a local vicar, it is hoped that it will be possible to re-inter the human remains within the castle site or on a nearby site.

APPENDIX 15 ANIMAL BONE

by Emma-Jayne Evans

Introduction

This report encompasses the animal bones from the site at Oxford Castle, from which a total of 22678 fragments of bone and teeth were excavated.

Methodology

Identification of the bone was undertaken at OA with access to the reference collection and published guides. A sample of the animal remains were counted and weighed, and where possible identified to species, element, side and zone (Serjeantson 1996). Also, fusion data, butchery marks, gnawing, burning and pathological changes were noted when present. Ribs and vertebrae were only recorded to species when they were substantially complete and could accurately be identified. Undiagnostic bones were recorded as small (small mammal size), medium (sheep size) or large (cattle size). The separation of sheep and goat bones was undertaken using the criteria of Boessneck (1969) and Prummel and Frisch (1986), in addition to the use of the reference material housed at OA. Where distinctions could not be made, the bone was recorded as sheep/goat (s/g).

The condition of the bone was graded using the criteria stipulated by Lyman (1996). Grade 0 being the best preserved bone and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable.

The quantification of species was carried out using the total fragment count, in which the total number of fragments of bone and teeth was calculated, and this figure broken down to the total number of fragments identifiable to each species. In addition the minimum number of individuals (MNI) was calculated using the zoning method (Serjeantson, 1996). The elements used for working out MNI do not include ribs, vertebra, loose teeth, tarsals and carpals unless these are the only elements present.

Tooth eruption and wear stages were measured using a combination of Halstead (1985), Grant (1982), and Levine (1982), and fusion data was analysed according to Silver (1969). Measurements of adult, that is, fully fused bones were taken according to the methods of von den Driesch (1976). Asterisked (*) measurements indicate bones that were reconstructed or had slight abrasion of the surface.

Results

Quantity of material

A total of 2939 hand collected animal bone from Oxford Castle has been fully analysed and recorded for this assessment, 13% of the total excavated at the site. Approximately half of the bone from Areas B and C was analysed and 25% of the material recovered from Area A. The sample included bones from all phases. A number of these bones have fresh breaks, the re-fitting of which has reduced the total fragment count to 2353, weighing 38068 g.

Species Representation

A total of 1024 fragments of bone and teeth were identifiable to species, 43.5% of the total number of bones assessed, with Tables 1 and 2 below highlighting all the species identified. Of the sheep/goat bones thirty three were identified as sheep and one as goat.

Table A15.1. Number of mammal bones identifiable to species (MNI of main domestic animals in brackets).

Phase	Sheep/goat	Cattle	Pig	Horse	Dog	Cat	Roe deer	Fallow deer	Red deer	Rabbit	Hare	Total
1	162 (12)	98 (5)	45 (4)	8 (1)	-	1	-	-	-	-	-	314
2	105 (10)	48 (3)	39 (5)	2 (1)	2	1	1	-	4	-	1	203
3	50 (5)	47 (5)	22 (2)	4 (1)	-	-	-	-	-	70*	-	193
4	110 (7)	86 (4)	36 (3)	2 (1)	3	-	3	2	-	1	2	245
<i>Total</i>	<i>427</i>	<i>279</i>	<i>142</i>	<i>16</i>	<i>5</i>	<i>2</i>	<i>4</i>	<i>2</i>	<i>4</i>	<i>71</i>	<i>3</i>	<i>955</i>

* 69 fragments from an articulating skeleton

Table A15.2. Number of bird and amphibian bones identifiable to species (MNI in brackets)

Phase	Domestic fowl	Goose	Mallard	Domestic goose	Duck	Buzzard	Owl	Frog/toad	Bird	Unidentified	Total
1	8	-	-	-	-	-	1	-	9	563	581
2	8	3	-	-	-	-	-	10	5	229	255
3	3	-	-	-	-	1	-	-	1	218	223
4	5	4	1	1	1	-	-	-	8	319	339
<i>Total</i>	<i>24</i>	<i>7</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>1</i>	<i>10</i>	<i>23</i>	<i>1329</i>	<i>1398</i>

Condition

The bone has survived in reasonably good condition, with the vast majority (73.2%) scoring 2 using Lyman's grading system. The good condition has not only allowed for a high percentage of bones to be identified to species, but also for many butchery marks, pathologies and gnawing marks to be observed, and for many of the bones to be measured and analysed for age at death information. The butchery evidence indicates that skinning, dismemberment, marrow extraction and horn working was carried out on the animals. Very few articulations were noted, which is not unusual for general domestic waste, with the exception of the articulating rabbit skeleton from phase 3. It is quite likely that this individual died naturally on the site, as there is no evidence of processing on the skeleton.

Potential and recommendations

There is good potential for the animal bones from Phases 1 and 2 to reveal the importance and use of animals to the local population through time. Even from this assessment changes in the importance of the main domestic species can be seen, with sheep/goat dominating all phases with the exception of Phase 3. Further analysis of the remaining bone will allow us to determine age at death patterns, any changes in size of the animals between the different phases, and any distinct butchery or disposal methods. Analysis of the sieved material may also reveal the presence of small mammals and fish, which will identify, any species of fish that were contributing to the diet of the populations present through the phases of the site. The Phase 3 and Phase 4 material is mostly from dumped deposits of uncertain provenance. However, although the Phase 3 deposits within the motte ditch are of uncertain provenance they are unlikely to contain much residual material. Analysing some of the bone from these moat fills would allow us to see further differences in the bones between the phases.

APPENDIX 16 PLANT REMAINS

by Ruth Pelling

Introduction

During excavations at the Oxford Castle site a series of bulk samples of deposit were taken for the extraction of charred plant remains. Samples were also taken for waterlogged remains from within the moat. Sampling was intended to produce remains from a representative range of all the feature types encountered at the site. Feature types sampled included pits, cess pits, postholes, ditches and gullies, beam slots, sections of rampart, floor surfaces and layers and graves. Bulk samples were processed by standard water flotation using a modified siraf type flotation machine at OA. The volume of deposit processed for each sample ranged from 2 to 70 litres. Occasional samples were processed by hand flotation or wet sieving for the recovery of bone and artefacts or waterlogged remains. The volume of wet sieved or hand floated samples ranged from 0.4 to 25l. Charred or mineralised samples were floated onto 500µm mesh sieves and allowed to air dry slowly. Waterlogged flots were processed onto 250µm mesh sieves and kept wet.

Assessment Method

A selection of 265 dry flots and five waterlogged samples were assessed for the quantity and quality of plant macrofossils present. Assessment was conducted by first splitting the flots in to manageable fractions using a stack of sieves from 2mm to 500µm. Each fraction was scanned under a binocular microscope at x10 magnification and the quantity of grain, seeds and chaff and other quantifiable remains was estimated. The range of cultivated species or plant types present and the standard of preservation were noted for most samples. Quantification of seeds and chaff was based on a graduated scale (+ = 0-10; ++ = 11-50; +++ = 51-100; 100+; 500+; 1000+). Charcoal was recorded on a four point scale from present (+) to abundant (++++). For waterlogged remains the most common species noted during the assessment were recorded with an estimate of total abundance of seeds on a four point scale as for charcoal. The assessment results are recorded in an Excel spreadsheet. Waterlogged species are recorded in a separate table.

Assessment Results

A summary of the results of the assessment is shown in Tables A16.1-A16.3. They are discussed by phase.

Phase 1 (late Saxon – 1071)

A total of 208 samples were assessed from Phase 1. The greatest number of samples were from postholes or post-pipes. Samples from pits and cess pits, floor surfaces, layers, beam slots, ditches and gullies, hearths, rampart make up and mortar deposits were also assessed. A summary of the Phase 1 samples assessed is given in Table A16.2. The summary gives the number of samples from each feature type assessed with the number of samples containing over 50 items (grain, chaff, seeds etc). The presence of waterlogged or mineralised remains and charcoal is also noted, with the number of samples containing frequent charcoal also recorded. The major cultivated or economic species noted are tabulated with approximate relative abundance (from present to abundant). Of the 208 samples assessed 74 produced more than 50 items. Only three samples produced no seeds or chaff.

Several of the posthole samples were small but grain rich. Preservation of the grain tended to be very good. While weed seeds were present in the majority of samples they tended to be present in low numbers in all but four samples. Chaff was always rare. Occasional fragments of *Corylus avellana* (hazel) nut shell and pulses were also noted. Only one sample produced no seeds or chaff. Charcoal was present in 96 samples but in small quantities in all but six.

The large quantities of grain in these posthole samples may be associated with grain burnt during storage and as such should be examined with careful reference to plans in order to plot spatial distribution. Samples from floor surfaces and layers and from beam slots produced several grain rich samples which again may be related to storage within structures. As with the posthole samples weeds and chaff tended to be rare in relation to grain.

Pits and cess pits, which tend to be characterised by secondary deposits of waste, produced far fewer grain rich samples in proportion to the structural features. Two cess pit samples were assessed both of which produced moderate quantities of grain with some weeds. No mineralised remains were noted. Charcoal was frequent in both samples. Of the 42 pit samples, nine produced greater than 50 items. Charcoal was present in 39 samples of which 13 produced large amounts. Chaff was very rare, present in only three samples, while weeds were present in 22 samples, and abundant in four of them. Mineralised remains were present in seven samples, all of which contained moderate (less than 50) charred seeds. The most frequently noted mineralised species were seeds of *Malus/Pyrus* sp. (apple/pear), while occasional weeds and small fly pupae were also noted.

Of 14 rampart samples assessed eight produced greater than 50 charred items, including four samples which were very rich in grain (greater than 100). Chaff was noted in one sample only and weeds tended to be rare in all but one sample. Charcoal was present in most samples but always in small quantities. The three hearth samples were unsurprisingly rich in charcoal. Two of them also produced particularly large numbers of weeds as well as moderate quantities of grain and chaff remains. The two ditch/gully samples produced rare grain and no charcoal, while one produced a significant quantity of weed seeds. The deposits of mortar produced only rare grain.

Grain dominated the majority of the samples assessed and was generally well preserved. Free-threshing *Triticum* sp. (wheat) and *Hordeum vulgare* (barley) were most commonly noted, while *Avena* sp. (oats) and *Secale cereale* (rye) were also present. The identification of chaff should enable the refinement of the cereal identification. While weed seeds often seem to be limited there are several samples with significant assemblages which should provide valuable evidence for crop processing activities as well as cultivation conditions. Pulses and some fruit also appear to be represented and identification should further refine and extend the species list. While charcoal was present in many samples the quantities are generally low. Those samples with more abundant charcoal should provide useful indication of both structural wood and fuel wood usage.

Phase 2 (1071-1485)

A total of 29 samples were assessed from Phase 2 deposits, including six samples taken from the moat, five of which were examined for waterlogged remains. The majority of charred assemblages assessed were taken from pits, while samples were also examined from a beam slot, floor deposits, graves, a posthole and rampart deposits. Charred remains were more limited than for the phase 1 deposits with six samples only producing more than 50 items (two from pits, one from a posthole and three from rampart deposits). Four samples produced waterlogged plant remains. A summary of the assessment results is shown in Table A16.3. The species noted in the waterlogged samples are shown in Table A16.5.

All samples assessed for charred plant remains produced grain, usually in low quantities and of poor to moderate preservation. Two pit samples were grain rich with more than 100 grains. One rampart sample also produced more than 100 grains. A posthole and two other rampart samples produced smaller but still useful grain deposits (greater than 50). Weeds were noted in several pit, posthole and rampart samples, with occasional weeds in the beam slot and one floor deposit. The grave deposits produced occasional grain and charcoal only. Chaff was

noted in two pit samples. Charcoal was present in several samples but usually in low quantities. Three pit deposits produced more abundant charcoal. Mineralised seeds were noted in one pit deposit.

Waterlogged seeds were present in three of the five samples assessed. The other two samples (<7154>, context 7145 and sample 7199 context 7240) produced waterlogged wood fragments and charcoal with no seeds. The seeds present included large fruits or nuts as well as seeds which are more likely to have derived from the surrounding environment. Sample 7142 (context 7126) produced only occasional badly preserved *Prunus spinosa/avium* (sloe/cherry) stones and degraded wood fragments. The remaining two samples (contexts 7283 and 7294) produced a greater range of seeds which will provide some indication of the immediate environment and conditions within the moat. Some arable weeds were noted (*Agrostemma githago*, *Anthemis cotula*). Closer examination should establish if these arable weeds may be derived from contaminated food waste (for example if associated with bran fragments) or from cereal processing waste.

Phase 3 (1485-1769)

A total of 28 samples were assessed from Phase 3 deposits. Of the samples assessed, eleven were from burials which were processed by hand for the recovery of bones but had also produced small flots. Other samples were assessed from a beam slot, ditch, moat, pits and post-holes.

One sample, from a beam slot, produced a grain rich assemblage with over 100 grain and occasional weeds. The remaining Phase 3 samples produced occasional grain and weeds only and three produced limited chaff. Charcoal was present in small quantities in several samples but in more abundant amounts in only three. The cereal species noted were free-threshing *Triticum* sp., *Hordeum vulgare* and *Avena* sp. Pulses were noted in one sample and *Corylus avellana* fragments in another. One sample was assessed for waterlogged remains. A large quantity of waterlogged wood was noted including large fragments of branch wood. No weeds were noted.

Recommendations

The Phase 1 samples included several grain rich assemblages from possible structural contexts. Such assemblages should provide an informative indication of storage patterns and spatial use as well as crop husbandry practices. The pit samples should conversely provide some information about refuse disposal as well as crop husbandry practices, while the mineralised deposits will provide additional dietary evidence not usually recovered from charred assemblages (such deposits tend to be associated with human sewage). It is therefore recommended that a selection of samples are sorted and analysed in full for charred plant remains from both structural deposits (postholes, beam slots, floors etc) and from secondary deposits (pits, ditches, hearths, rampart deposits). While it is important that all the richer samples (>100 items) are sorted it is also important to include a randomly selected range of the smaller but still useful samples (>50 items) so as to reduce bias during the analysis and to ensure a representative range of samples have been examined. As the assemblages do appear to be fairly repetitive it is not necessary to sort all the samples with useful numbers of remains. The seven deposits which produced mineralised remains should also be sorted.

The Norman/early medieval period is an important one for arable development and crop introductions. As such charred plant remains are important in establishing the extent and date of new introductions and to what extent new cultivation systems impact on the archaeological record. While the remains from Phase 2 are much more limited than for the previous phase there is scope for useful information from several assemblages, particularly from pit deposits.

It is recommended that the six samples with larger assemblages (>50 items) are sorted and analysed in full as well as two waterlogged deposits (contexts 7283 and 7294)

The range of material and the number of samples with useful quantities of seed and chaff is limited for Phase 3. One sample from a beam slot did produce a large amount and grain and it is worth while sorting this sample, although it is difficult to assess how representative of a phase a single sample is. The remaining samples, including those from the graves are likely to be dominated by redeposited material or 'background' noise and as such they have limited use. The grave samples did not produce any material which could be interpreted as derived from stomach contents. To provide a bit more representative cover for this phase it is however recommended that some time is spent sorting a selection of samples.

It is also recommended that some time is allowed for a charcoal specialist to assess and examine charcoal from a selection of samples for each phase.

Table A16.1 Recommendations

Task	Staff
Phase 1	
Sorting of Phase 1 samples (30-40 samples)	Technician
Identification of seeds and chaff	Specialist
Sorting of mineralised deposits (7 samples)	Technician
Identification of seeds etc	Specialist
Phase 2	
Sorting of Phase 2 charred samples (6 samples)	Technician
Identification of seeds and chaff	Specialist
Sorting of Phase 2 waterlogged samples (2 samples)	Technician
Identification of seeds etc	Specialist
Phase 3	
Sorting of phase 3 samples including sample 8512 (context 8755) (up to 8 samples)	Technician
Identification of seeds etc	Specialist
Analysis and writing up	Specialist

Table A16.2: Summary of Phase 1 Samples

Total samples assessed	208									
Phase	1	1	1	1	1	1	1	1	1	1
Feature Type	unknown	post hole/pit	rampart	surface/layer/floor	Beam slot	cesspit	Pit	ditch/gully	hearth	mortar
No. samples assessed	3	96	14	24	20	2	42	2	3	2
Samples with >50 charred items	1	33	8	12	6	2	9	1	2	
Samples with mineralised seeds							7			
Samples with charcoal	3	92	11	23	18	2	39	0	3	
Samples with frequent charcoal		6	2	8	3	2	13		3	
Species noted										
Triticum aestivum/turgidum	+++	++++	+++	+++	+++	++	+++	++	+++	+
Hordeum vulgare	++	++++	+++	+++	+++	++	+++	++	++	+
Avena sp.		+++	+++	+++	+++		+++			
Secale cereale	++	+++	+++	++	++		+++			
Pisum/Vicia sp.	+	++	+	+			+	+		
Corylus avellana		++	+	++	++	+	++			
Malus/Pyrus sp.							++			

+ present; ++ - frequent; +++ - common; ++++ - abundant

Table A16.3: Summary of Phase 2 Samples

Total samples assessed	29						
Phase	2	2	2	2	2	2	2
Feature	Beam slot	floor	grave	Pit	Post hole	Rampart	moat
Samples assessed for charred remains	1	2	2	12	1	5	1
Samples assessed for waterlogged remains							5
Samples with >50 charred items				2	1	3	
Samples with mineralised remains				1			
Samples with waterlogged seeds							3
Samples with charcoal		2	2	12	1	5	1
Samples with freq charcoal				3			
Triticum aestivum/turgidum	++	++	+	++++	+++	++++	
Hordeum vulgare	++	+	+	++++	+++	++++	
Avena sp.	+			+++		+++	
Secale cereale				+++			
Pisum/Vicia sp.				+			
Corylus avellana				+			

+ present; ++ - frequent; +++ - common; ++++ - abundant

Table A16.4: Summary of Phase 3 samples

Total samples assessed	28						
Phase	3	3	3	3	3	3	3
Feature	beam slot	burial	ditch	moat	pit	post hole	unknown
No. samples	1	11	2	1	2	10	1*
No Samples with >50 charred items	1						
Samples with waterlogged remains							Wood +++
Samples with charcoal	1	9	1	1	1	3	
Samples with frequent charcoal		2		1			
Triticum aestivum/turgidum	++++	++	++		++	++	
Hordeum vulgare	++++	++	++		++	++	
Avena sp.	+++	+			+	++	
Secale cereale							
Pisum/Vicia sp.		+					
Corylus avellana						+	

+ present; ++ - frequent; +++ - common; ++++ - abundant

* assessed for waterlogged remains

Table A16.5: Species noted in waterlogged samples

Sample	7201	7202	7142
Context	7283	7294	7126
Species noted			
Prunus spinosa (sloe) stone	+	+	
Prunus cf. avium (cherry) stone		+	
Prunus spinosa/avium			+
Prunus cf. domestica (plum/greengage etc) stone	+		
Juglans regia (walnut) nut shell fragments		+	
Corylus avellana (Hazel) nut shell fragment	+	+	
Ranunculus acris/repreus/bulbosus	+		
Conium maculatum	+		
Agrostemma githago		+	
Lycopus europea		+	
Fragaria vesca		+	
Hyoscyamus niger	+		
Aphanes arvensis	+		
Urtica dioica		+	
Anthemis cotula	+		
Carex sp.	+		
Wood fragments		+	+



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Figure 1: Site location

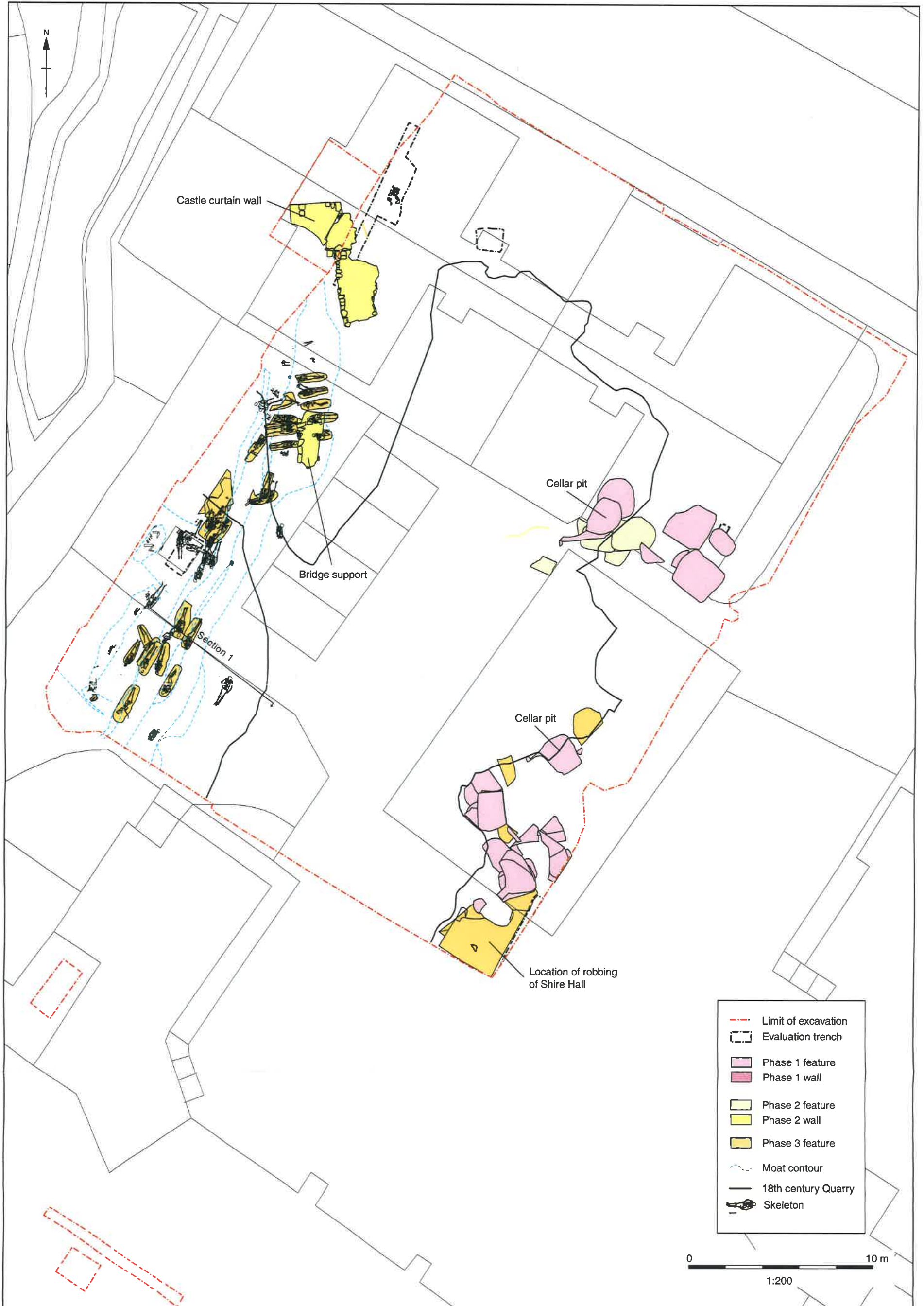


Figure 2: Area A - Principal archaeological features (Phases 1-3)

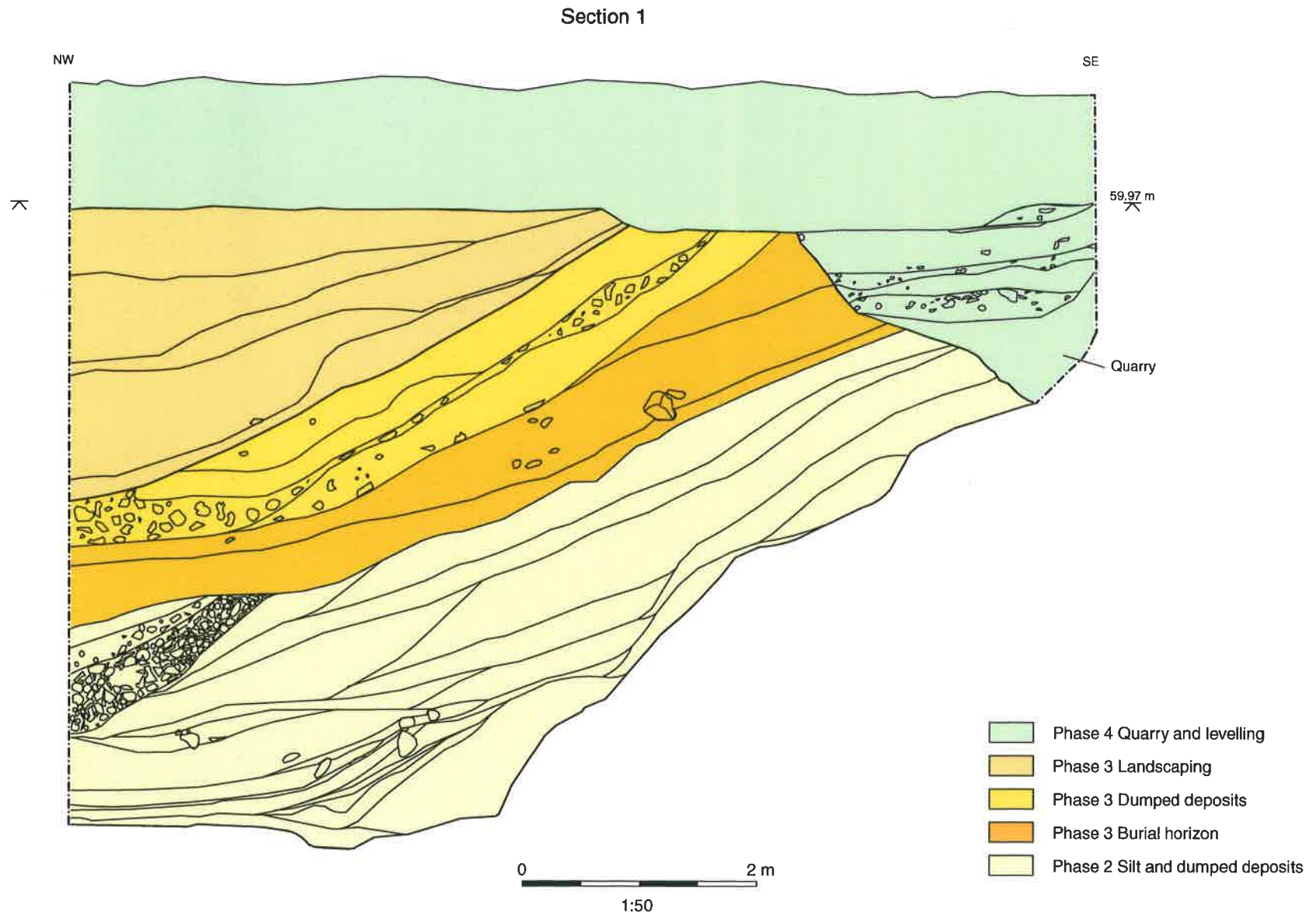


Figure 3: Area A - Composite section through motte ditch deposits



Figure 4: Area A - Principal archaeological features (Phase 4)

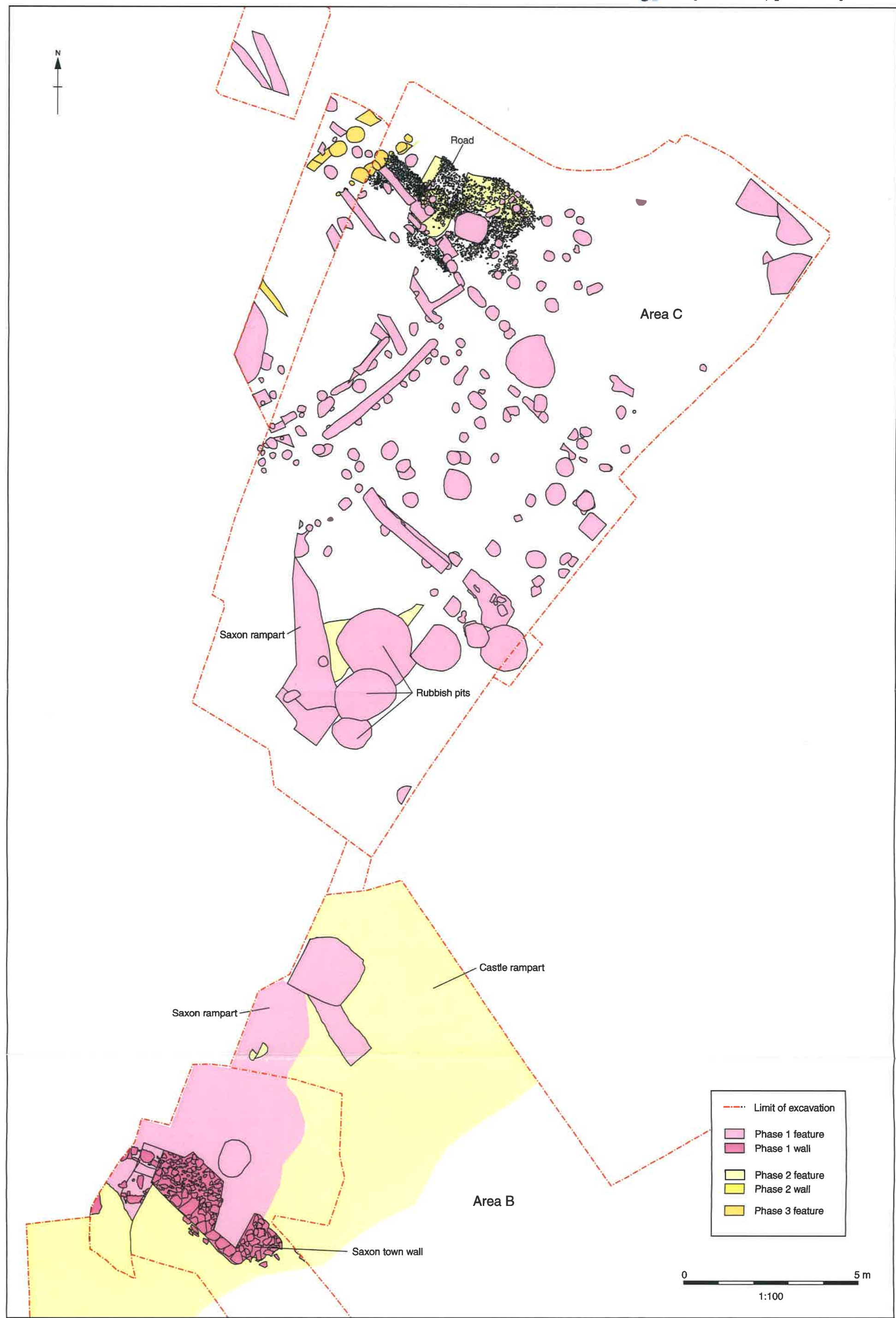


Figure 5: Areas B & C - Principal archaeological features (Phases 1, 2 & 3)

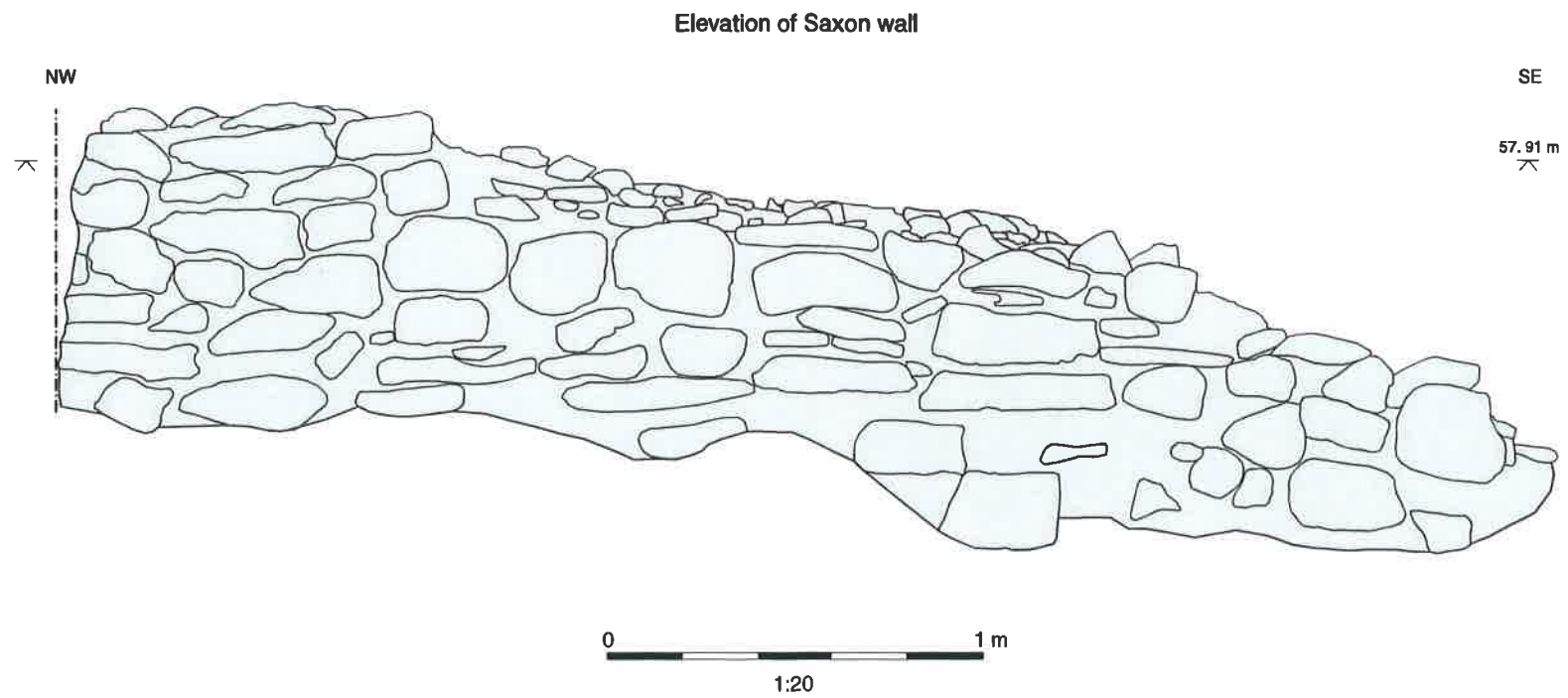


Figure 6: Elevation of Saxon wall

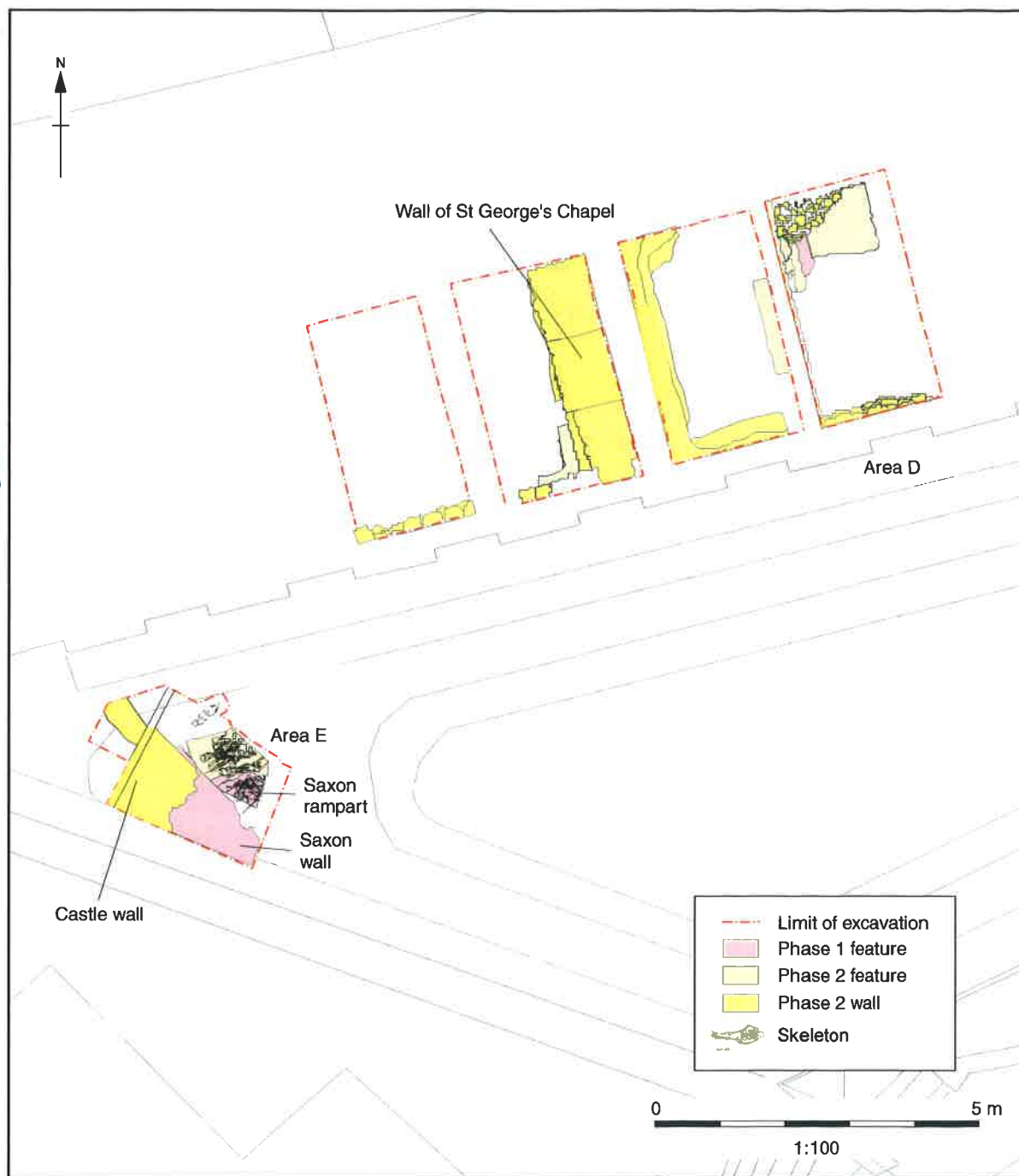


Figure 7: Areas D & E - Principal archaeological features (Phase 1 and 2)

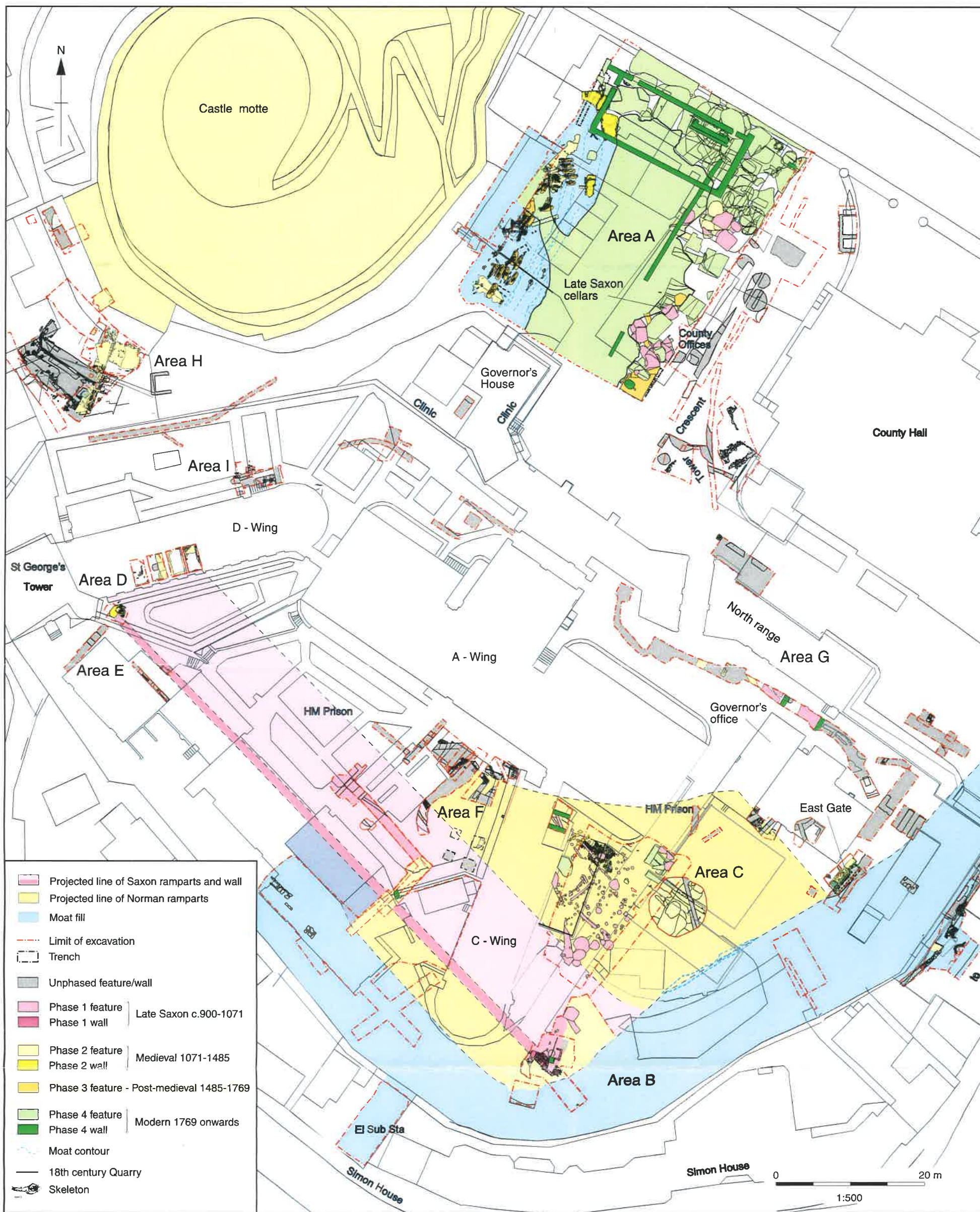


Figure 8: All areas - Principal archaeological features (all phases)



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