BISHOPTHORPE PALACE

BISHOPTHORPE

YORK

ARCHAEOLOGICAL INVESTIGATION

REPORT

JUNE 2008

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SITE CODE: YBP07-08

REPORT CODE: FAS2008 397 YBP301

NGR: SE 5960 4783

REPORT

June 2008

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LIST OF CONTENTS

Figures

Plates

Tables

Appendices

Summary

An archaeological watching brief was carried out at Bishopthorpe Palace, York, by Field Archaeology Specialists (FAS) Ltd on behalf of W R Dunn. The work involved the archaeological monitoring of service trench excavations inside and outside the palace structures, and the maintenance of a structural watching brief on internal alterations.

The below-ground watching brief encountered remains of medieval to modern date. Extensive layers of buried soil, interspersed with cobbled surfaces, were consistently found throughout much of the watching brief area. A single inhumation burial was encountered to the west of the palace, and was dated to the 14th-century or later. This burial lay to the west of a series of limestone walls which have been interpreted as medieval buildings, associated at one time with lead-working. The robbed-out foundations of two parallel walls were identified in the vicinity of the 18th-century gatehouse, and have been interpreted as evidence for a medieval gatehouse.

Potential 17th- and 18th-century activity was represented within the palace, where a brick wall may represent part of an early form of the palace. Outside the west front, a further brick wall appears to represent part of the 18th-century phase of palace construction. In the wider area outside the palace, preparation layers that may have formed part of the wider landscaping of the 18th-century were defined, as well as the foundations of the current 18th-century gatehouse.

To the south of the palace, 19th-century structural activity was attested by wall footings and a quarry tile floor, interpreted as part of the demolished bakehouse. Service trenches dated to 19th- to 21st-century were observed throughout the area.

The structural watching brief established the presence of surviving *in situ* elements of the floor and roof structures within the north range of the palace. Dendrochronological dating of these elements provided a date of *c*.1502/3 indicating that the north wing must have been under construction or nearing completion at this time. This would suggest that rather than the work of Archbishop Rotherham between 1480 and 1500 as has been previously suggested (Ryder 1982; Gee 1983; and FAS 2006), the north wing was erected by Archbishop Thomas Savage (1501-1507). Further, the southwest additions to the north wing had previously been though to have been added in *c*.1650 by Colonel Walter White, but dendrochronological dating of both the floor and roof structures indicated a date of *c*.1560s suggesting it was the work of Archbishop Young (1561 - 1568). The timbers dated from this phase of work all appeared to be *in situ*, with no evidence of reuse. Some of the timbers from these two phases of development of the palace were reused in the alterations to the north range, particularly when the bay front was inserted into the northwest elevation and part of the roof structure replaced.

Acknowledgements

Field Archaeology Specialists would like to thank Richard Dunn, of W R Dunn, Peter Baker of Simpson (York) Ltd and the staff of Bishopthorpe Palace for assistance during this project. FAS are also grateful to John Oxley, principal archaeologist, City of York, for advice.

1.0 INTRODUCTION

This document reports on an archaeological watching brief undertaken at Bishopthorpe Palace, York, by Field Archaeology Specialists (FAS) Ltd on behalf of W R Dunn. The watching brief involved the monitoring of groundworks and structural alterations forming part of a programme of redevelopment at the palace. The fieldwork was undertaken intermittently between 15th February 2007 and 17th March 2008.

1.1 LOCATION AND LAND USE

Bishopthorpe Palace (NGR SE 5960 4783) lies to the northeast of the village of Bishopthorpe, *c*. 4km from the centre of the city of York (Figure 1; Plate 1). The grounds of the palace are defined by the River Ouse to the east, York Crematorium to the north, Bishopthorpe Road to the west and Chantry Lane to the south. The palace itself contains extensive accommodation for the Archbishop, reception rooms, a chapel and offices. Other structures in the palace grounds include the 18th-century gatehouse to the south of a stable block and brew house complex. The remainder of the palace grounds are landscaped with formal features nearer the house, and a pond and river terrace.

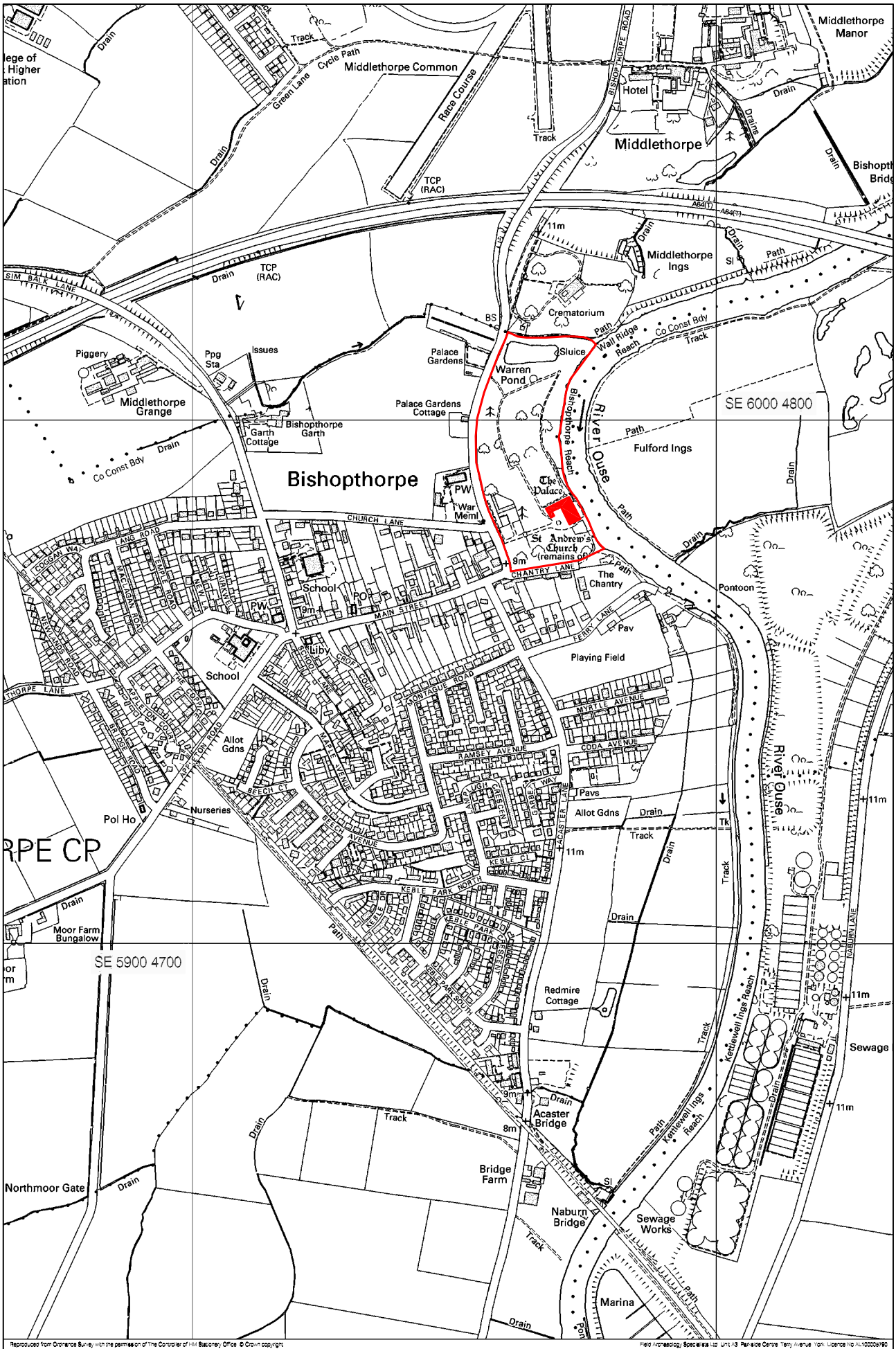
Plate 1 Aerial view of the palace complex, from the east (Aeroscene 202/38)

1.2 AIMS AND OBJECTIVES

The archaeological watching brief was undertaken in accordance with a specification provided by the Directorate of City Strategy Planning and Sustainable Development Group, City of York Council (Appendix A). The work was undertaken to fulfil an archaeological planning condition, implemented as part of approval to undertake external and internal alterations, including works to create a self-contained apartment and office accommodation for staff, to construct a new lift and link structure and alterations at roof level (06/01822/FUL, condition 3, 06/01823/LBC). The aim of the watching brief was to preserve by record any archaeological remains to be impacted by these works, and to maximise the opportunity to gain further understanding of the building.

1.3 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

The village of Bishopthorpe appears to have been settled in the Saxon period; there is some archaeological evidence for an Anglo-Saxon presence, with two coins from the reign of King Ethelred (AD840-871) found at the church (Keeble 1905, 4). In 1086 the village was recorded in the Domesday Book as 'Thorp' and from the early 13th century the name 'Andrewthorpe' or Thorpe St Andrew was used, following the construction of a church in the village by St Andrew's Priory, York (Keeble 1905, 11). In 1226, Walter de Gray, Archbishop of York, purchased the manor from the monks of Kirkstall Abbey as a location for a country seat, within easy reach



Location map | Scale 1:10000 | Figure 1

of York (Bishopthorpe Local History Group, 1). De Gray had apparently settled in Bishopthorpe by 1228 and by 1241 he had built his house at the site, including a chapel with a chantry. By 1255 a grant providing a chaplain for the chantry also records the presence of other buildings at the site, and gardens and a fishpond (Gee 1983, 2). This 13th-century house forms the core of the current building, with the great hall and adjacent chapel still extant, although altered. The palace was thought to have been extended in the later medieval period, most notably by Archbishop Rotherham (1480-1500) who is thought to have added the brick-built north wing at right angles to the earlier palace buildings.

The first known drawing of the site was included on Parson's *Map of Dringhouses*, drafted in 1624 (Plate 2). The extensive palace complex is portrayed, including two wings extending north from the current north range which have subsequently been demolished. The drawing also depicts the gatehouse of the palace, with two attached ranges of buildings, running to the north and south of the gatehouse. All these buildings have since been demolished, including the gatehouse which was replaced by the current one in the 18th century. However, this complex of buildings undoubtedly represents the service buildings for the palace, including a stable block. Gee (1983, 39) states that the stables were to the south of the entrance drive, the upper of the two ranges depicted in Parson's drawing. It seems likely that services such as the brew house would also have been located in these ranges at this time.

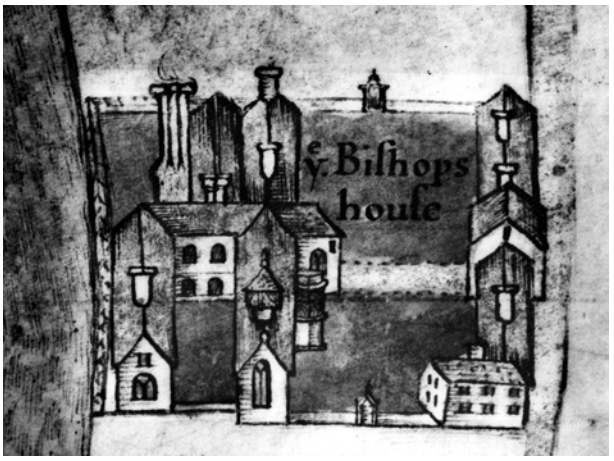


Plate 2 Drawing of Bishopthorpe Palace on Parson's *Map of Dringhouses* 1624

The next significant phase of reconstruction at the palace was undertaken by Archbishop Drummond in the 1760s. This included a new Gothic front to the west elevation of the main block, designed by Thomas Atkinson and constructed 1763-5. Following the demolition of the earlier stable range by the previous Archbishop in 1760, Drummond is also thought to have commissioned Peter Atkinson, a partner to John Carr, to rebuild the stable block in the classical style, constructed 1761-3 (Gee 1983, 39). Smaller alterations continued throughout the early 19th century, with more significant work being undertaken by Archbishop MacLagan (1891-1908), including the restoration of the chapel and the enlargement of a number of rooms in the north range.

At this point the palace complex had reached its fullest extent, with subsequent 20th-century archbishops seeking to consolidate the building, with the demolition of a number of superfluous buildings, particularly service buildings such as the Georgian kitchen block, demolished in the 1950s. Two wings of the stable block were demolished in 1923-4, under the supervision of architect W. D. Caröe, with further buildings to the north of the stable block removed in 1967-68. Work in the palace complex in the 20th century has focussed on the updating of the existing buildings, a process which is continuing with the current installation of new services and disabled access. Recent service trenches, excavated in 2006, were subject to an archaeological watching brief by York Archaeological Trust (Dean 2007).

2.0 FIELDWORK PROCEDURE

The archaeological watching brief on groundworks was undertaken in several phases, allocated Intervention 1 to Intervention 4 (Table 1; Figure 2). Intervention 5 was assigned to a watching brief imposed on all structural changes, which occurred mainly within the north range of the palace, which also included a programme of dendrochronological dating of timbers forming the floor and roof structures.

Table 1 Summary of interventions

Int	Location	Description
1	Interior, Utility room, Palace	Monitoring of groundworks carried out as part of water main installation
2	Exterior, Palace to entrance	Monitoring of service trench excavations for water main
3	Exterior, south of palace	Monitoring of service trench excavations for water main
4	Exterior, Stable block and Brew House Cottage	Monitoring of service trench excavations for water main
5	Interior, north range and Palace	Structural watching brief

2.1 ARCHAEOLOGICAL WATCHING BRIEF

The installation of new water mains involved the excavation of several service trenches to the west and south of the palace. Intervention 1, situated within the building and Intervention 3, to the south of the palace, were hand excavated; Intervention 2 to 4 were excavated using a tracked mini-digger fitted with a toothless ditching bucket, under strict archaeological supervision. Intervention 1 also involved the monitoring of groundworks associated with the installation of a new lift; full access to this trench was restricted for safety reasons.

Written, drawn and photographic records were made of all archaeological deposits. All plans and sections were drawn to a scale of 1:10 or 1:20. A full photographic record was compiled, consisting of 35mm colour photography.

A local site grid was established and rectified to the Ordnance Survey grid during post-excavation. All coordinates and alignments in this report refer to the Ordnance Survey National Grid, and all heights are expressed in metres above Ordnance Survey datum (AOD).

The excavation and recording system employed during fieldwork is based on a set of principles known as *Field Research Procedure* (Carver 1999), the standard operating system employed by FAS. The procedure structures excavation data in an hierarchical system. Each stratigraphic unit defined during excavation, which is considered to have been formed by a single deposition, is referred to as a 'context', and where appropriate, contexts are grouped during excavation as 'features'; a single index was created for contexts, starting at C1000, and for features, starting at F1. Each unit has a structured *pro forma* recording sheet to be completed using a series of keywords. Indices of photographic recording, samples and drawings have been compiled and cross-referenced with the context and feature indices. An index of records produced is provided in Appendix B; summaries of contexts and features are provided in Appendix C and D respectively; stratigraphic diagrams for

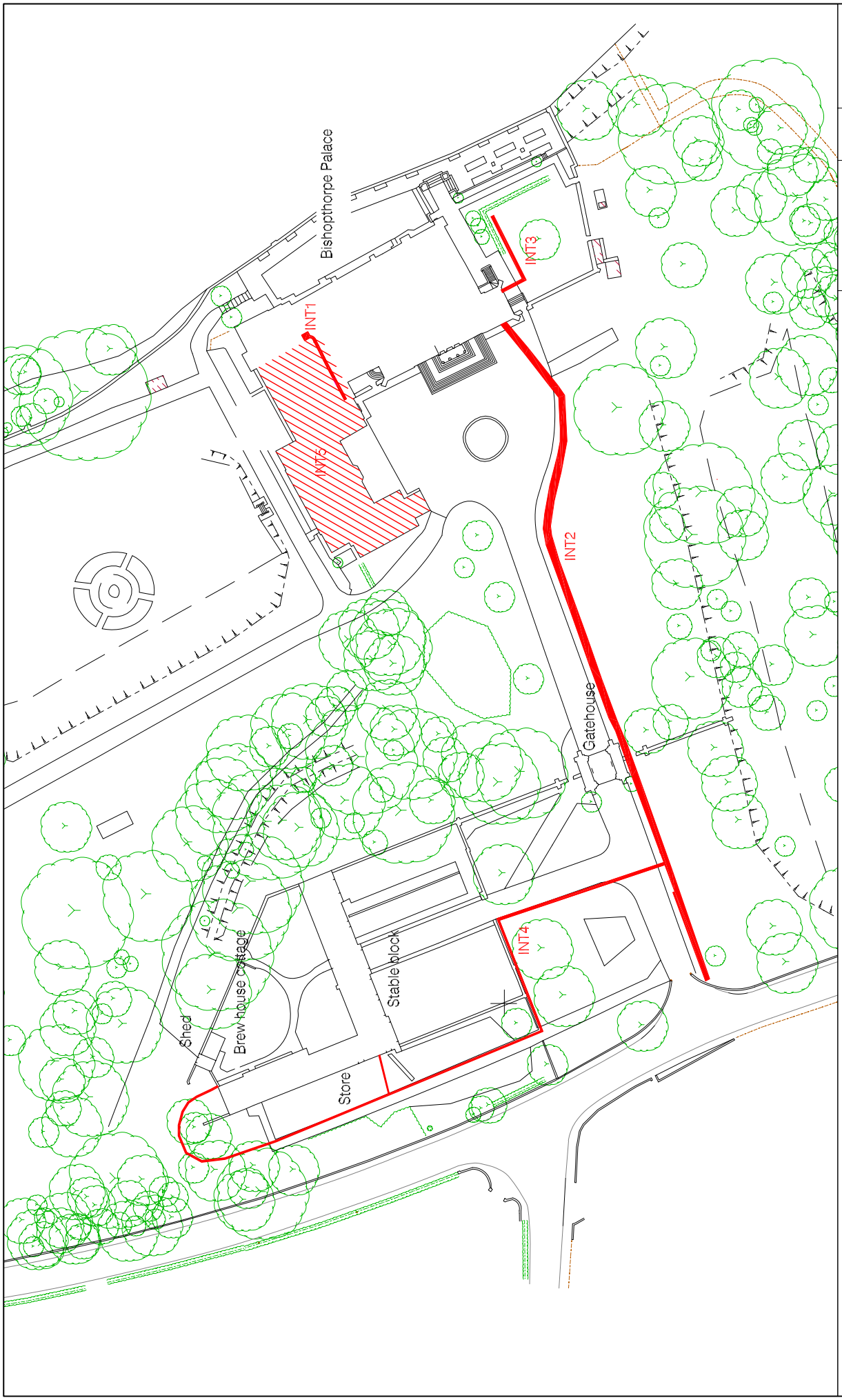


Figure 2

Scale 1:1000

Location of interventions

each trench are included in Appendix E.

Bishopthorpe Palace occupies an approximate NW-SE alignment. Previous studies of the building have, however, referred to the building using cardinal points (with the northwest range referred to as the north range, the northeast range as the east range, and so on). To avoid confusion, descriptions of the building and the watching brief within it have also taken this approach.

2.2 STRUCTURAL WATCHING BRIEF

During redevelopment of the palace interiors, a number of interventions were made into the fabric, which mainly involved the localised removal of existing floor and ceiling materials. As a result, areas of historic floor and roof structure were exposed as well as earlier fabric of the building. Further, localised areas of plaster removal exposed some features within the walls of the north range. A photographic and written record was made of all historic features exposed. In addition, drawings of the location of all historic timbers were also created (Intervention 5).

3.0 FIELDWORK RESULTS

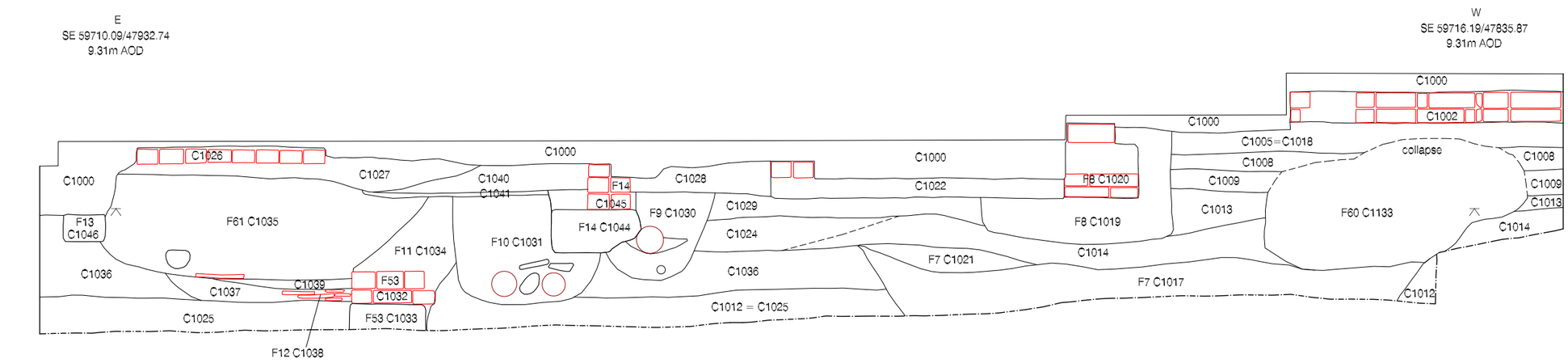
3.1 INTERVENTION 1

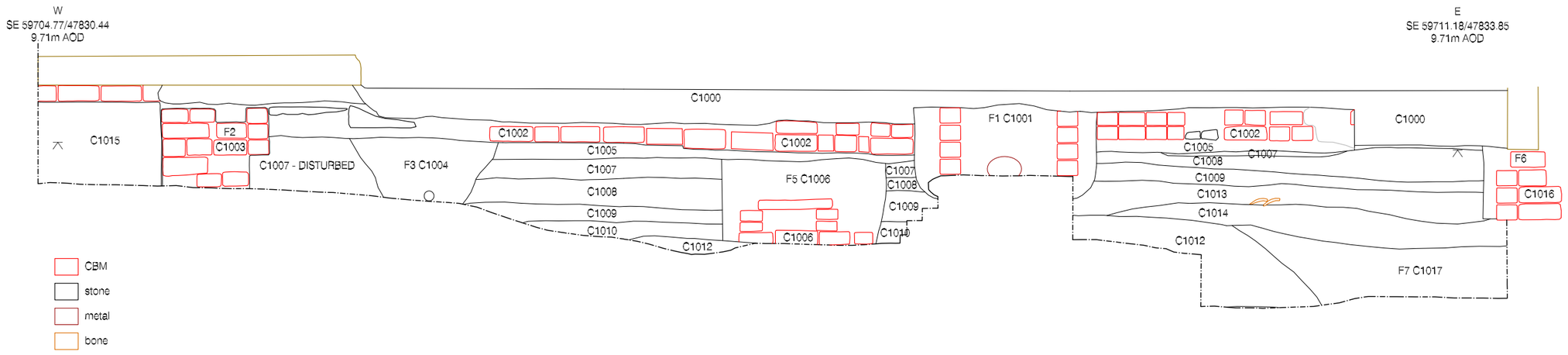
Intervention 1 was located in the north range of the palace, within the utility room (see Figure 2). The trench measured 13.0m x 0.60m, and was excavated to a maximum depth of 1.0m below ground level. The ground stepped downwards to the west, leading towards the basement area. A sequence of layers and features was encountered representing buried soil horizons and structural activity of likely post-medieval date (Figure 3; see Appendix Ei).

The earliest deposit encountered in Intervention 1 was a layer of dark yellowish-brown sandy silt, flecked with charcoal and mortar, observed *c*.0.80m below floor level. As the required depth had been achieved, this deposit was not fully excavated (C1012=C1025). C1012 has been interpreted as a possible buried soil, and the presence of medieval brick among the CBM assemblage indicates a date after the 14th century (Appendix F).

In the western part of the trench, buried soil C1012 was directly overlain by C1010=C1036, also interpreted as a buried soil or ground level, consisting of a firmly compacted clean brown sandy silt. A single possible posthole (F5) was defined against C1010, backfilled with a brick-rich deposit (C1011) which may have served as post-packing. This feature was not excavated, as the required depth had been reached (Figure 4; Plate 3).

Plate 3 Intervention 1, F5 C1011, looking north

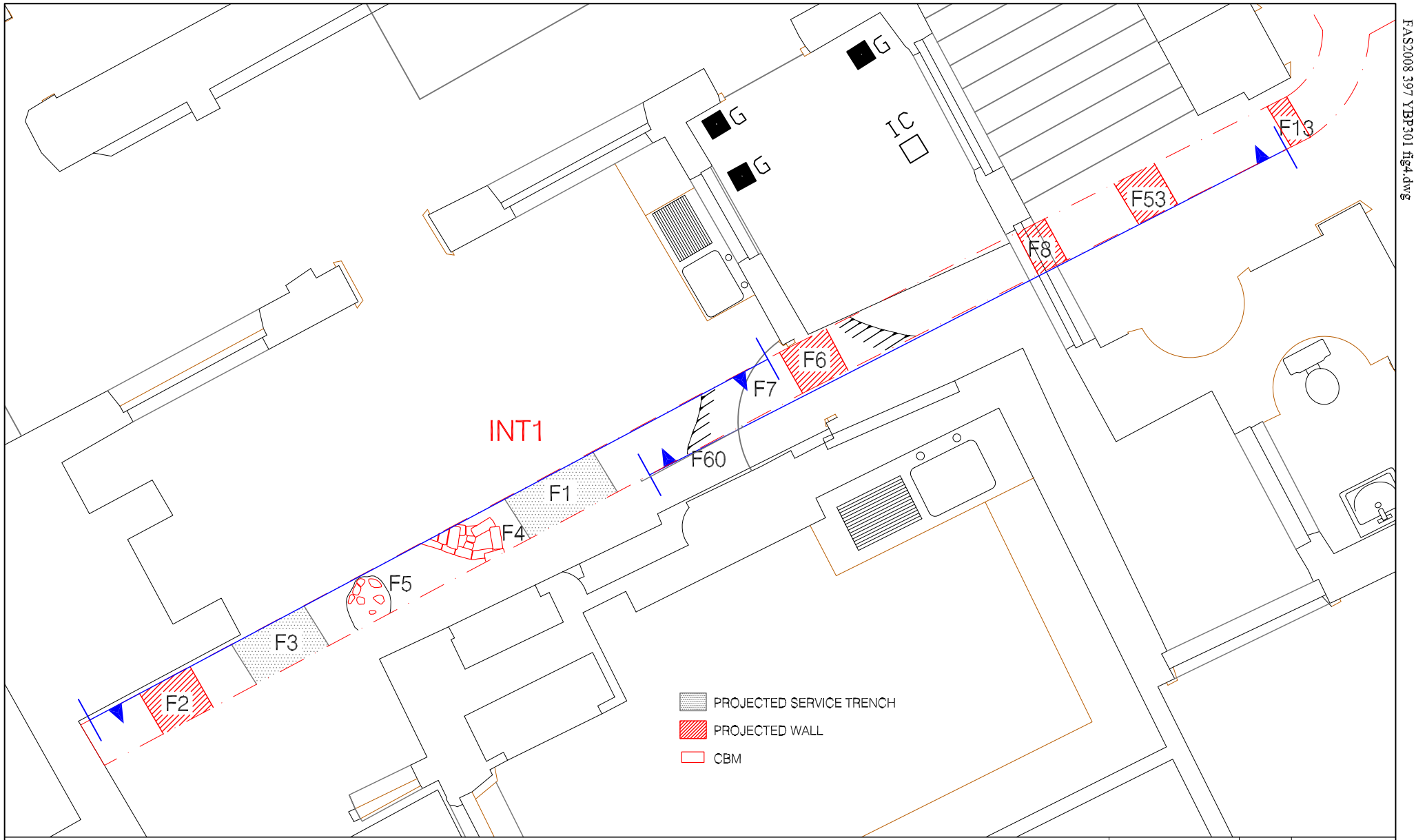




Intervention 1- north-facing section (above) and south-facing section (below)

Scale 1:25

Figure 3



Intervention 1- plan of features

Scale 1:50

Figure 4

To the west of F5, a cut feature was defined against C1036, and allocated F7 (see Figure 4). The visible cut measured over 3.0m east-west, and extended beyond the trench to the north and south. Two distinct backfills were defined in section; the earlier (C1017) containing mortar and CBM, while the latter was a less substantial deposit of clean strong brown sand (C1021). Given the small proportion of the feature exposed within the trench, its full shape and function could not be defined; the presence of wall plaster, mortar and CBM in the backfill suggests that it may be associated with the robbing or demolition of earlier structures.

In the eastern end of the trench, a brick and stone wall (F53) was recorded in the north-facing section (see Figure 3), and was also observed in the south-facing section. The lower foundation of the wall was constructed with limestone blocks (C1033), with two courses of brick defined above (C1032). Abutting this wall on the eastern side, a series of layers appear to represent contemporary use (C1038, C1039, C1037). C1038 consisted of a series of horizontally-laid medieval roof tiles which appear to represent a deliberate feature (F12), possibly a floor surface. A steep-sided cut, F11 (C1034), was interpreted as a robber trench which would have removed the upper courses, and evidence for construction, of this wall.

Within the utility room, an area of collapse in the north-facing section exposed a further possible robber trench, which was allocated F60 C1133 (see Figure 3). Given the limited visibility within the narrow trench, the relationship of this feature to adjacent layers could not be defined, but it is possible that this feature occupied a similar stratigraphic position to F53.

Following backfilling of F7, a distinct layer of lime mortar and CBM was defined (C1014). This compacted horizon appeared to have been deliberately deposited to form a surface, and extended across most of the eastern half of the utility room; some variation may be represented by C1024. The floor surface contained abraded CBM, including two fragments of glazed floor tile, and fragments of brick of 14th-century or later date. Evidence for use of surface C1014 was provided by overlying C1013, a layer of very dark greyish-brown sandy silt which contained a high proportion of charcoal, animal bone and oyster shell, and has been interpreted as kitchen waste. Further to the east, surface C1014 was overlain by a deposit of black sandy silt, with mortar and CBM inclusions, which appeared to represent a construction horizon, and was allocated C1029.

Sealing these surfaces and use horizons across the western half of the trench was a layer of very dark grey sandy silt which has been identified as a buried soil (C1009). C1009 sealed posthole F5, and kitchen waste C1013. This layer produced two fragments of clay pipe which indicate a date in the early 17th century (Appendix G). Overlying this buried soil, a possible consolidation or construction layer (C1008) was defined, flecked with mortar and charcoal, which, in the western half of the trench, was sealed by a further buried soil (C1007).

A brick culvert (F4) was defined in plan cutting C1007; the feature curved slightly to the east (see Figure 3 and 4). F4 was constructed with slop-moulded bricks, bonded with a pale grey lime mortar (C1006); the bricks suggested a date after the 17th to 18th century (Plate 4). The brick culvert (F4) had been sealed by C1005, a mixed silty sand layer which had been deposited prior to the laying down of brick floor C1002.

Further to the east, two linear service trenches were recorded. F9, to the east, contained a salt-glazed pipe and lead water pipe, while F10, to the west, contained two cast-iron foul pipes. Their stratigraphic relationship could

not be discerned due to the later insertion of wall F14; F9 truncated earlier layer C1029, and F10 cut robber trench F11. Also cutting F11, a possible pit was defined in section and allocated F61. This feature measured over 1.60m across and 0.59m deep, and was backfilled with a loose sandy silty containing rubble and CBM (C1035).

Plate 4 Intervention 1 - F4 C1006, looking south

F14 and F6=F8 were allocated to two parallel brick walls which appear to have been constructed following the deposition of this preparation layer, and traversed the trench on the same alignment as existing walls. Both were brick-built; F14 was found to have a concrete foundation. The upstanding remains of these walls survive in the current building; although the doorways within the upstanding walls appear to have been inserted at a later date. To the east, a limestone block with concrete concretions was recorded in the north-facing section, and allocated F13 (C1046); this lay opposite the current foundations of the standing building, and may represent an earlier continuation of this structure. At the western end of the intervention, a further brick foundation was defined (F2 C1003). This feature continued to greater depth than the foundations of either F14 or F6=F8, and the loose backfill abutting it to the west (C1015) suggested that it is represented a below-ground structure. Also cutting preparation layer C1005, a further service trench (F3) was defined, containing a lead water pipe.

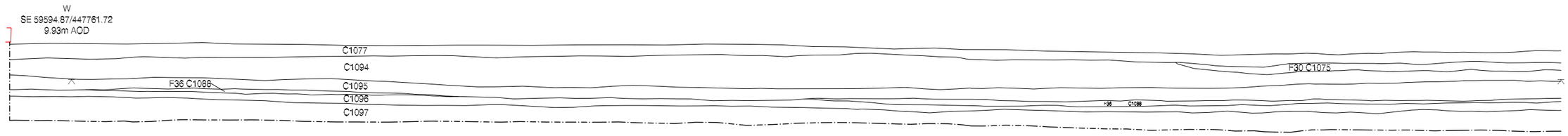
Following the construction of the walls, brick floor C1002 was laid down; a further remnant of brick surface identified beyond F14 (C1026) is likely to have belonged to the same phase of activity, and was found to have been laid down over preparation layers C1022, C1026 and C1040.

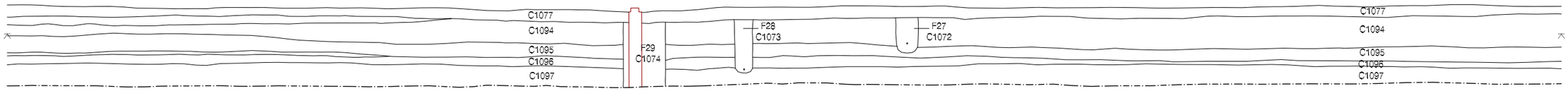
Cutting floor C1002, and sealed by the modern concrete surface, F1 was identified as a modern, brick-lined heating duct, when traversed the trench on a north-south alignment. Walls F6=F8, F14, F13 and F53 had all been at least partly removed when the current concrete surface (C1000) was laid down. The poured concrete filled a possible cut above F13, and may indicate that part of this wall was robbed out at this time.

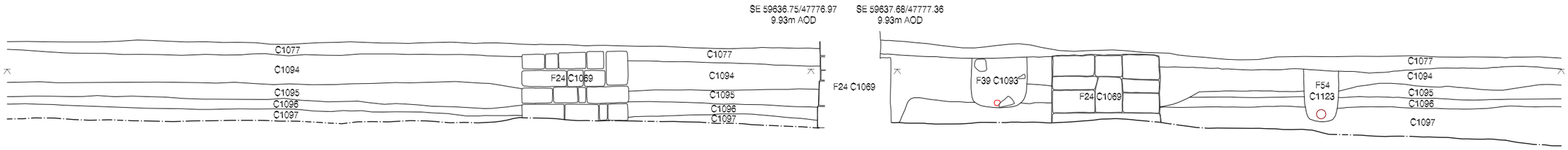
3.2 INTERVENTION 2

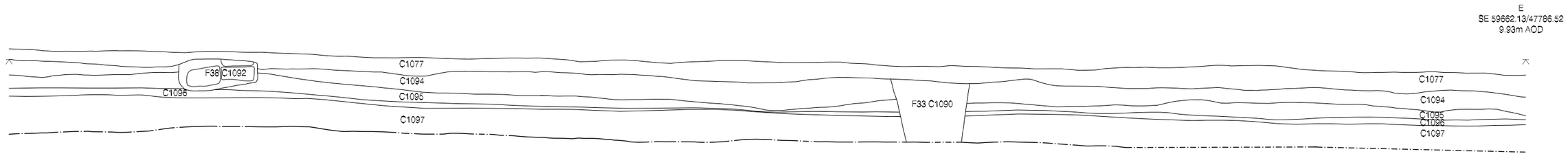
Intervention 2 was excavated to receive a new high-pressure water main, and ran for a distance of *c*.135m parallel to the main driveway leading from the road to the palace (see Figure 2; Plate 5); the trench was excavated beneath the wall adjacent to the palace gatehouse. Intervention 2 measured *c*.1.0m wide and up to 1.0m deep (Figure 5 and 6) and revealed a number of features of medieval to modern date (Figure 7; Appendix Eii).

Plate 5 Intervention 2 - general shot, looking east





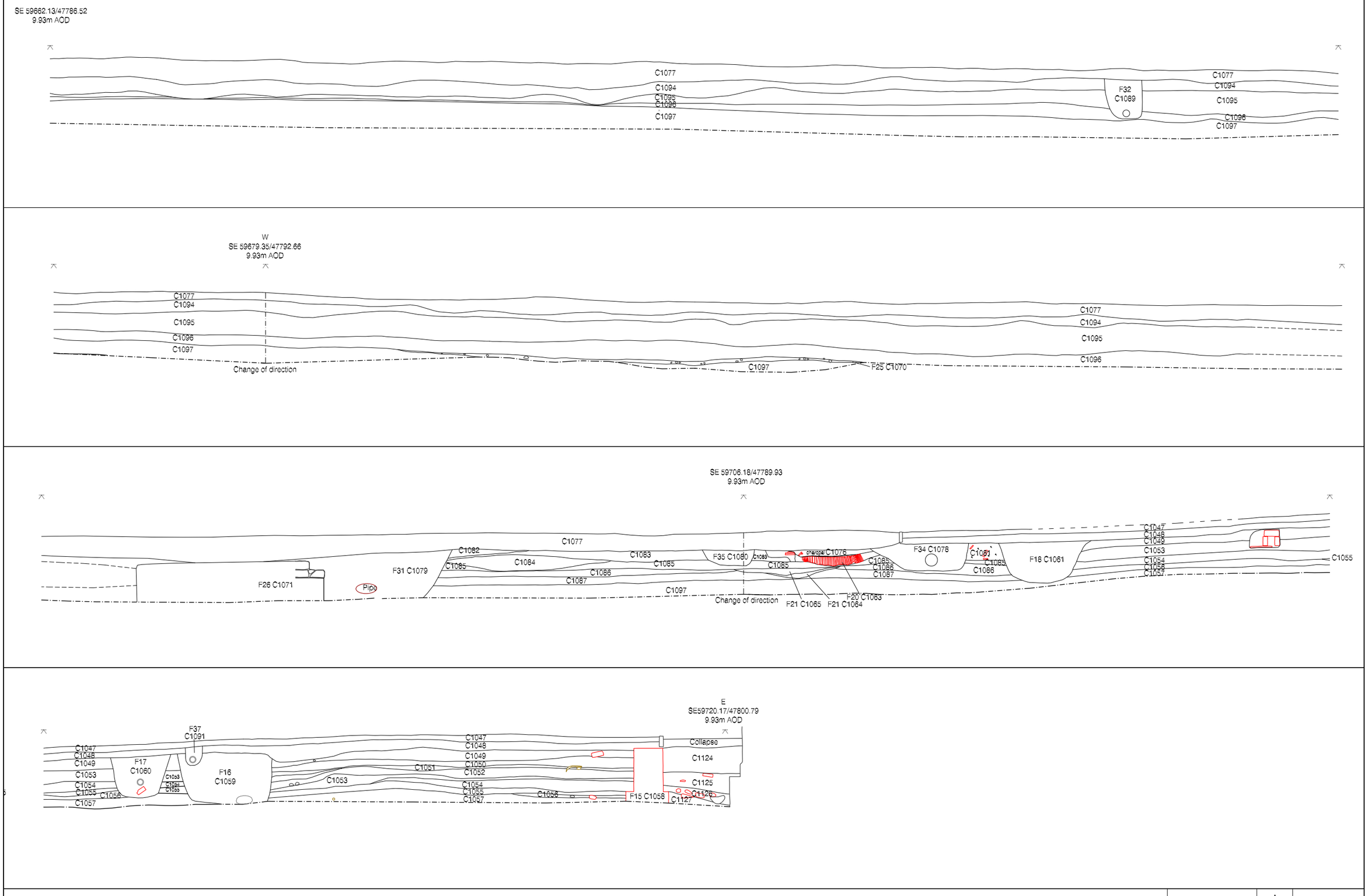




Intervention 2 - south-facing section, west end

Scale 1:50

Figure 5



Intervention 2 - south-facing section, east end

Scale 1:50

Figure 6

Intervention 2, 3 and 4 - location of features | Scale 1:500 | Figure 7

The earliest deposit encountered in Intervention 2 was a layer of strong brown silty sand, with rare charcoal flecks; an equivalent deposit was defined at the eastern end of the trench and allocated C1057. This deposit appeared to represent natural subsoil (Plate 6).

Plate 6 Intervention 2- F19, F26

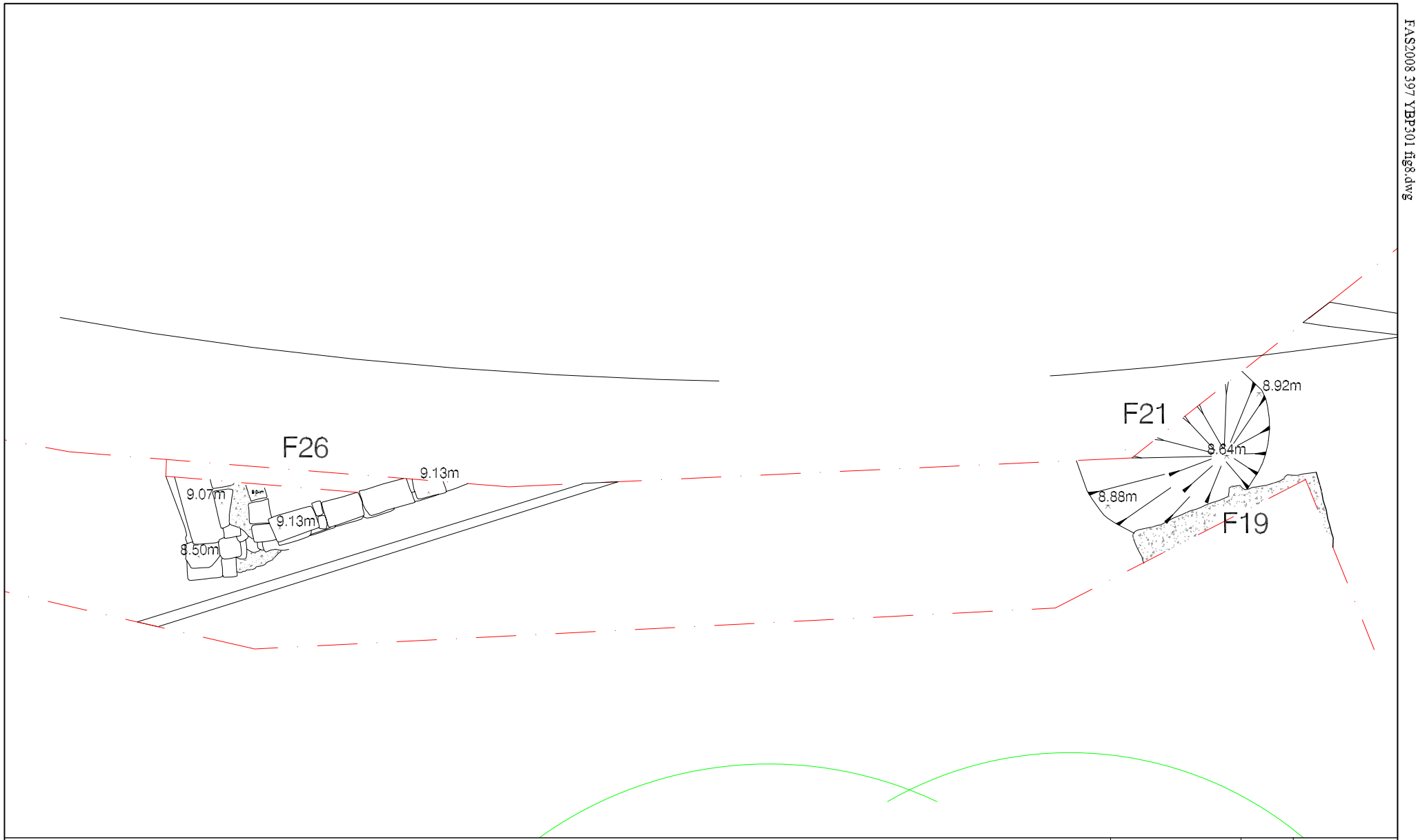
In the eastern part of Intervention 2, a cobbled surface was defined overlying C1097, allocated F25 C1070 (Plate 7). This feature was exposed for a distance of 3.40m, and consisted of small, rounded cobbles, firmly pressed into the underlying deposit, and flecked with charcoal. F25 was subsequently overlain by C1096, a deposit of brown silty sand, with lenses of gravel and sand. C1096 was identified across Intervention 2 for a distance of over 110m, and appears to represent a buried soil which accumulated gradually. An equivalent deposit to the east, allocated C1056, produced sherds of Brandsby ware and York Glazed ware indicating a date after the 13th century.

Plate 7 Intervention 2 - F25 C1070, looking west

At the western end of the trench, C1096 was overlain by a further gravel surface, allocated F36. This feature was defined only in section and extended for a length of 13m, and included cobbles and rare fragments of CBM, in a silty sand matrix (C1088)(see Figure 5). Over the surface represented by F36, further accumulation of dark yellowish-brown silty sand, with frequent gravel inclusions, was allocated C1095. To the east of the trench, no cobbled surface was defined, but a distinct layer of mixed clay (C1087) and an overlying gravel layer within a sand matrix (C1086) are likely to represent a contemporary ground level; further east, this continued as a more yellowish-brown layer, C1054.

C1087 was seen to have been cut by the footings of a limestone wall. This feature (F19 C1062) was observed for a distance of 1.50m on a roughly east-west alignment; a southern return was observed in a small extension of the trench to the south, which showed the wall to be 0.80m wide (Figure 8; Plate 8). Adjacent to, and possibly respecting, wall F19, a possible metalworking hearth was encountered (F21). This feature was defined as a shallow scoop, *c*.2.0 in diameter, and extending beyond the northern section of the trench. A mortar lining was identified (C1064), containing a number of lead droplets and waste (Appendix H). Two fragments of lead, likely to derive from this activity, were recovered from an overlying deposit (C1085);

Plate 8 Intervention 2 - F19, F21, looking west



Intervention 2 - F19, F21 and F26

Scale 1:100

Figure 8

these were found to represent a misshapen lead came, and twisted waste fragment. The nature of the lead waste was suggestive of the melting of waste for salvage, although the precise function of the feature remains uncertain. The hearth had been backfilled with C1065, which produced a sherd of likely residual York Gritty ware of 11th-century date.

Plate 9 Intervention 2 - F26 C1071, looking north

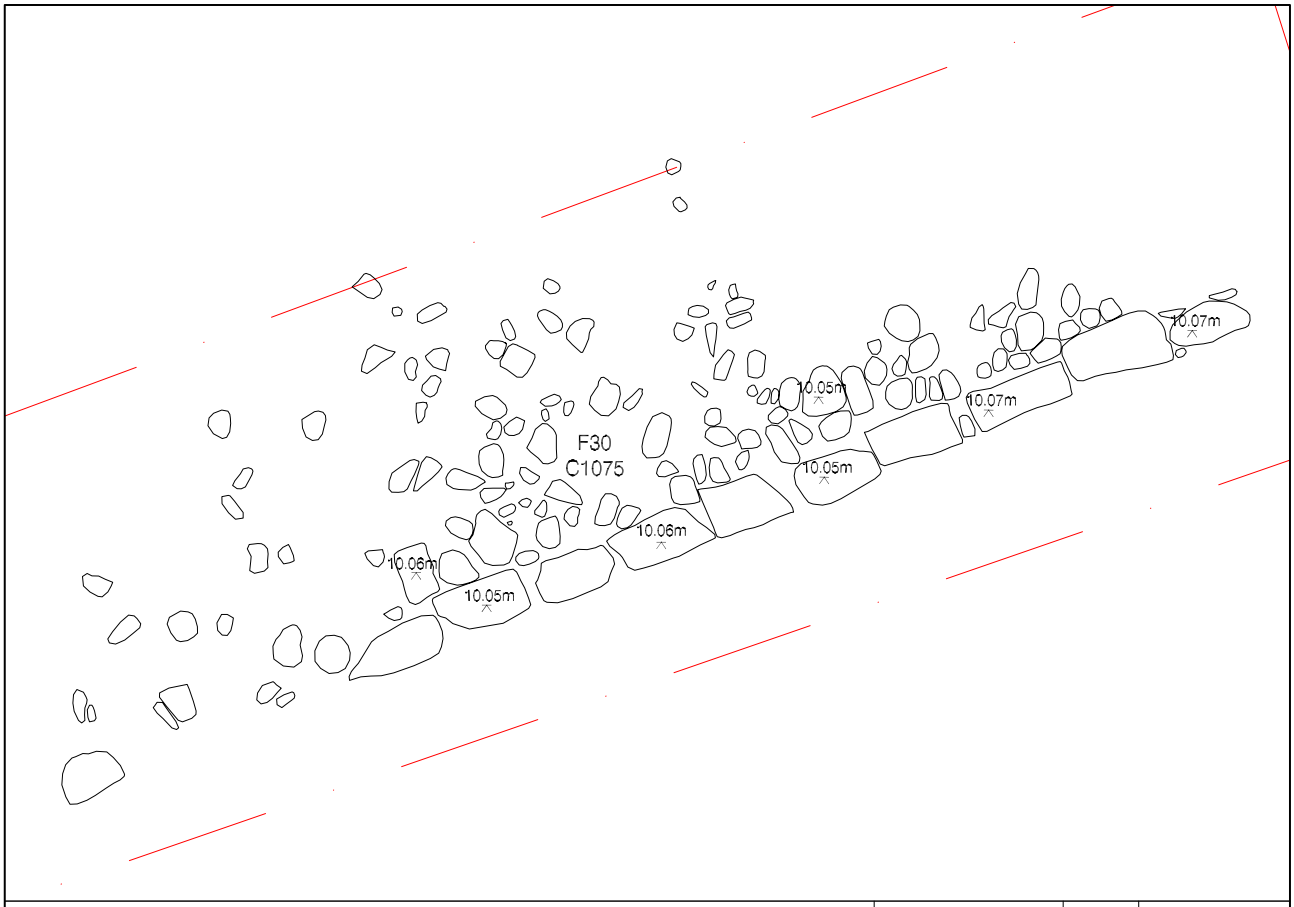
Less than 8.0m to the west of F19, a further footing was identified (F26). Although not so clearly stratified as F19, this wall ran on a similar alignment and is therefore assumed to be contemporary. The footing, allocated F26, was formed from roughly-shaped limestone blocks; the stepped foundations were found to be deeper at the north-south return, than on the main 1.80m long east-west portion, suggesting the corner of the structure had received more substantial foundations (see Figure 8; Plate 9).

An distinct later of reddish-brown clayey sand (C1085) was identified over C1086 to the east, and sealed hearth F20 and wall F19, marking their disuse; this layer was traced further east as C1053. A mortar dump (C1084) identified close to F26 may have been associated with subsequent demolition or structural activity. A black sandy silt (C1083) lay over this deposit, the charcoal-rich nature of which indicated may have been associated with the establishment of a second hearth (F20) (see Figure 6; Plate 10). The hearth was constructed from vertically-set tiles, identified as peg tiles and plain tiles of 13th- to 16th-century date. A thin lens of charcoal over the tiles provided evidence for use, before the hearth was backfilled with a black sandy silt matrix (C1076). A short distance to the west, cutting the charcoal spread possibly associated with F20, a possible pit (F35) was recorded in section.

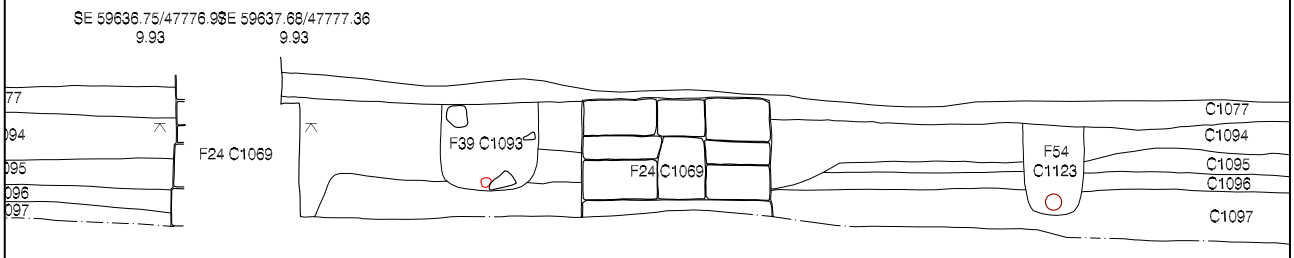
Plate 10 Intervention 2 - F20 C1063, south-facing section

Plate 11 Intervention 2 - F30 C1075, looking north

The walls and hearth features were confined to this part of Intervention 2; to the west and east, the sequence was simpler. To the west, a sequence of buried soils and ground levels were represented by C1052, C1051, C1050. To the east, buried soil C1095 was sealed by C1094, a mixed deposit of silty sand with CBM, shell, gravel, charcoal and mortar. The mixed character of the deposit suggested that this was a deliberately deposited layer of made ground, laid down prior to the laying down of a further, well defined cobbled surface, allocated F30 (Figure 9; Plate 11). F30 (C1075) was exposed for a length of *c*.4.0m, and extended 0.90m into the trench.



Intervention 2 - F30 C1075 | Scale 1:20



Intervention 2 - F38 and F39, south-facing section | Scale 1:50 | Figure 9

The southern edge was marked by a cobble kerb, and the surface consisted of a layer of rounded cobbles pressed into the underlying layer.

Some 20m to the west of wall F26, a single inhumation burial was encountered cut through C1096 (F22)(Figure 10; Plate 12). Initially defined following machine-disturbance of the skeleton, the burial was contacted less than 0.50m below ground level. The grave was orientated broadly east-west, and contained the *in situ* remains of an adult male aged between 35 and 45 years (C1067)(Appendix I). Osteological analysis identified a healed fracture to the left clavicle and severe dental health problems including caries, calculus, tooth loss, abscess and periodontisis. The rectangular form of the grave and an ephemeral coffin stain observed during excavation suggest the presence of a coffin and copper-alloy stains on the cranium and posterior femur suggest the presence of shroud pins in these positions. Shrouded burial became commonplace from the 14th-century onwards and sherds of York ware, York Gritty Ware, Beverly Ware and Humberware recovered from C1066 also provide a date of the late 14th century.

Plate 12 Intervention 2 - F22 C1067, looking north

To the west of burial F22, cutting made ground C1094, two linear features were identified in section in the vicinity of the gatehouse, and allocated F38 and F39. Both features were orientated roughly north-south, and were recorded as U-shaped cuts containing limestone rubble, interpreted as robbed foundations of parallel, limestone walls (see Figure 9; Plate 13). A fragment of jardiniere of mid-18th-century date provided a *terminus post quem* for the robbing of these walls, which have been interpreted as the remains of the medieval gatehouse.

Plate 13 Intervention 2 - F38 C1038, south-facing section

The current gatehouse structure itself was encountered in Intervention 2. The stepped limestone foundations of the southern elevation, and the boundary wall adjoining it, were allocated F24 C1069 (see Figure 9). The cut for the wall was not clearly defined, although given the rough nature of the masonry of the boundary wall it seems likely to have been cut from the level of C1094.

To the far east of the trench, the foundations of the palace were also exposed (F23)(Plate 14). F23 was seen to consist of shaped limestone blocks, with occasional

Plate 14 Intervention 2- F23 C1068, looking east

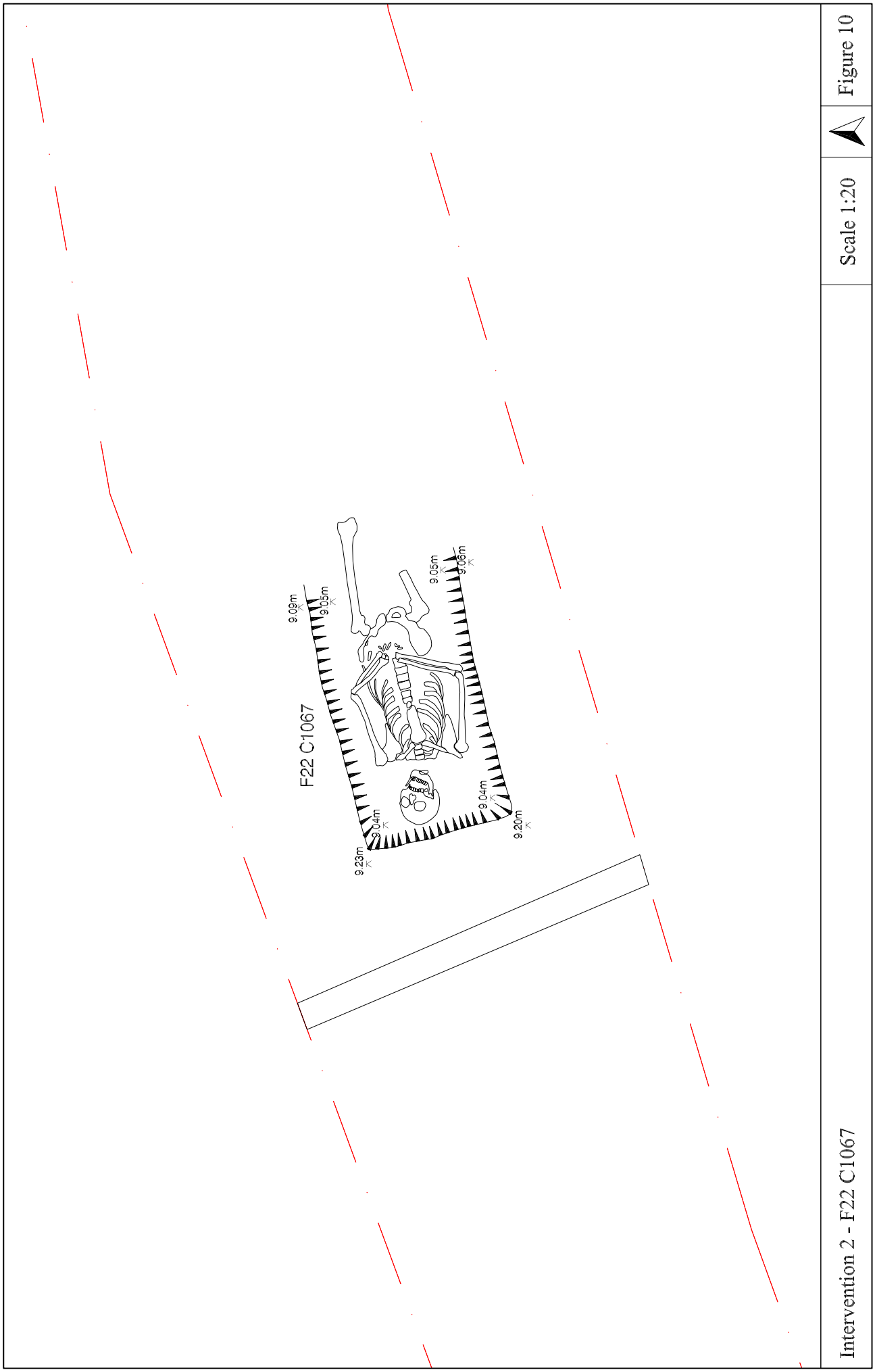


Figure 10

Scale 1:20

Intervention 2 - F22 C1067

brick inclusions. Running parallel to the palace wall, at a distance of 1.0m a second, brick-built, wall was defined (F15)(Plate 15). This feature was constructed with slop-moulded brick, indicating a date in the 17th century or later. Although the cut for the feature could not be defined, it appeared that a sequence of layers and mortar/gravel surfaces abutted it to the west, suggesting that it was cut from an earlier horizon. To the east, a sequence of looser sandy silt deposits, containing limestone, CBM and gravel (C1124 to C1127) appear to be retained by the wall, suggesting some form of terrace or raised bed.

Plate 15 Intervention 2 - south-facing section, F15

Abutting wall F15 to the west, and overlying C1053, a sequence of buried soils and possible surfaces was defined, possibly representing a sequence of surfacing or made ground (C1052, C1051, C1050, C0149). The latest of these, C1049, had been cut by a series of 19th- to 20th-century service trenches, F16, F17, F18 and F34. After its final disuse, F15 was sealed by a pea-grit preparation layer (C1048) laid down for the modern tarmac surface (C1047).

Further service trenches were noted throughout the trench, containing glazed ceramic pipes, lead waterpipes, and cast-iron foul pipes (F31, F32, F33, F54, F27, F28 and F29). In the areas not covered by modern tarmac, these features and earlier deposits were sealed by a layer of topsoil and turf.

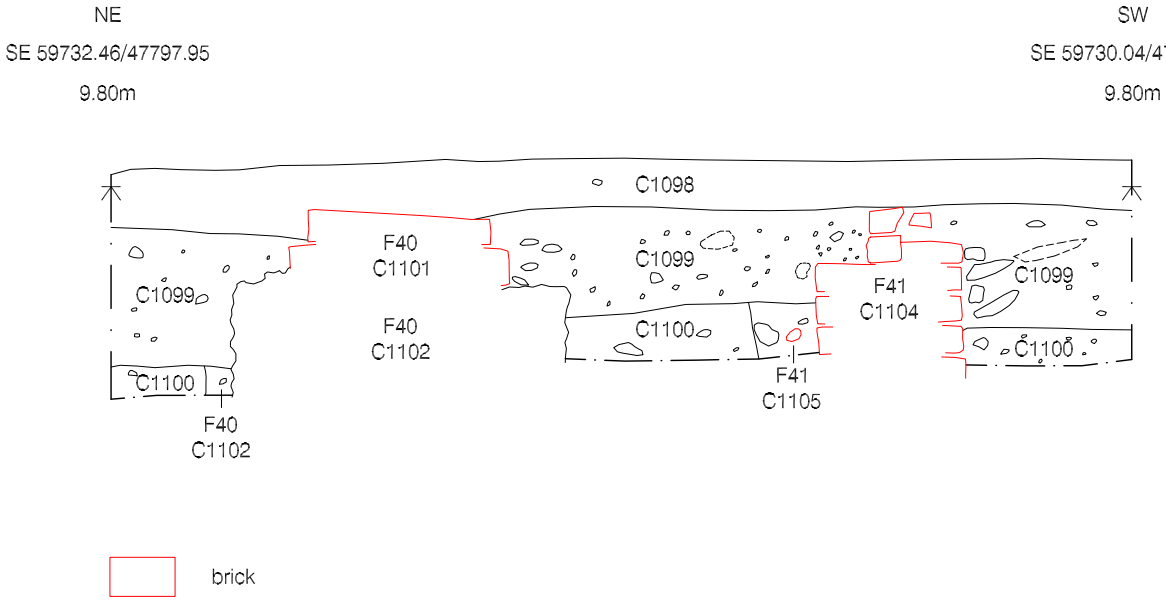
3.3 INTERVENTION 3

Intervention 3 was excavated to the south of the main palace range (see Figure 2). An L-shaped trench was hand-excavated to a depth of 0.60m. Further features were exposed during the removal of three trees to the north of this area.

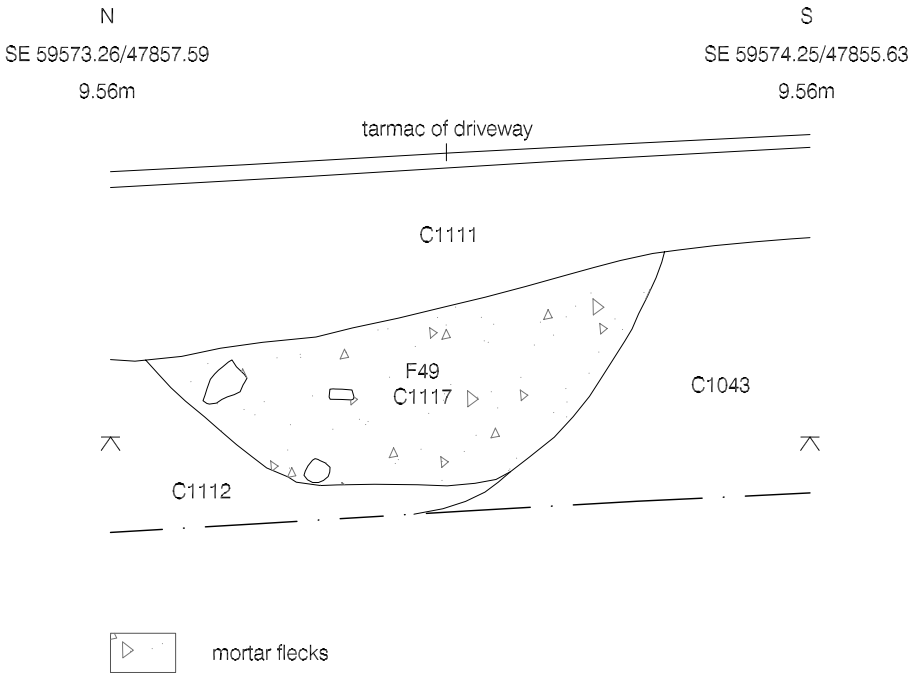
The earliest deposit encountered was allocated C1100, and consisted of a dark brown silty clay with CBM and mortar inclusions (Appendix Eiii; Figure 11). An assemblage of CBM of medieval to modern date was recovered.

Two parallel brick walls, with concrete foundations, were encountered cutting C1100, allocated F40 and F41 (Plate 16). Further evidence for brick structures was also visible following removal of trees in this area. Abutting the walls, and sealing the floor surface, a mixed layer of silty clay was deposited, measuring 0.30m in depth, and containing large quantities of rubble and CBM. These deposits are likely to represent levelling associated with the demolition of the structure

Plate 16 Intervention 3 - F40 and F41, looking southwest



Intervention 3 - north-facing section | Scale 1:20



Intervention 4 - east-facing section | Scale 1:20 | Figure 11

represented by F40 and F41. This sequence was then sealed by an imported modern topsoil allocated C1098.

3.4 INTERVENTION 4

Intervention 4 was excavated using a tracked mini-digger, and led from the northern corner of Brew House Cottage, flanking the west range of stable block buildings and connecting with the water main trench represented by Intervention 2 (Plate 17).

Plate 17 Intervention 4 - general shot, looking south

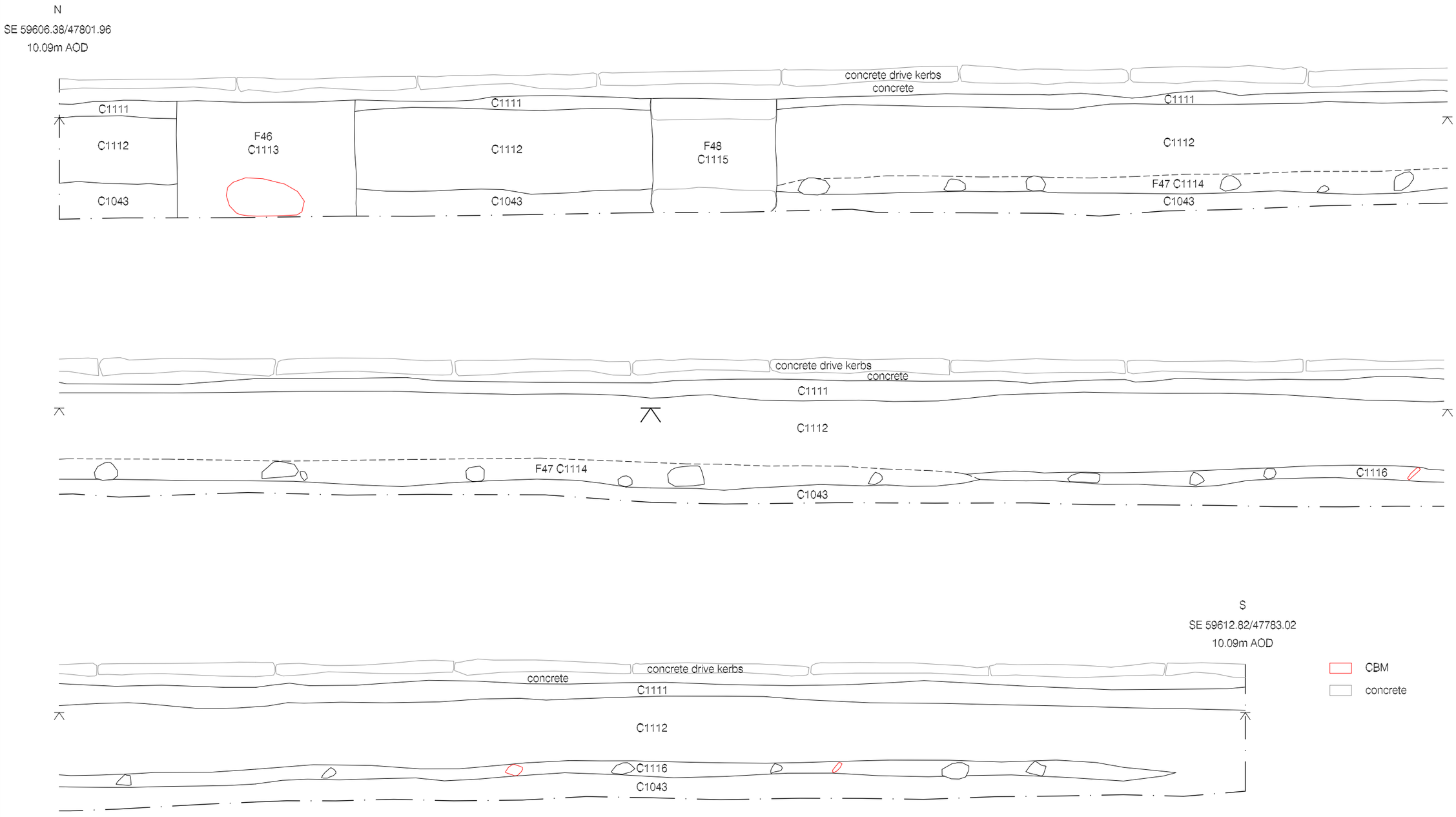
Subsoil was encountered at the base of the trench, at a depth of 0.60m below ground level (C1043)(Figure 12). Overlying subsoil was a cobbled surface, allocated F47, which consisted of small rounded cobbles set into the surface of the clayey subsoil (see Appendix Eiii). To the south, the surface gave out to a layer of demolition rubble, allocated C1116. Both deposits had subsequently been sealed by C1112, an overburden consisting of very dark greyish-brown clayey silt, with gravel and mortar inclusions.

Cutting C1112, and defined against subsoil in plan, F49 was defined as a cut feature, measuring a maximum 1.60m wide and 0.50m deep, backfilled with loose mortar and limestone rubble (see Figure 12). The limited area exposed within the trench meant that the full form of the feature could not be discerned, but F49 possibly represented a robber trench. The position of the feature at the extent of overburden C1112 suggested that it may have been a boundary feature.

Plate 18 Intervention 4 - F50 C1120

To the north of Brew House Cottage, a wall footing was encountered and allocated F50 (Plate 18). This wall, constructed with mortar-bonded brick, was orientated broadly west-east, and has been interpreted as a boundary wall. F50 was abutted by a flagstone surface, F51.

A turf and topsoil layer (C1111) overlay overburden C1112 and the defined structural features. Adjacent to the driveway leading west from the main drive, C1111 and had been cut by a service trench containing a salt-glazed pipe (F46) and a vertical-sided drain for the driveway (F48); these features lay beneath the concrete surface and kerb of the current driveway. Further modern services were noted along the length of Intervention 4, specifically a number of gas pipes (F55 to F58) and a telephone cable (F59).



Intervention 4 - west-facing section

Scale 1:20

Figure 12

3.5 INTERVENTION 5

Part of the refurbishment work included some replacement of the services within the north range of the palace. To facilitate the work some areas of floor boarding were removed exposing the sub-floor structure. The floor boards lifted were entirely of 19th-century date or later and had clearly been removed on numerous occasions before the current works.

3.5.1 First floor structure

Removal of the floor boards at first-floor level towards the northeast end of the range exposed some areas of historic floor joists and bridging beams which appeared to be *in situ* (Plate 19). Further historic timbers were exposed at the southwestern end of the range, but these had clearly been reused in their current locations.

Plate 19 Intervention 5 - bridging beam and joists exposed at first floor level

The *in situ* timbers consisted of bridging beams running northwest to southeast between the long wall of the range (Figure 13). Where it was possible to inspect, or feel, the underside of the timbers it was clear that they had all been finished with chamfers on each lower corner. Likewise the joists that were jointed into the bridging beams were treated in a similar fashion, but, in addition, the chamfers were stopped where they met the bridging beams (Plates 20 and 21). The joists were tenoned to fit into mortices provided on the bridging beams and secured by a single peg per joint, visible in the upper face of the bridging beams. Bridging beams and joists were clearly intended to be exposed on their lower faces and originally would have been visible in the ceiling of the ground floor. Of the timbers that were exposed a regular bay rhythm could be discerned, with the bridging beams set at a distance of *c*.2.5m between each of them.

Plate 20 Intervention 5 - chamfer stop on joist

Plate 21 Intervention 5 - chamfer stop on joist

The timbers exposed at the southwest end of the range were all reused, presumably during the 19th-century alterations, although of similar form to those identified as *in situ* (Figure 14). Original joists were halved and reused as thinner joists, but rotated 90 degrees so that the chamfered detailing was now located on one side of

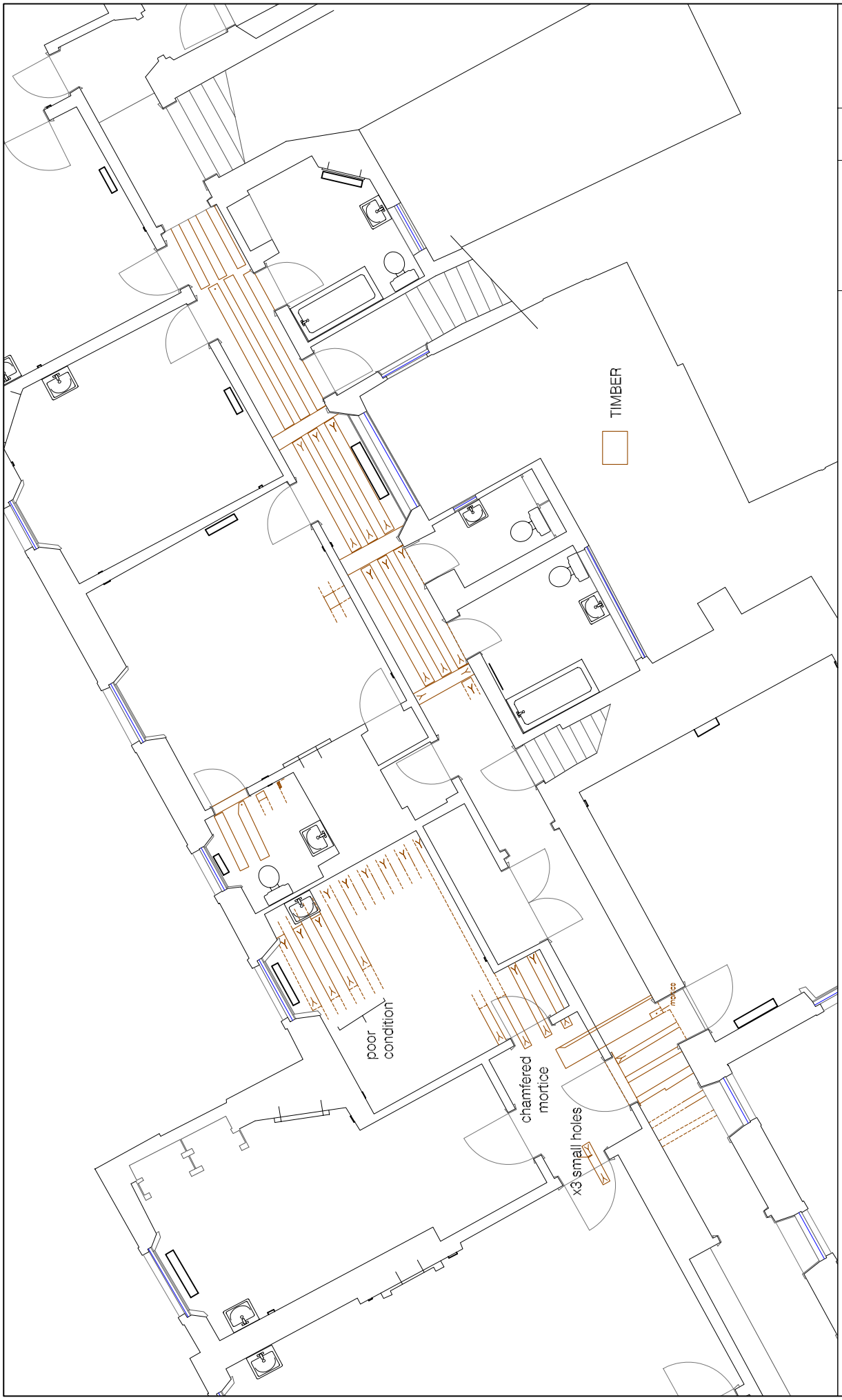


Figure 13

Scale 1:100

Intervention 5 - plan of in situ floor timbers at first-floor level, northeastern half of the north range

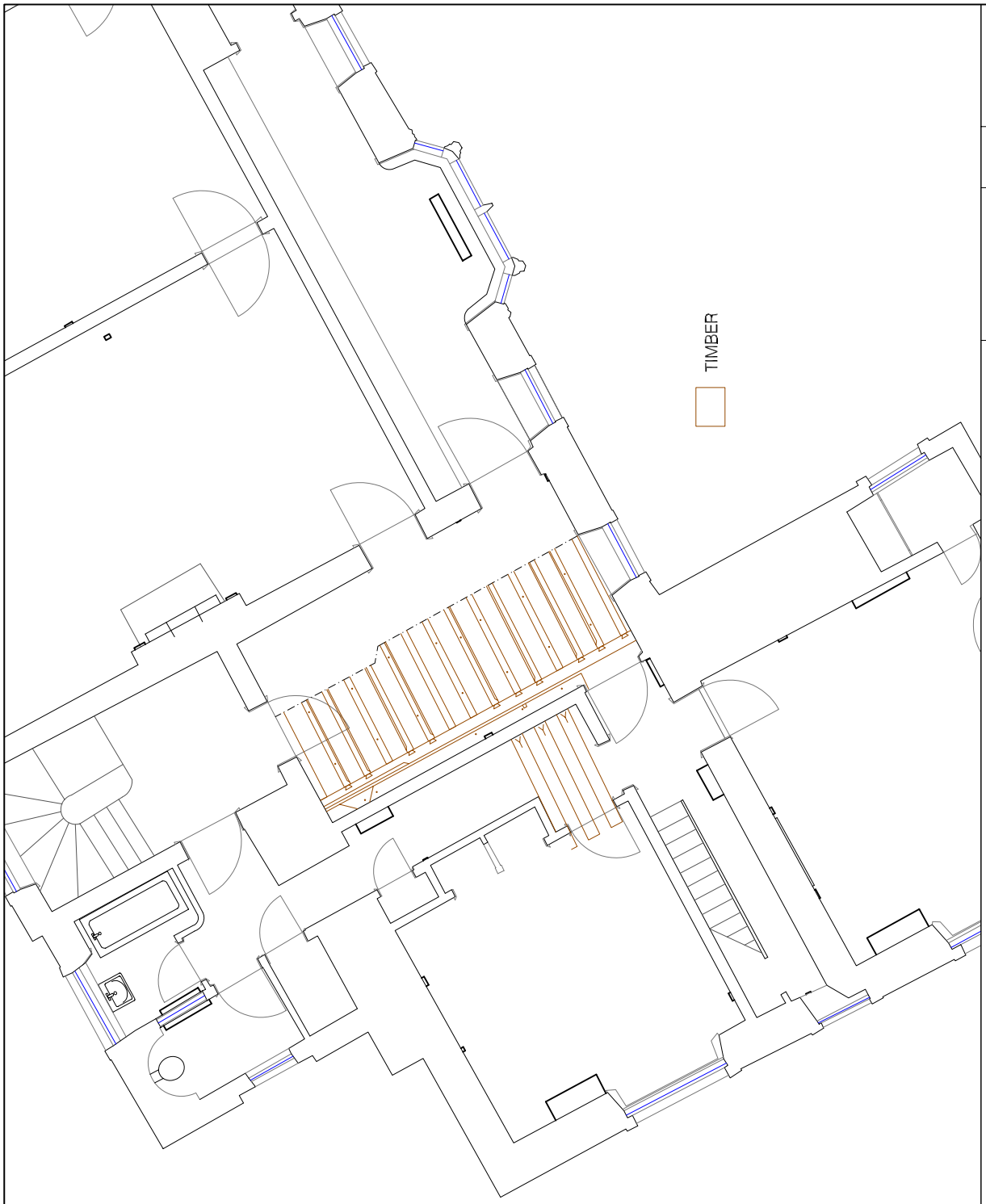


Figure 14

Scale 1:100

Intervention 5 - plan of re-used floor timbers at first floor level, southwestern half of the north range

their upper and lower faces (Plate 22). The reused joists were dove-tail jointed into reused bridging beams and wall plates (Plate 23).

Plate 22 Intervention 5 - reused joists

3.5.2 Second floor structure and roof

New exposure at second-floor level was more limited and was mainly concerned with the southwest end of the north range. Two bridging beams and several floor joists were exposed within this part of the building (Figure 15). Both bridging beams were orientated NW-SE with joists pegged into them. The soffits of the bridging beams were moulded, but the presence of a ceiling fixed to them made a detailed examination impossible (Plate 24). However, they were clearly of a different and more ornate form than the simple chamfers discovered on those in the majority of the north range.

3.5.3 Architectural features

Window head

Removal of a small area of plaster, close to the ceiling, at ground floor level within the corridor into the southwest addition to the north range exposed the remains of a window head (Figure 16). Seven brick voussoirs were exposed of an arch head that appeared to be four-centered (Plate 25). The voussoirs retained evidence for being chamfered into the opening and traces of rendering and white lime wash. The window would have faced to the southeast, but would have been effectively blocked by the construction of the southwest addition to the north range, now dateable to the 1560s on the basis of dendrochronological dating of its roof and floor structure. There can be little doubt that the window was part of the early 16th-century scheme of the north range, subsequently blocked in the 1560s.

Plate 23 Intervention 5 - dovetail joint on reused joist

Plate 24 Intervention 5 - moulding on bridging beam

Plate 25 Intervention 5 - brick voussoirs of window head

Intervention 5 - plan of in situ floor timbers and trusses at second-floor level, north range

Scale 1:200

Figure 15

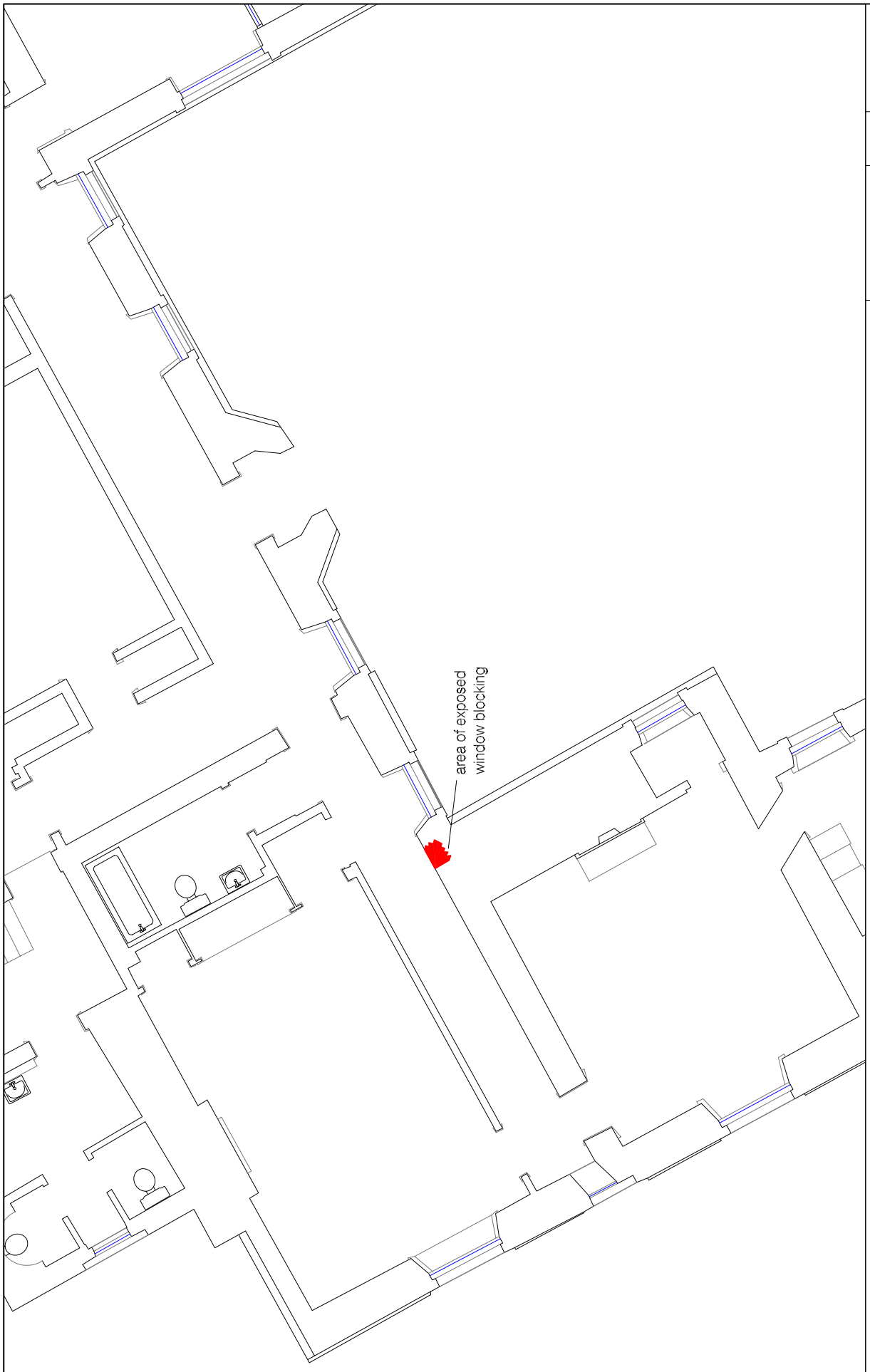


Figure 16

Scale 1:100

Location of window head, ground floor, north range

Plate 26 Intervention 5 - ceiling exposed in east range

Plate 27 Intervention 5 - detailed of ceiling exposed in east range

East range

Refurbishment work in the Georgian Gothick east range, added to the southwest side of the great hall and chapel in the 1760s, revealed some details of its original interior design. Removal of the stud partitioning and suspended ceiling, inserted to form secretarial offices, at first-floor level exposed an earlier ceiling at the northwest end of the range (Plate 26). The ceiling was coved with a moulded cornice which had unfortunately been cut into to receive the 1960s stud partitioning (Plate 27).

Plate 28 Intervention 5 - floor structure above chapel

Lifting of the floor boards at first-floor level above the chapel revealed no features of note (Plate 28). Some limited removal of plaster on the interior of the northeast wall did expose a small brick arch (Plate 29). This appeared to be serving as a relieving arch for one of the windows in the northeast wall of the chapel at ground-floor level.

Plate 29 Intervention 5 - brick relieving arch above chapel windows

4.0 DISCUSSION

The results of the watching brief are not well dated, but using stratigraphic evidence, with known historic and cartographic sources, it is possible to assign the archaeological deposits that were encountered to four main phases (Table 2).

Table 2 Summary of periods

Period	Date	Description
1	Medieval - 14th to 16th century	Cobbled surfaces, structures, burial, metalworking
2	Post-medieval - 17th century	Structural activity, waste deposition
3	Post-medieval - 18th-century	Building alterations, new gatehouse
4	Modern - 19th to 20th century	Service trenches, modern surfacing, structural alteration

4.1 PERIOD 1 - 13TH TO 16TH CENTURY

4.1.1 Surfaces and structural activity

Across most of the area of the watching brief, medieval activity was represented primarily by buried soils and cobbled surfaces. These dated from the 13th century or later, and would seem to represent the accumulation of soils, and phases of consolidation, associated with what would have been a busy area to the rear of the main palace range. Within the palace, buried soil C1012 produced only medieval material, although this may be residual material in a later deposit. The large feature (F7), and possible posthole (F5) contained medieval CBM, although in F5 this was heavily worn and abraded. The presence of plaster, brick and CBM within the backfill of F7 might indicate demolition or robbing of earlier walls, possibly associated with early palace structures.

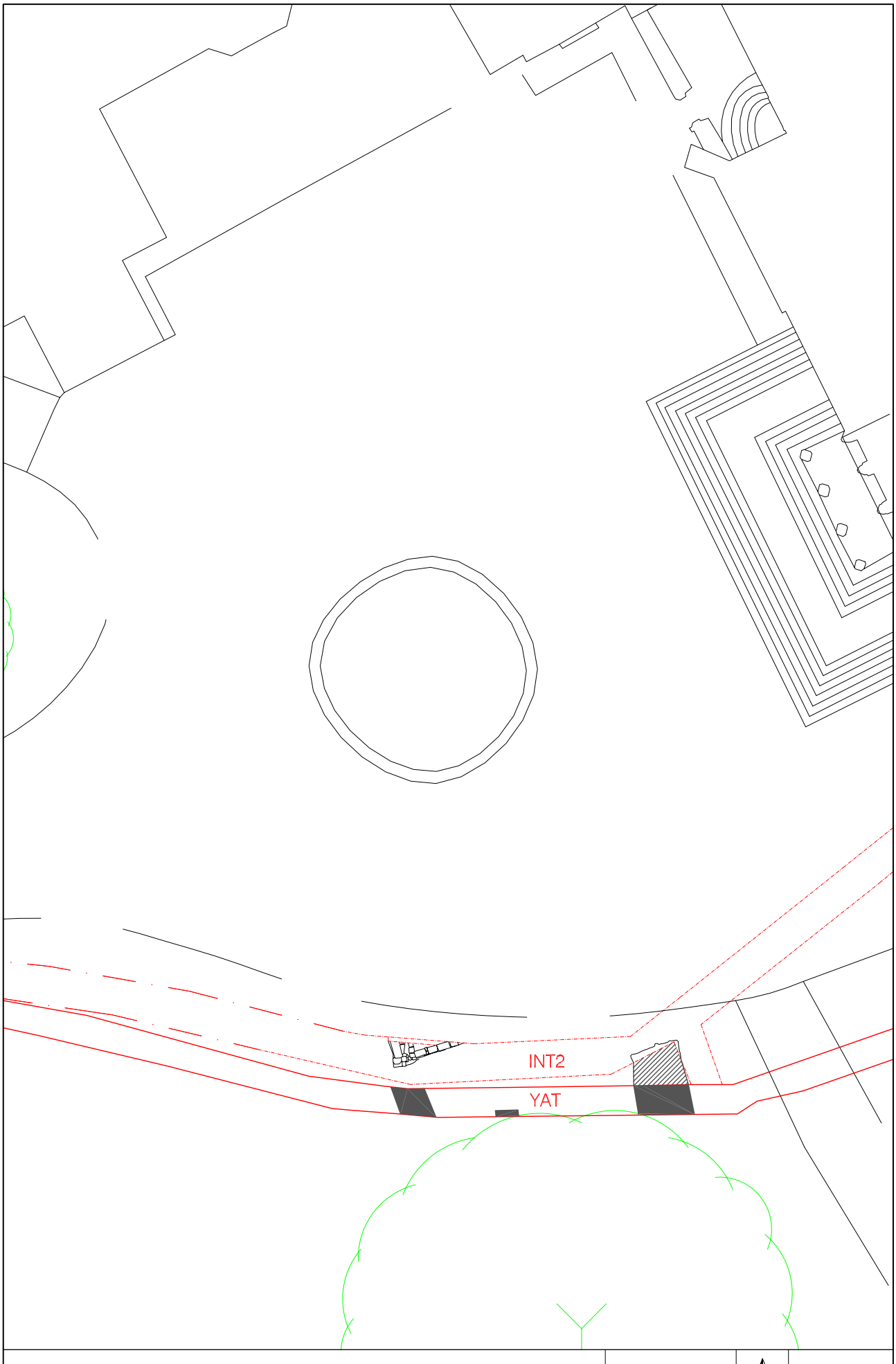
Buildings to the west of the palace

Approximately 25m southwest of the palace, the remains of two stone walls provided evidence for a building, or buildings, in this area, and although not securely dated, the limestone wall foundations have been assigned to the medieval period. These walls were encountered during a previous watching brief on the site (Dean 2007), and allow a broader layout to be projected (Figure 17). These features occupy the same alignment as the extant remains of the palace, and can be aligned with the end of the north range. It is possible, therefore, that they represent part of the western range depicted by Parsons in the early 17th century, known to have been demolished by the 18th. The associated lead-working hearth would seem to indicate industrial activity, and could have been associated with the preparation or salvage of lead fittings for the palace and associated buildings. Also assigned a medieval date was the succeeding tile-built hearth made exclusively of plain medieval roof tile (F20).

Medieval gatehouse

The robbed walls to the east of the current gatehouse (F38 and F39) can be interpreted as evidence for the medieval gatehouse. The lack of surviving foundations means that the character of the building was not determined, but the location of the walls indicates a structure measuring *c*.4m from east to west.

The depiction of the palace by Parsons (see Plate 2) shows the medieval configuration of the gatehouse and wall, and shows a road running immediately east of the range. This led previously to two hypotheses being suggested; that the medieval gatehouse lay some distance to the west of its 18th-century successor, or that the road was moved when the new gatehouse was constructed. It would appear from the archaeological evidence that the gatehouse did not move dramatically, and so the latter suggestion seems more likely, that the north-south road



Intervention 2 - structural features | Scale 1:200 | Figure 17

originally passed by the gatehouse, and was moved further east at a later date.

4.1.2 Burial

The single inhumation burial represents something of an enigma; no cemetery is known at the site, and no burials have previously been encountered in this area.

A number of possible ecclesiastical associations can be suggested, but none provides a clear association with this burial. The church of St Andrew, now disused, lies to the southeast of the palace, some 100m from the burial. The church has 13th-century fabric, but it seems incongruous that burials associated with it would have been located so far away, and so close to the palace structure. The chapel within the palace complex itself is unlikely to have attracted burial, at least located a significant distance away. A chantry chapel, said to have been replaced by a domestic chapel in 1241, remains insecurely located, but is generally placed to the west of the disused St Andrews (Ordnance Survey 1851).

These considerations, and the lack of human remains (*in situ* or disarticulated) from the surrounding area, leads to the suggestion that this represents an isolated burial, situated a short distance away from buildings associated with the palace complex. The presence of a hitherto unknown ecclesiastical focus cannot be discounted.

4.1.3 Palace fabric

Dendrochronological analysis of the timbers of both the floor structures and the main roof trusses of the north range (excluding those replaced in the 19th century) have provided a date of *c*.1502/3 for their felling. This would suggest that the north range (and possibly the two demolished ranges that were formerly attached to its northwest elevation), were the work of Archbishop Thomas Savage (Archbishop of York 1501 - 1507) rather than Archbishop Rotherham (Archbishop of York 1480 - 1500).

Dendrochronological dating of the floor structures and roof on the southwest extension provided a date in the 1560s suggesting that this was a development by Archbishop Thomas Young (1561 - 1568). Young was President of the Council of the North between 1564 and 1568 and it is tempting to see a link between the development of the palace in this period, and Young's new additional role.

4.2 PERIOD 2 - 17TH CENTURY

Many of the deposits encountered during the watching brief can only be loosely assigned a date after 17th-century, possibly into the 18th; for the purposes of discussion these have been distinguished from the better documented phases of 18th-century structural activity, which have been assigned to Period 3.

4.2.1 Structural activity

Within the palace (Intervention 1), the stratified sequence provided little secure dating evidence, but the presence of clay pipes (C1009), and the context of the wider building, suggest that the earliest deposits represent

17th-century activity. Deliberately-laid deposit (C1014) extended across much of the area, the character of which suggested an exterior ground level. The pictorial evidence would indicate, therefore, that these were deposited after the demolition of the second range shown on Parson's depiction of the palace.

This space, used for the dumping of kitchen waste C1013, would have been delimited on three sides by a 17th-century addition to the north range to the west and the two medieval ranges to the north and east; this arrangement continued into the 19th century (Ordnance Survey 1851; 1893). It is notable that the kitchen is situated at the east end of the north range, with an exterior door situated in its southern wall (FAS 2006, 37); a 17th-century room to the west was also used previously as a kitchen, both of which would provide a context for waste deposition in this area.

Within Intervention 1, the deposition of kitchen waste was succeeded by a cleaner buried soil (C1009), which again indicated that this area was external at this time; the presence of 17th-century clay pipe provides a *terminus post quem* for the accumulation of these layers. Apparent construction layers (C1008, C1007), which can be traced across much of the trench, with equivalent layer C1029, then suggest the onset of structural activity in this area, likely to pertain to 18th-century activity (see below).

Although truncation by later features has removed stratigraphic relationships, it is possible that early wall F53, was associated with this horizon. The north-south wall (F53), which was later extensively robbed, can be seen to form an alignment with the west wall of the kitchen, perhaps forming a passage down the western side of the range.

4.3 PERIOD 3 - 18TH CENTURY

The 18th century saw a significant level of structural activity undertaken under the auspices of various archbishops. However, perhaps the most significant work during this period was carried out for Archbishop Drummond (1761-77), who commissioned Peter Atkinson to design the quadrangular stable block to the northeast of the main palace buildings in 1761-3, and saw the construction of the west range which forms the Gothic frontage of the palace. Evidence for alterations of this date, both structural and in the wider grounds, was encountered in all interventions.

4.3.1 Structural activity in the north range

At the western end of Intervention 1, a below-ground wall (F2), dated stratigraphically to the 17th century or later, appears to represent the remains of a subterranean structure, possibly a cellar, with a loose, brick backfill abutting the wall to the west. This lies close to the 17th-century block to the west, but no cellar is known beneath this wing. The wall sits in alignment with 18th-century cellarage to the east, attributed to Thomas Atkinson (1765-9)(FAS 2006, 29) and may have formed part of a passage or feature associated with this complex, but subsequently disused. The collapse of wall (F60) appears to align with known 18th-century construction (FAS 2006, 34), and may also have been contemporary with construction of the Gothic range.

4.3.2 18th-century kitchen block

At the southern end of the medieval chapel, a kitchen block was constructed, also attributed to the 18th-century works carried out under Archbishop Drummond. This building was extant well into the 1950s, and was contacted archaeologically in the watching brief as walls F40 and F41. These walls appear to align with the eastern wall of the range as it projected south, and from photographic evidence, can be equated with a small linking block between the main range and the palace (Plate 30).

Plate 30 18th-century kitchen block, *c*.1850

4.3.3 18th-century gatehouse

The foundations of the 18th-century gateway were encountered within the trench. This structure is known to have been built in 1763-5 by Thomas Atkinson, reusing stone brought from Cawood Castle (Gee 1983, 3), and would have seen the demolition and robbing of the medieval gatehouse structures. Ceramic evidence from the robbed medieval foundations, including a Delftware tile, supports an 18th-century date for this activity.

The reorganisation of the gatehouse structures is likely to have been contemporary with widespread landscaping across the area. Despite the presence of medieval foundations, there is little demolition rubble across most of the driveway and associated areas, and it seems likely that earlier features and layers were truncated in order to landscape the area, resulting in the shallow depth of the burial and hearth structures, before general levelling layer C1094 was laid down. The newly laid, east-west aligned cobble surface F30 may have been laid down as part of a contemporary activity, possibly leading towards the road which had more recently been moved eastwards.

4.3.4 Stable block and Brew House cottage

Within Intervention 4, structural remains appeared to represent the remains of boundary walls associated with the 18th-century stable block complex. F50 can be seen to align with a section of upstanding wall, having been partially demolished.

The spreads of rubble are also likely to derive from these buildings, possibly from the north-south ranges that extended southwards, and building known to have been situated at the northern end of the complex (Plate 31). These were demolished in the 1920s and 1960s respectively.

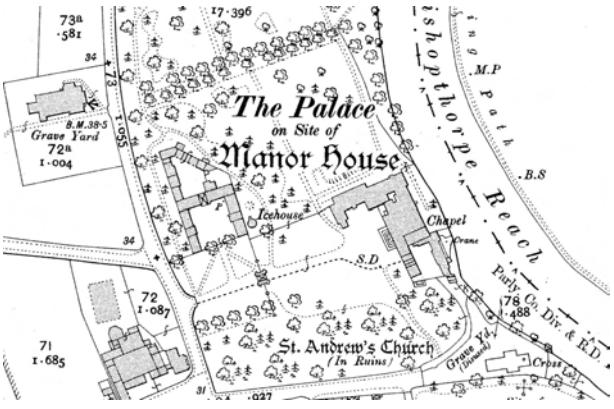


Plate 31 Extract from OS 1909

4.4 PERIOD 4 - 19TH TO 20TH CENTURY ACTIVITY

4.4.1 Structural activity

Structural alterations within the palace building (Intervention 1) are attested by robbing of wall F53, which may have occurred at the same time as known demolition of part of the 17th-century projecting wings in the late 19th century (FAS 2006, 14). After robbing of wall F53, Intervention 1 revealed the subsequent insertion of service trenches within the area, containing salt-glazed ceramic pipes and lead pipes, which appear to represent 19th-century developments. At least two of these service trenches predate the construction of wall F14. Previously this wall had been identified as part of a projecting block leading north from the block; however, the stratigraphic evidence would suggest that F53 forms a more likely 18th-century candidate, with F14 constructed parallel to F6=F8 and F13 as part of 19th- or 20th-century infilling of this area.

The brick floor (C1002) would have been the original flooring of this area; later 20th-century alterations, which saw the insertion of doorways through the walls, were accompanied by the poured concrete floor that survives today.

Service trenches of varying date were observed across all of the interventions, representing the continual development of the palace, and associated buildings. The demolition of the kitchen block to the south of the palace, and the structures associated with the stable blocks, occurred between the 1920s and 1960s, also reflecting the continual evolution of the whole complex.

5.0 ASSESSMENT AND RECOMMENDATIONS

The results of the watching brief add to the wider body of knowledge relating to the development of the Archbishop's palace and associated structures. Of particular note are the medieval remains, including the robbed foundations of the medieval gatehouse, the burial and the associated structures; the location of the medieval gatehouse had previously been unclear. The structures were only glimpsed in service trenches, but a short note on the findings should be submitted to the relevant journal (*Medieval Archaeology*). The 18th- to 20th-century findings largely concurred with what is known of the development of the building, and no further work is required, beyond the illustration of a single sherd of 18th-century pottery which has been included in the current report.

The structural watching brief provided an opportunity to refine the dated sequence of the development of the palace. It is now certain the north range was constructed in *c*.1502/3 rather than between 1480 and 1500 and subsequently added to and altered in the 1560s rather than the 1650s. Any future interventions into the fabric are likely to reveal more information on the original internal layout of the building and further details of its original fenestration scheme.

6.0 ARCHIVE

The skeletal remains were submitted for osteological assessment, before the individual was reburied in the churchyard of St Andrew's, Bishopthorpe, marked with a simple wooden cross. The ceramic assemblage (17 sherds) is to be retained, and a sample of five fragments of CBM is to be retained.

A paper and electronic copy of this report will be deposited with the City of York Council, and the report will be made available *via* OASIS.

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APPENDIX A THE PALACE, BISHOPTHORPE ROAD, BISHOPTHORPE: ARCHAEOLOGICAL SCHEME OF INVESTIGATION: WATCHING BRIEF

1.0 INTRODUCTION

1.1 A planning application and listed building application to carry out external and internal alterations including works to create a self-contained apartment and office accommodation for staff, to construct a new lift and link structure and alterations at roof level have been approved by the City of York Council (06/01822/FUL, 06/01823/LBC). An archaeological watching brief on all groundworks has been made the subject of a condition on the planning consent (06/01822/FUL, condition 3). This document sets out the details of the archaeological watching brief that the City of York Council considers will be necessary in conjunction with the proposed works.

2.0 SITE DESCRIPTION

2.1 The site is located at NGR SE 59714782. An Historic Buildings Assessment (HBA) has been prepared by Field Archaeology Specialists and submitted as part of the planning application. This gives a detailed archaeological and historical account of the site as well as a detailed assessment of the fabric of the Palace

2.2 The core of the site represents the 13th century palace built by Archbishop de Gray and extended by subsequent Archbishops. The main impact on sub-surface archaeological deposits will come through the works associated with the construction of the lift for the building. The HBA concluded that the site of Bishopthorpe Palace has a relatively high archaeological potential.

3.0 ARCHAEOLOGICAL PROGRAMME

3.1 It will be necessary for a watching brief to be kept on all ground disturbances for this development. A professional archaeologist or archaeological unit (the archaeologist) which must be approved in writing by the Assistant Director (Planning and Sustainable Development) must undertake this watching brief. In addition, the watching brief will observe interventions in the above ground structure and record any historic fabric which is revealed.

3.1.1 The watching brief will consist of the archaeologist observing all groundworks and interventions in the above ground structure as described in 3.1 above. Where it becomes clear during the watching brief that there is no likelihood of archaeological deposits surviving on the site the watching brief may be curtailed with the agreement in writing of the Assistant Director (Planning and Sustainable Development). Where it becomes clear that the extent of surviving archaeology is greater than the archaeologist had allowed for in thir costing of the watching brief, the archaeologist must inform their client that this is the case. In this situation the client should consult with the City of York Archaeologist in order to determine what, if any, further archaeological work must be undertaken in order to meet the terms of the planning condition.

3.1.2 The watching brief must be carried out by the archaeologist in a manner that allows the contractor to proceed with their construction programme without unreasonable interference or delay. The contractor must allow the archaeologist reasonable access and resources to implement this archaeological scheme of investigation.

3.1.3 Where archaeological deposits of national importance are revealed during the watching brief, the archaeological

contractor must notify the City of York Council's Archaeologist at once. Consultations can then take place to determine what additional steps, if any, are appropriate in the circumstances relating to the deposits.

3.2 The objective of the watching brief is to establish the following details:

3.2.1 the date and character of any archaeological deposits disturbed by the development

3.3 During the watching brief the following methodologies must be followed:

3.3.1 the archaeologist will be in attendance at such times during the excavation for the groundworks as he or she considers appropriate and necessary; the archaeologist will record the presence or absence of archaeological features and deposits and make all appropriate written, drawn and photographic records of any archaeological deposits which are revealed; all burials must be recorded and removed by the archaeologist; a Home Office burial licence must be obtained for this procedure;

3.3.2 all records must be indexed, ordered, quantified, and checked for consistency;

3.3.3 all artefacts and ecofacts recovered and retained from the watching brief must be fully documented and packed and stored in the appropriate materials and conditions to ensure that minimal deterioration takes place and that all their associated records are complete;

3.3.4 all artefacts and ecofacts recovered from the watching brief must be assessed, and where appropriate processed analysed drawn and published, by a person or organisation with skills and expertise relating to the artefacts and ecofacts;

3.4 The details and processes outlined in 3.3.1—3.3.4 will produce the following output as a concise report:

3.4.1 plan of site showing position of trench;

34.2 portfolio of drawn sections, trench plans, and, where appropriate, drawings of artefacts;

3.4.3 an assessment of the artefacts and ecofacts and where produced reports on any further analyses;

3.4.4 a full description of and an interpretation of the archaeological sequence, setting the site into the context of the known archaeology of the area;

3.4.5 an index to and details of the location of the archive. The long term care of the watching brief archive must be provided for. All the original material and paper archive must be prepared for deposition with an approved archaeological depository such as the Yorkshire Museum. These Institutions will normally make a charge to cover the long-term curation of the archaeological archive. The requirements of the receiving Institution must be identified at the time of producing an estimate for this scheme of investigation.

3.4.6 The City of York Council UAD/SMR supports the *Online Access to Index of Archaeological Investigations* (OASIS) project. The overall aim of the OASIS project is to provide an online index to the mass of archaeological grey literature that has been produced as a result of the advent of large-scale developer funded fieldwork. The archaeological contractor must therefore complete the online OASIS form at http://ads.ahds.ac.uk/project/oasis/. If the archaeological contractor does not have internet access a paper copy of the form can be obtained from the City of York UAD/SMR at 9 St Leonard's Place, York YOI 7ET. Contractors are advised to contact the City of York UAD/SMR prior to completing the form. Four printed copies of the report must be deposited with City of York Council. In addition a copy of the report must be supplied in electronic form. This must be done on a CD-ROM as a PDF file or files. If in doubt about formats please contact John Oxley on *01904 551346* or e-mail to *john.oxley@york.gov.uk*. Once a report has become a public document by forming part of a planning application, City of York Council will place the information on its WWW. Please ensure that you and your client agree to this procedure in writing as part of the process of submitting the report to the Principal Archaeologist.

3.4.7 The contractor must produce a written synopsis of the results of the watching brief and submit this to the City of York Council no later than two months after the completion of work on site.

3.4.8 The Contractor must give at least seven days notice in writing of the start of works on site to Assistant Director (Planning and Sustainable Development), Planning and Sustainable Development, 9 St Leonard's Place, York, YOI 7ET

3.4.9 The Contractor will be subject to regular monitoring visits by the City of York Council. Reasonable access must be given at all times to the Principal Archaeologist, City of York Council or his agent to the site and to premises used for the purposes of post-excavation work to allow this monitoring to proceed. This will ensure that the scheme of investigation is being followed and that high professional standards are being maintained. It can be anticipated that the City of York Council will want to inspect a 10% sample of all archaeological records generated by the project.

4.0 SUMMARY

4.1 This document sets out the background to and outlines a programme for the watching brief which the City of York Council considers is reasonable and necessary on this site.

APPENDIX

1.0 INTRODUCTION

1.1 This appendix describes a set of procedures which must be implemented by all contractors.

2.0 PROCEDURES

2.1.1 All work must be undertaken in a professional manner paying attention to the Institute for Field Archaeologist Standards and Guidance:

- Introduction to Standards and Guidance (PDF)
- Standard and Guidance for desk-based assessment (PDF)
- Standard and Guidance for field evaluation (PDF)
- Standard and Guidance for Excavation (PDF)
- Standard and Guidance for an archaeological watching brief (PDF)
- Standard and Guidance for the archaeological investi ation and recording of standing buildings or structures (PDF)
- Standard and Guidance for the collection, documentation conservation and research of archaeological materials (PDF)
- Appendices to Standards (PDF)

All documents are available from either the City of York Council or from the IFA website at http://www.archaeologists.net

2.2 All finds processing, conservation work and storage of finds from this site must be carried out in accordance with the standards agreed by the Yorkshire Museum, the Castle Museum, and YAT those set by the UKIC. These standards form the basis of current practice in York and all contractors will be expected to base their estimates on the implementation of those standards (see section 3 below).

2.3 Finds specialists must be able to document and demonstrate levels of professional competence and technical expertise and access to comparative material.

2.4 Where the conservation of archaeological objects is necessary, this work should be undertaken either by or in consultation with the Conservation Section of the York Archaeological Trust.

3.0 FINDS PROCESSING STANDARDS

3.1 The following finds-processing standards must be followed by all contractors

3.2 On-site finds processing

3.2.1 All bulk material must be washed

3.2.2 All bulk material except animal bone marked. Marking and labelling materials indelible and irremovable by abrasion

3.2.3 All bulk finds must be appropriately boxed and recorded on computer

3.2.4 Identification of stone-type and tile must be undertaken on site

3.2.5 All the above to be completed within two months from the end of the excavation

3.2.6 All small finds recorded both in the finds register and on computer

3.2.7 Small find recording system must be compatible with Yorkshire Museum accessioning system

3.2.8 All small finds must be appropriately packaged for optimum survival of data

3.2.9 All the above to be completed within two days of the object having been excavated

3.3 Off-site Finds Processing

3.3.1 All small find and bulk find data must be made available to finds researchers, conservators and curatorial staff

3.3.2 Computer system should be used to monitor location of objects to allow rapid access

3.3.3 All material stored in optimum conditions to ensure survival of data. Includes

- Controlled environment storage where appropriate
- Correct packaging with inert materials
- Regular checking of the condition of objects
- Immediate selection for conservation of vulnerable material

3.3.4 All material stored in buildings with appropriate security (see storage below)

3.4 Conservation

3.4.1 All metal objects will be x-rayed, then selected for conservation. Non-conserved material stored in controlled conditions.

3.4.2 All organic materials will be appropriately treated, including prior specialist recording for materials where there is possible information loss in the process of conservation

3.4.3 Specialist advice must be taken for wood, leather, osseous material and textile conservation and research

3.4.4 All other classes of material must be treated where appropriate

3.4.5 Special packaging undertaken must be provided for all vulnerable objects. All textiles, coins, and painted glass stored in specially-designed systems.

3.5 Storage

3.5.1 All objects stored in appropriate materials and storage conditions

3.5.2 All objects stored to allow rapid access on demand

3.5.3 All storage at appropriate security levels, eg:

- Small finds in storage approved by National Security Adviser or Area Museums Service
- Bulk finds in storage with lower security rating but still physically secure and alarmed

3.5.4 Safe secure and environmentally controlled storage must be provided for all material between excavation and the deposition of the archive with the receiving body.

4.0 All contractors must follow the above guidelines.

APPENDIX B INDEX TO FIELD FILE

CODE		DESCRIPTION	RECORD	FORMAT
		Indices		
YO1		Index of notebooks	-	-
YO2		Index of contexts	5	A4
YO3		Index of features	3	A4
YO4		Index of structures	-	-
YO5		Index of drawings	1	A4
YO6	.0	Index of photographs	5	A4
	.1	Index of film processing	1	A4
YO7	.0	Index of finds	DIGITAL	DIGITAL
	.1	Index of finds by context	-	-
	.2	Index of finds by grid square	-	-
	.3	Sample Register	-	-
	.4	Artefact Register	-	-
	.5	Finds Storage Register	-	-
YO8		Index of geophysical data files	-	-
YO9	.0	Index of survey stations	-	-
	.1	Index of co-ordinate files	-	-
	.2	Index of topographic files	-	-
YO10		Index of interventions	1	A4
		Contexts		
Y2	.0	Context Record	136	A4
	.1	Skeleton Record	-	-
	.2	Coffin Record	-	-
	.3	Masonry Record	-	-
	.4	Timber Record	-	-
		Features		
Y3	.0	Feature Record	62	A4
	.1	Auger Record	-	-
		Structures		
Y4		Structure Record	-	-
		Site drawing		
Y5	.0	Legend	-	-
	.1	Plans	-	-
	.2	Maps	-	-
	.3	Sections	-	-
		Photographs		
Y6	.0	Black and white negatives	-	-
	.1	Colour negatives	72	35mm
	.2	Colour slides	-	-
	.3	Colour enprints	72	6 x 4
	.4	Black and white prints	-	
		Finds		
Y7	.0	Finds Location Record	-	-
	.1	Artefact Record	-	-
		Survey		
Y8	.0	Record of geophysical data files	-	-
	.1	Record of .RAW data file	-	-
	.2	Record of .FLD data file	-	-
	.3	Surface Reconnaissance Record	-	-

APPENDIX C SUMMARY OF CONTEXTS

Context	Feature	Int	Identity	Description	Munsell
1000	-	1	surface	modern concrete surface of utility room	-
1001	1	1	make-up	brick and concrete make-up of modern heating duct	-
1002	-	1	make-up	brick floor make-up, comprising bricks measuring 220mm x 130mm x 110mm, bonded with lime mortar	-
1003	2	1	make-up	brick and mortar make-up of wall, bricks measuring 220mm x 130mm x 50mm, bonded with pale brown lime mortar	-
1004	3	1	backfill	mixed backfill of service trench containing lead water pipe, comprising dark brown clayey silt with clean orange sand, and charcoal inclusions	10YR3/2
1005	-	1	layer	construction horizon for overlying brick floor, comprising a mixed layer of dark and pale brown silty sand with charcoal flecks	10YR3/2 10YR4/4
1006	4	1	make-up	brick and mortar make-up of culvert , with bricks measuring 220mm x 110mm x 80mm, bonded with a pale whitish-grey mortar	-
1007	-	1	buried soil	firm, dark greyish-brown silty sand with inclusions of charcoal and lime mortar, gravel and pebbles	10YR3/1
1008	-	1	layer	pale brown sandy silt flecked throughout with lime mortar and charcoal, with feint horizon of lime mortar over surface, identified as buried soil or construction layer	10YR5/3
1009	-	1	buried soil	very dark grey sandy silt with gravel inclusions	10YR3/1
1010	-	1	make-up	clean brown, fine, sandy silt, with no inclusions; interpreted as a possible surface of deliberately imported material	10YR5/4
1011	5	1	backfill	brick backfill of possible posthole, in a matrix of fine crushed brick	red
1012	-	1	buried soil	dark yellowish-brown sandy silt, with flecks of lime mortar and charcoal, visible in the base of the trench	10YR3/4
1013	-	1	layer	bone-rich layer of compact, very dark greyish-brown sandy silt with animal bone, oyster shell and charcoal inclusions	10YR3/2
1014	-	1	make-up	surface make-up, comprising lime mortar and crushed CBM	10YR6/1
1015	-	1	infill	voided, crushed brick infill	various
1016	6	1	make-up	make-up of wall footing, comprising bricks 230mm x 110mm x 70mm with hard lime mortar	various
1017	7	1	backfill	dark yellowish brown clayey silt backfill with mortar and CBM inclusions	10YR3/6
1018	-	1	layer	preparation layer for brick surface C1002, 0.15m deep and partly collapsed	10YR5/6
1019	8	1	backfill	backfill of construction cut for wall F8, comprising a black sandy silt with sand, CBM and mortar inclusions	10YR2/1
1020	8	1	make-up	brick and mortar make-up of wall F8	-

Context	Feature	Int	Identity	Description	Munsell
1021	7	1	backfill	layer of sand forming the latest backfill of pit F7, 0.15m deep	7.5YR4/6
1022	-	1	layer	concrete layer with red brick inclusions, abutting wall F8 and forming preparation for a floor layer	-
1023	-	1	make-up?	two bricks seen in section; unclear whether they formed part of a structural feature	-
1024	-	1	layer	same as C1013. Layer of compact, very dark greyish-brown sandy silt with animal bone, oyster shell and charcoal inclusions	10YR3/2
1025	-	1	layer	same as C1012. Dark yellowish-brown sandy silt, with flecks of lime mortar and charcoal, visible in the base of the trench	10YR3/4
1026	-	1	brick floor	brick floor, situated beneath the modern concrete ground surface	-
1027	-	1	preparation layer	light grey silt with concrete and brick inclusions forming preparation for brick floor C1026	-
1028	-	1	layer	layer of partially degraded sandstone 0.15m in depth	2.5Y6/6
1029	-	1	layer	very dark brown sandy silt with inclusions of mortar and CBM	10YR2/1
1030	9	1	backfill	modern backfill, consisting of a black silty sand with CBM, mortar, over a lead pipe	10YR2/1
1031	10	1	backfill	backfill of service trench, comprising very dark grey silty sand, with mortar, CBM, charcoal over iron pipes	10YR3/1
1032	53	1	make-up	brick make-up of wall	-
1033	53	1	make-up	limestone block forming foundation of brick wall	-
1034	11	1	backfill	dark yellowish brown silty sand with mortar and CBM inclusions	10YR3/4
1035	-	1	deposit	pale brown sandy silt with inclusions of mortar, CBM and fuelash	10YR6/3
1036	-	1	layer	very dark greyish-brown sandy clay with inclusions of mortar and CBM	10YR3/2
1037	-	1	layer	dark brown clay silt with inclusions of mortar, CBM and charcoal	10YR3/3
1038	12	1	make-up	ceramic tile make-up of floor	red
1039	-	1	layer	dark grey sandy clay with mortar inclusions	10YR4/1
1040	-	1	layer	very dark greyish-brown silty sand with CBM and mortar inclusions	10YR3/2
1041	-	1	layer	sandy silt layer	various
1042	-	1	layer	sandy silt layer	various
1043	-	1	subsoil	reddish sandy clay	various
1044	14	1	make-up	concrete make-up of foundation	-
1045	14	1	make-up	brick and mortar make-up of wall	-
1046	13	1	make-up	limestone block forming make-up of possible foundation	-
1047	-	2	make-up	Tarmac make-up of current ground surface	-

Context	Feature	Int	Identity	Description	Munsell
1048	-	2	preparation layer	gravel preparation for tarmac surface	-
1049	-	2	buried soil	dark brown clayey sand matrix with frequent CBM fragments, mortar flecks, charcoal flecks, gravel and pebbles	10YR3/3
1050	-	2	layer	strong brown sand, with CBM, charcoal and mortar inclusions; represents made ground	7.5YR4/6
1051	-	2	layer	very dark greyish brown clayey sand with occasional fleck and lumps of lime mortar, and charcoal throughout. Identified as an occupation layer	10YR3/2
1052	-	2	buried soil	very dark greyish brown clayey sand with mixed throughout with charcoal, mortar and CBM flecks, and some gravel and pebble inclusions	10YR3/2
1053	-	2	surface make-up	light grey lime mortar layer, very compact, mixed throughout with dark greyish brown silty sand, occasional charcoal flecks, and some gravel and pebbles	10YR7/2
1054	-	2	buried soil	brown clayey sand with patches of clean, light yellowish-brown clay, charcoal and CBM flecks	10YR4/3
1055	-	2	layer	charcoal-rich deposit of black silt, with ash throughout	10YR2/1
1056	-	2	layer	mixed sandy silt and charcoal matrix, with lumps and flecks of lime mortar throughout	10YR2/1
1057	-	2	layer	sterile, strong brown clayey silt layer with rare gravel and pebble inclusions. Not fully excavated	7.5YR4/6
1058	15	2	make-up	brick and mortar make-up of wall F15; brick dimensions 140mm x 240mm x 50mm, bonded with lime mortar	-
1059	16	2	backfill	dark grey clayey sand backfill, with stone rubble, CBM fragments and mortar throughout	10YR4/1
1060	17	2	backfill	dark greyish-brown clayey sand backfill with CBM, mortar and charcoal inclusions	10YR4/2
1061	18	2	backfill	very dark greyish-brown sandy clay with CBM and mortar inclusions	10YR3/2
1062	19	2	make-up	limestone and lime mortar make-up of wall F19, four courses were identified within the trench, scorched in places by layer hearth	-
1063	20	2	make-up	ceramic tile make-up of hearth F20, with a thin lens of charcoal over	-
1064	21	2	lining	mortar lining of hearth F21, with lead droplets forming concretions	5YR8/1
1065	21	2	backfill	dark grey silt with ash, mortar, ceramic and charcoal inclusions	7.5YR4/1
1066	22	2	backfill	mid brown clayey silt with inclusions of ceramic, CBM and window glass. Possible coffin stain proved too ephemeral to follow.	10YR5/3
1067	22	2	skeleton	adult extended supine skeleton	-
1068	23	2	make-up	limestone make-up of stepped foundations of western elevation of the palace	-
1069	24	2	make-up	limestone make-up of stepped foundations of the gatehouse	-

Context	Feature	Int	Identity	Description	Munsell
1070	25	2	make-up	cobble make-up of surface, comprising rounded cobbles firmly set into underlying clay subsoil, within a grey clayey sand matrix	7.5YR5/1
1071	26	2	make-up	limestone make-up of wall F26, bonded with line mortar, with roughly shaped blocks forming foundation, and well-dressed blocks the upper course	-
1072	27	2	backfill	sandy silt backfill of modern service trench	10YR3/2
1073	28	2	backfill	greyish-brown sandy silt backfill of modern service trench	10YR5/2
1074	29	2	backfill	very dark greyish-brown sandy silt backfill of modern service trench, over a fine white gravel	10YR3/2
1075	30	2	make-up	cobble make-up of probable road surface, comprising rounded cobbles between 30mm and 160mm in diameter, with occasional blocks of limestone	-
1076	20	2	backfill	black sandy silt matrix mixed throughout with brown silty sand, burnt silt, occasional charcoal flecks	10YR2/1
1077	-	2	topsoil	topsoil encountered across all of Int 2 and forming current lawn of palace grounds	10YR2/2
1078	34	2	backfill	backfill and *in situ* pipe of modern service trench	-
1079	31	2	backfill	backfill and ceramic pipe within modern service trench	10YR3/1
1080	35	2	backfill	backfill of possible pit, consisting of very dark greyish-brown silty sand with inclusions of mortar, CBM, charcoal and shell	10YR3/2
1081	-	2	layer	brown clay layer, with charcoal and CBM flecks, forming part of made ground sequence beneath the current roadway	10YR4/3
1082	-	2	layer	brown clayey sand matrix with occasional mortar flecks, gravel and pebble inclusions	10YR4/3
1083	-	2	layer	black sandy silt later with fragment lumps and flecks of charcoal throughout, possible associated with hearth F20	10YR2/1
1084	-	2	layer	mixed deposit of lime mortar and limestone fragments, with a charcoal lens recorded at its base	10YR7/3
1085	-	2	layer	reddish-brown clayey sand with occasional patches of strong brown sand and rare charcoal flecks	5YR4/3
1086	-	2	layer	yellowish-brown sand layer mixed throughout with rounded pebbles; some mortar trample(?) layers observed within the deposit	10YR5/6
1087	-	2	layer	layer of redeposited clay subsoil	mixed
1088	36	2	make-up	make-up of cobble surface, comprising rounded cobbles between 20mm and 160mm across, with occasional fragments of limestone	-
1089	32	2	backfill	backfill of modern service trench	-
1090	33	2	backfill	pea gravel backfill of modern service trench	-
1091	37	2	backfill	ceramic pipe and backfill within modern land drain	10YR4/2

Context	Feature	Int	Identity	Description	Munsell
1092	38	2	make-up	limestone block make-up of wall foundation, consisting of roughly shaped limestone blocks	-
1093	39	2	make-up	rubbly alignment of limestone blocks identified as wall make-up	-
1094	-	2	layer	stony silty sand matrix with frequent inclusions of CBM, some shell and mortar flecks. Identified as made ground	10YR4/3
1095	-	2	layer	mixed combination of dark yellowish-brown and brown sand, with gravel and pebble fragments throughout	10YR4/6
1096	-	2	layer	clean brown silty sand with rare inclusions of gravel and pebbles, possibly an early ground level	10YR5/3
1097	-	2	layer	strong brown silty sand matrix with rare charcoal flecks and gravel inclusions	7.5YR4/6
1098	-	3	topsoil	dark grey sandy silt layer, *c*.15m in depth, with mortar flecks	7.5YR4/1
1099	-	3	layer	mixed deposit of silty clay, with frequent inclusions of mortar and CBM	7.5YR2.5/1
1100	-	3	layer	dark brown silty clay layer, with CBM and mortar flecks	2.5YR3/2
1101	40	3	make-up	brick make-up of wall	-
1102	40	3	make-up	rubble and concrete make-up of foundation	-
1103	40	3	backfill	backfill of foundation trench, comprising very dark grey silty clay with CBM and mortar inclusions	10YR3/1
1104	41	3	make-up	brick make-up of wall	-
1105	41	3	backfill	dark yellowish brown clay backfill of foundation trench	10YR4/4
1106	42	3	backfill	salt-glazed pipe and silty clay backfill of service trench	7.5YR3/1
1107	43	3	backfill	dark grey silty clay backfill of service trench dark grey silty clay backfill of service trench, with stone, mortar and CBM inclusions	7.5YR4/1
1108	44	3	backfill	dark grey silty clay backfill of service trench, with stone and mortar inclusions	7.5YR4/1
1109	-	3	surface	slabbed surface, bonded with mortar	-
1111	-	4	topsoil	turf and topsoil over all of Int 4	10YR3/2
1112	-	4	overburden	very dark greyish-brown clayey silt with inclusion of gravel and pebbles	10YR3/2
1113	46	4	backfill	very dark greyish-brown clayey silt matrix and salt-glazed ceramic pipe	10YR3/2
1114	47	4	make-up	cobble make-up of surface, cobbles measuring 150mm-200mm in diameter	-
1115	48	4	make-up and backfill	concrete make-up fo clayey silt backfill of driveway drain	various
1116	-	4	layer	mixed light reddish-brown clayey layer with lenses of dark grey clayey silt and lime mortar flecks, with occasional limestone fragments	various
1117	49	4	backfill	loose limestone rubble and mortar backfill of feature	whitish-grey

Context	Feature	Int	Identity	Description	Munsell
1118	-	4	layer	layer of crushed limestone representing either a construction or demolition layer	various
1119	-	4	layer	mixed clayey silt layer with CBM and limestone inclusions, and occasional fragments of medieval roof tile and wall tile; possible from demolition	10YR3/2
1120	50	4	make-up	brick make-up of wall, bonded with cement/mortar	-
1121	51	4	make-up	stone floor make-up, comprising stone blocks at least 15mm thick and 0.50m across	-
1122	52	1	make-up	brick and stone make-up of below-ground structure F52	-
1123	53	2	backfill	backfill of modern service trench	-
1124	-	2	layer	loose sandy silt layer abutting F15	10YR 3/2
1125	-	2	layer	loose sandy silt layer abutting F15	10YR 3/2
1126	-	2	layer	loose sandy silt layer abutting F15	10YR 3/2
1127	-	2	layer	loose sandy silt layer abutting F15	10YR 3/2
1128	55	4	backfill	backfill of modern service trench	-
1129	56	4	backfill	backfill of modern service trench	-
1130	57	4	backfill	backfill of modern service trench	-
1131	58	4	backfill	backfill of modern service trench	-
1132	59	4	backfill	backfill of modern service trench	-
1133	60	1	make-up	masonry make-up of collapsed wall	-
1134	62	2	backfill	make-up and backfill of service trench	-
1135	-	4	layer	modern concrete	-

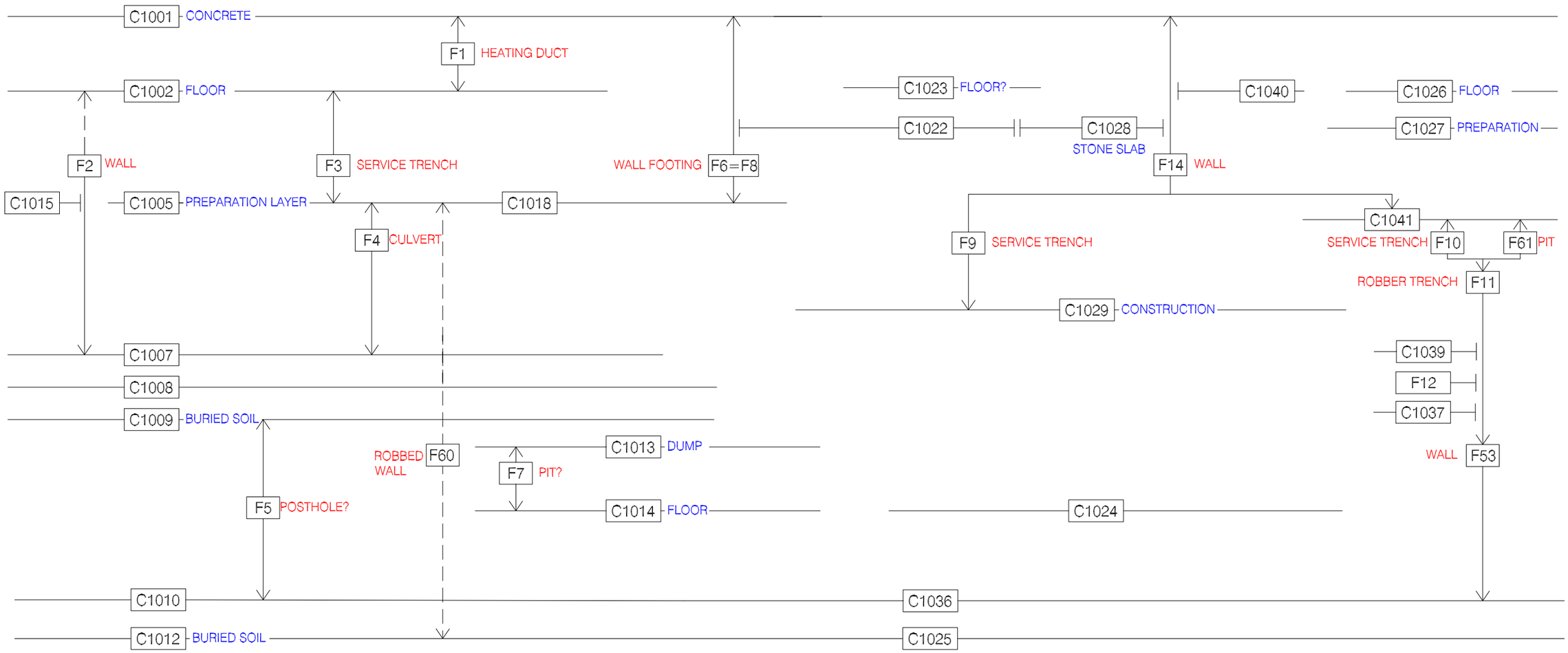
APPENDIX D SUMMARY OF FEATURES

Feature	Int	Contexts	Identity	Description	Profile
1	1	1001	heating duct	modern, below-ground heating duct traversing Int 1, measuring 0.6m wide, of brick and concrete.	rectangular
2	1	1003	wall	wall footing seen in both sections of Int 1, of brick construction	not seen
3	1	1004	service trench	19th or 20th-century service trench containing a lead water pipe	not seen
4	1	1006	culvert	brick-built culvert traversing the width of Int 1, roughly west-east	not seen
5	1	1011	posthole?	possible posthole, 0.55m in diameter, with a brick-rich backfill possibly representing post-packing. Not excavated.	not seen
6	1	1016	wall	brick wall footing	rectangular
7	1	1017 1024	pit	pit seen in section to a maximum depth of 1.10m	not seen
8	1	1020 1021	wall	brick-built wall within defined foundation trench, part of upstanding building	rectangular
9	1	1029	service trench	service trench, 0.50m wide and 0.50m deep, containing ceramic pipe and lead water pipe	U-shaped
10	1	1031	service trench	service trench, containing two iron foul pipes	U-shaped
11	1	1034	robber trench	vertical sided cut seen above wall make-up C1032, measuring 0.50m wide and 0.40m deep.	U-shaped
12	1	1038	floor	ceramic tiled surface	rectangular
13	1	1046	wall	limestone wall footing visible in section	not seen
14	1	1044 1045	wall	footings of existing brick wall, with concrete foundation and mortar-bonded brick	rectangular
15	2	1058	wall	brick wall of which up to 10 courses survive, 0.45m wide and aligned approximately north-south	rectangular
16	2	1059	service trench	modern service trench recorded in south-facing section	U-shaped
17	2	1060	service trench	modern service trench containing a ceramic pipe, recorded in the south-facing section	U-shaped
18	2	1061	service trench	modern service trench measuring 1.8m wide, containing a modern waste pipe	unseen
19	2	1062	stone wall	limestone wall, aligned roughly west-east and only partly exposed within the trench, constructed with limestone blocks bonded with lime mortar. 1.5m in length before butt-ending within the trench, width not seen	rectangular

Feature	Int	Contexts	Identity	Description	Profile
20	2	1063 1076	hearth	hearth encountered 0.25m below ground level, made of vertically-set rooftiles, and backfilled once	scoop
21	2	1064 1065	hearth	possible metal-working hearth contacted 0.55m below ground level, with a scooped profile, mortar lining. Lead waste and droplets were encountered	scoop
22	2	1066 1067	grave	extended supine inhumation burial, visible extents measuring 1.00m x 0.50m and surviving to 0.20m in depth	rectangular
23	2	1068	wall	stepped limestone footings of the western elevation of Bishopthorpe Palace, exposed for a depth of 0.95m	stepped
24	2	1069	wall	stepped foundation of the current gatehouse walls, forming two buttress bases, exposed below ground to a depth of 0.85m	stepped
25	2	1070	surface	cobbled surface encountered 0.90m below ground level, and exposed for an area of 3.40m in length , consisting of rounded cobbles, firmly compacted into underlying clay subsoil	irregular
26	2	1071	wall	limestone wall contacted 0.20m below ground level, seen to be a corner of a building, exposed for a maximum length of 1.80m	rectangular
27	2	1072	service trench	modern service trench	U-shaped
28	2	1073	service trench	modern service trench, containing lead pipe, immediately to the east of the current water main	U-shaped
29	2	1074	service trench	current water main, running north-south across Int 2, with pipe running vertically to the surface at the northern edge of the excavated trench	rectangular
30	2	1075	surface	cobbled surface encountered to the west of the gatehouse, visible for some 4.00m, and seen to have a single row of limestone blocks forming a kerb	unseen
31	2	1079	service trench	modern service trench aligned NE-SW, containing a waste pipe which was left *in situ*	U-shaped
32	2	1089	service trench	modern service trench containing a modern waste pipe which was left *in situ*	U-shaped
33	2	1090	service trench	modern service trench, containing a pipe which was left *in situ*	unseen
34	2	1078	service trench	modern service trench containing a modern waste pipe which was left *in situ*	U-shaped
35	2	1080	pit	allocated to a scooped feature seen in section and identified as a possible pit. 0.70m wide and 0.25m in depth	scoop

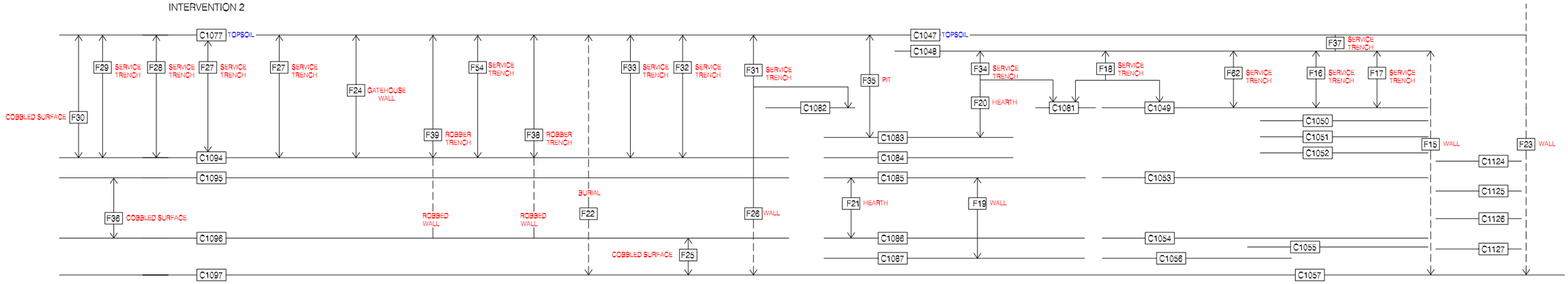
Feature	Int	Contexts	Identity	Description	Profile
36	2	1088	surface	cobbled surface encountered towards the western end of Int 2, and contacted *c*.0.50m below ground level	unseen
37	2	1091	drain	land drain aligned roughly north-south, with ceramic pipe	U-shaped
38	2	1092	wall footing	limestone wall footing contacted 0.10m below ground level, aligned roughly north-south, and surviving to a depth of 0.40m	rectangular
39	2	1093	wall footing	rubble wall footing, formed with roughly shaped limestone blocks	rectangular
40	3	1101, 1102, 1103	wall	brick wall, with mortar-bonded stepped brick courses over a rubble and concrete foundation	square
41	3	1104, 1105	wall	brick wall, five courses of which were observed	square
42	3	1106	service trench	service trench containing a salt-glazed pipe	U-shaped
43	3	1107	service trench	service trench	U-shaped
44	3	1108	service trench	service trench	U-shaped
45					
46	4	1113	service trench	service trench containing a salt-glazed pipe, 0.35m wide orientated roughly NW-SE and 0.40m below ground level.	U-shaped
47	4	1114	cobbled surface	cobbled surface encountered 4.5m from the car park and comprising selected rounded cobbles	unseen
48	4	1115	drain	concrete drain clipped in Int 4	rectangular
49	4	1117	robber trench?	cut feature filled with a loose limestone rubble and mortar backfill, identified either as a robber trench or demolition pit	U-shaped
50	4	1120	wall footing	brick wall footing encountered within Int 4, orientated roughly west-east, and 0.40m high	rectangular
51	4	1121	surface	stone floor, possibly formerly internal	flat
52	4	1122	structure	brick and stone-built, below-ground structure	unseen
53	1	1032	wall	brick wall recorded in section in Int 1	rectangular
54	2	1122	service trench	service trench situated close to the palace gatehouse	U-shaped
55	4	1128	service trench	modern service trench (gas)	U-shaped
56	4	1129	service trench	modern service trench (gas)	U-shaped
57	4	1130	service trench	modern service trench (gas)	U-shaped
58	4	1131	service trench	modern service trench (gas)	U-shaped
59	4	1132	service trench	modern service trench (BT)	U-shaped
60	1	1133	collapsed wall	collapsed masonry recorded in section	U-shaped
61	1	1035	pit?	possible pit recorded in section	U-shaped
62	2	1134	service trench	modern service trench	U-shaped

INTERVENTION 1



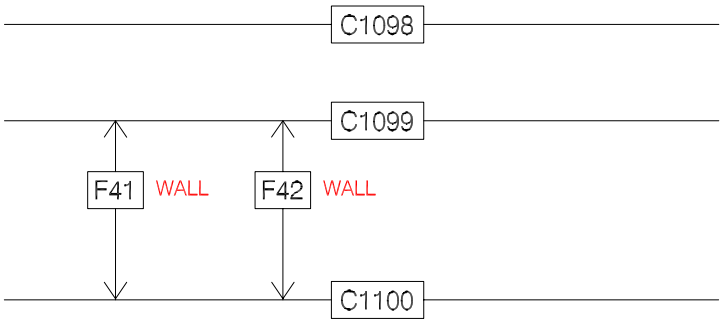
Intervention 1 - stratigraphic diagram | Appendix Ei

INTERVENTION 2

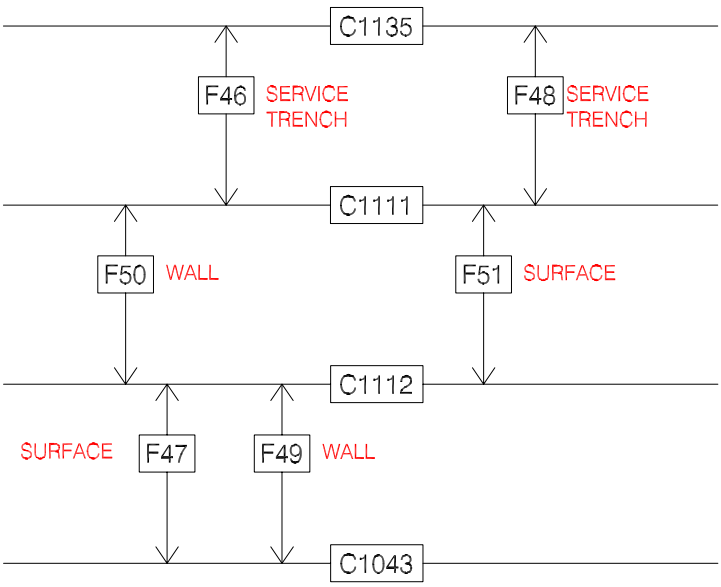


Intervention 2 - stratigraphic diagram | Appendix Eii

INTERVENTION 3



INTERVENTION 4



Intervention 3 and 4 - stratigraphic diagram | Appendix Eiii

APPENDIX F CERAMIC BUILDING MATERIAL

Cecily Spall, Field Archaeology Specialists

1.0 INTRODUCTION

A medium assemblage of ceramic building material (CBM) was submitted for assessment and full recording (205 fragments were recorded amounting to *c*.100 litres). The assemblage was recovered during the course of an archaeological watching brief undertaken by Field Archaeology Specialists (FAS) at Bishopthorpe Palace, Bishopthorpe, York.

The assemblage was hand-collected and diagnostic samples selected on-site from a number of brick-built features. The assemblage was dominated by CBM of medieval date, with roof tile, brick, floor and ridge tile identified. Several slop-moulded bricks were also identified and date to the post-medieval period, along with a fragment of Delftware tile.

2.0 ASSESSMENT PROCEDURE

The assemblage was recorded using a system based on that used by the Museum of London and was undertaken in accordance with the draft Minimum Standards for Recovery, Curation and Publication for Ceramic Building Material issued by the Archaeological Ceramic Building Materials Group (ACBMG 2002).

Each assemblage of CBM was scanned for information about form and date, as well as features of note such as stamps, glazes or imprints. Marks from manufacture were recorded such as over- or under-firing or tool marks. Several fragments were recommended for retention with the remainder of the assemblage being the subject of a disposal policy.

3.0 ASSESSMENT (Table 1)

3.1 MEDIEVAL

3.1.1 Rooftile

By far the majority of the assemblage could be identified as medieval in date being largely fragments of plain medieval roof tile of 13th to 16th century date. Within the plain tile assemblage, the fragments recovered from tiled hearth F20 often displayed signs of sooting and smoke discolouration on the edges. An assemblage of plain roof tile fragments were recovered from the backfill of grave F22 (C1066) and provide a terminus post quem for burial of the 13th century and given the poor state of preservation possibly later.

As well as plain tile fragments, several roof tiles could be identified a peg tile fragments and were joined by a single, abraded example of ridgetile. The peg tiles represented circular and square forms, and in one case the classic York peg tile of a single central square peg. One circular peg tile displayed a peg hole close to one corner and may represent a double–peg tile. One near-complete peg tile was retained as a good representative of a York peg tile, while the remainder of the assemblage was unremarkable and was disposed of.

3.1.2 Floor tile

Three fragmentary floor tiles were identified during recording. Two of which, recovered from C1014, appeared to represent tiles measuring *c*.10cm square and one displayed vestigial brown glaze suggesting they were monochrome, although both were extremely abraded. A single very small fragment of dark green glazed monochrome floor tile was noted from F30 C1075 and can be dated to the 14th to 16th century, but was probably residual in its context.

Table 1 Catalogue of CBM

C. No.	F.No.	E_Date	L_Date	Form	Cor	L (mm)	Bdth (mm)	Th (mm)	Mort?	Ret?	Comments
1006	4	17	20	brick	4	230	110	62	Yes	No	slop-moulded, slightly blown
1006	4	17	20	brick	4	260	125	45	Yes	No	slop-moulded, straw marked
1104	41	17	20	brick	2	0	100	65	Yes	No	slop-moulded, slightly blown
1104	41	17	20	brick	2	0	105	48	Yes	No	slop-moulded
1063	20	13	16	peg tile	1	0	0	18	No	No	circular peg hole
1063	20	13	16	peg tile	1	0	0	18	No	No	circular peg hole
1063	20	13	16	plain	0	0	0	0	No	No	26 small fragments, some sooted
1014		13	16	floor tile	1	0	0	25	Yes	Yes	very worn upper surface, bevelled
1014		13	16	floor tile	3	110	112	23	Yes	Yes	upper suface totally lost, bevelled, vesitigial brown glaze on edge
1014		14	16	brick	1	0	0	48	Yes	No	
1014		13	16	plain	0	0	0	0	Yes	No	12 medium plain tile frgaments, all mortared, possibly from demolition
1100		13	16	plain	0	0	0	0	Yes	No	46 medium plain tile fragments, most mortared, possibly from demolition
1100		14	16	brick	2	230	0	52	Yes	No	
1100		13	16	peg tile	0	0	0	15	No	No	square peg hole
1100		13	16	peg tile	1	0	0	20	No	No	square peg hole, white slipped

C. No.	F.No.	E_Date	L_Date	Form	Cor	L (mm)	Bdth (mm)	Th (mm)	Mort?	Ret?	Comments
1038	12	13	16	peg tile	2	0	215	18	Yes	Yes	nice example typical york peg tile, indented border, central square peg hole
1066	22	13	16	plain	0	0	0	0	No	No	9 small plain tile fragments
1017	7	0	0	plaster	0	0	0	0	No	No	3 fragments conjoining lime wall plaster
1017	7	13	16	plain	2	0	0	13	Yes	No	
1017	7	14	16	brick	0	0	0	0	No	No	2 small abraded brick fragments
1012		14	16	brick	0	0	0	42	Yes	No	
1012		13	16	peg tile	1	0	0	18	Yes	No	mortared on broken edge, on circular peg hole close to corner
1012		13	16	plain	0	0	0	22	No	No	
1094		17	19	delft tile	1	0	0	0	No	Yes	small fragment of worn delftware tile
1094		13	16	plain	0	0	0	0	No	No	44 small abraded plain tile fragments
1094		14	16	brick	0	0	0	0	No	No	small abraded brick fragment
1096		13	16	plain	0	0	0	0	No	No	2 small plain tile fragments
1100		17	20	brick	2	0	120	54	Yes	No	bow marked, slop-moulded
1100		17	20	brick	2	0	110	50	Yes	No	bow marked, slop-moulded
1100		19	20	brick	2	0	115	65	Yes	No	possible machine-extruded brick
1100		19	20	brick	2	0	120	53	No	No	possible machine-extruded brick
1100		13	16	peg tile	0	0	0	20	No	No	square peghole
1100		13	16	peg tile	0	0	0	17	No	No	circular peg hole
1100		13	16	peg tile	0	0	0	12	No	No	square peg hole
1100		12	16	ridge tile	0	0	0	20	No	No	abraded with slight curve

C. No.	F.No.	E_Date	L_Date	Form	Cor	L (mm)	Bdth (mm)	Th (mm)	Mort?	Ret?	Comments
1088	36	13	16	plain	0	0	0	0	No	No	54 small fragments of plain tile, possibly used as surface make-up
1058	15	17	18	brick	4	230	115	45	Yes	No	sample from feature, slop-moulded 17th -18th century
1058	15	17	18	brick	4	236	115	47	Yes	No	sample from feature, slop-moulded
1063	20	13	16	peg tile	0	0	0	18	Yes	No	circular peg hole, sooted on edge
1063	20	13	16	peg tile	1	0	0	16	Yes	No	square peg hole, mortared on broken edge, indented border
1075	30	13	16	plain	0	0	0	0	No	No	seven small abraded fragments
1075	30	14	16	brick	0	0	0	36	No	No	sanded
1075	30	14	16	floor tile	0	0	0	28	No	Yes	dark green glazed monochrome with bevel and nail hole

3.2 POST-MEDIEVAL MATERIAL

3.2.1 Slop-moulded brick

Ten slop-moulded bricks were noted during recording providing a mid-17th-century date or later for F4, F15, F41 and C1100. In several instances the bricks displayed characteristic wire- or bow-marks and the impression of straw on which the bricks were left to harden. Two bricks were tentatively identified from C1100 as machine-made and therefore of the 19th century, although they may represent large forms of handmade post-medieval type.

3.2.2 Tile

A single abraded fragment of Delftware tile was recovered from buried soil C1094. The fragment represents a fragmentary corner of a tile with hand-painted blue ornament possibly from a tile with a roundel scene and corner ornament. Delftware tiles were used most commonly within fireplace surrounds and date from the late 17th century onwards. Given the poor preservation of the tile fragment a date of the 18th century onwards would not be unreasonable for C1094.

4.0 RECOMMENDATIONS

Five fragments were retained during recording being medieval floor tile fragments, a medieval roof tile of the typical York form and the Delftware tile fragment. These pieces should be retained within the archive.

APPENDIX 1 CATALOGUE

C. No.	F.No.	E_Date	L_Date	Form	Cor	L (mm)	Bdth (mm)	Th (mm)	Mort?	Ret?	Comments
1006	4	17	20	brick	4	230	110	62	Yes	No	slop-moulded, slightly blown
1006	4	17	20	brick	4	260	125	45	Yes	No	slop-moulded, straw marked
1104	41	17	20	brick	2	0	100	65	Yes	No	slop-moulded, slightly blown
1104	41	17	20	brick	2	0	105	48	Yes	No	slop-moulded
1063	20	13	16	peg tile	1	0	0	18	No	No	circular peg hole
1063	20	13	16	peg tile	1	0	0	18	No	No	circular peg hole
1063	20	13	16	plain	0	0	0	0	No	No	26 small fragments, some sooted
1014		13	16	floor tile	1	0	0	25	Yes	Yes	very worn upper surface, bevelled
1014		13	16	floor tile	3	110	112	23	Yes	Yes	upper suface totally lost, bevelled, vesitigial brown glaze on edge
1014		14	16	brick	1	0	0	48	Yes	No	
1014		13	16	plain	0	0	0	0	Yes	No	12 medium plain tile frgaments, all mortared, possibly from demolition
1100		13	16	plain	0	0	0	0	Yes	No	46 medium plain tile fragments, most mortared, possibly from demolition
1100		14	16	brick	2	230	0	52	Yes	No	
1100		13	16	peg tile	0	0	0	15	No	No	square peg hole
1100		13	16	peg tile	1	0	0	20	No	No	square peg hole, white slipped
1038	12	13	16	peg tile	2	0	215	18	Yes	Yes	nice example typical york peg tile, indented border, central square peg hole
1066	22	13	16	plain	0	0	0	0	No	No	9 small plain tile fragments

C. No.	F.No.	E_Date	L_Date	Form	Cor	L (mm)	Bdth (mm)	Th (mm)	Mort?	Ret?	Comments
1017	7	0	0	plaster	0	0	0	0	No	No	3 fragments conjoining lime wall plaster
1017	7	13	16	plain	2	0	0	13	Yes	No	
1017	7	14	16	brick	0	0	0	0	No	No	2 small abraded brick fragments
1012		14	16	brick	0	0	0	42	Yes	No	
1012		13	16	peg tile	1	0	0	18	Yes	No	mortared on broken edge, on circular peg hole close to corner
1012		13	16	plain	0	0	0	22	No	No	
1094		17	19	delft tile	1	0	0	0	No	Yes	small fragment of worn delftware tile
1094		13	16	plain	0	0	0	0	No	No	44 small abraded plain tile fragments
1094		14	16	brick	0	0	0	0	No	No	small abraded brick fragment
1096		13	16	plain	0	0	0	0	No	No	2 small plain tile fragments
1100		17	20	brick	2	0	120	54	Yes	No	bow marked, slop-moulded
1100		17	20	brick	2	0	110	50	Yes	No	bow marked, slop-moulded
1100		19	20	brick	2	0	115	65	Yes	No	possible machine-extruded brick
1100		19	20	brick	2	0	120	53	No	No	possible machine-extruded brick
1100		13	16	peg tile	0	0	0	20	No	No	square peghole
1100		13	16	peg tile	0	0	0	17	No	No	circular peg hole
1100		13	16	peg tile	0	0	0	12	No	No	square peg hole
1100		12	16	ridge tile	0	0	0	20	No	No	abraded with slight curve
1088	36	13	16	plain	0	0	0	0	No	No	54 small fragments of plain tile, possibly used as surface make-up
1058	15	17	18	brick	4	230	115	45	Yes	No	sample from feature, slop-moulded 17th -18th century

C. No.	F.No.	E_Date	L_Date	Form	Cor	L (mm)	Bdth (mm)	Th (mm)	Mort?	Ret?	Comments
1058	15	17	18	brick	4	236	115	47	Yes	No	sample from feature, slop-moulded
1063	20	13	16	peg tile	0	0	0	18	Yes	No	circular peg hole, sooted on edge
1063	20	13	16	peg tile	1	0	0	16	Yes	No	square peg hole, mortared on broken edge, indented border
1075	30	13	16	plain	0	0	0	0	No	No	seven small abraded fragments
1075	30	14	16	brick	0	0	0	36	No	No	sanded
1075	30	14	16	floor tile	0	0	0	28	No	Yes	dark green glazed monochrome with bevel and nail hole

APPENDIX G CERAMIC ASSESSMENT

Alan Vince and Kate Steane

1.0 INTRODUCTION

A small collection of pottery and clay tobacco pipe fragments was recovered from excavations at Bishopthorpe Palace, York, undertaken by Field Archaeology Specialists Ltd (Site Code: ybp'07). The finds range in date from the 11th to 13th centuries and the 18th century.

2.0 DESCRIPTION

2.1 CLAY TOBACCO PIPES

Four unmarked stem fragments were recovered. From their bore diameters, two can be dated to the early 17th century or later and one to the later 17th century or later.

2.2 POTTERY

2.2.1 Medieval

Eighteen sherds of medieval pottery were recovered. The earliest type is York Gritty ware, produced in West Yorkshire from the mid 11th century until the mid 13th century (Holdsworth 1978). Two wares current in the later 12th and early 13th centuries were present. They are Beverley glazed ware (BEVO2B – fine-textured fabric with a suspension glaze, Watkins 1991; idsbury and Watkins 1992 – and York Glazed ware, Jennings 1992). The York glazed ware includes three sherds which are probably 13th rather than 12th century. One of these comes from a seal jug (Jennings 1992) and the other two have roller-stamped decoration. Seal jugs seem to have been a speciality of the York glazed ware industry and the vessels are decorated with large stamped medallions in the form of medieval seals (but were not made with actual seal matrices).

A single undiagnostic sherd of Brandsby-type ware (BRAN) dates between the later 13th and the 15th centuries and an oval-sectioned Humberware (HUM) jug handle with grooved decoration down the back is probably of mid 14th-century or later date.

2.2.2 Post-medieval

A single sherd of Westerwald stoneware was recovered (WEST). The sherd comes from a large straight-sided vessel, probably a jardinière (*Blumenkübel)* with repeating sprigged decoration around the rim and sprigged medallions, with a floral/rural theme on the body (Figure 1). The vessel uses no paint to augment the decoration.

Two types of jardinière are known in Westerwald stoneware. One has an elaborate pedestal urn form and the other is flat-based with straight sides. The Bishopthorpe vessel probably belongs to the second type (Reineking - von Bock 1986, 416-8)

and an example in the Stadt Museum in Cologne is dated *c.*1700. However, The lack of paint and the overall style of decoration suggests a date closer to the middle of the 18th century.

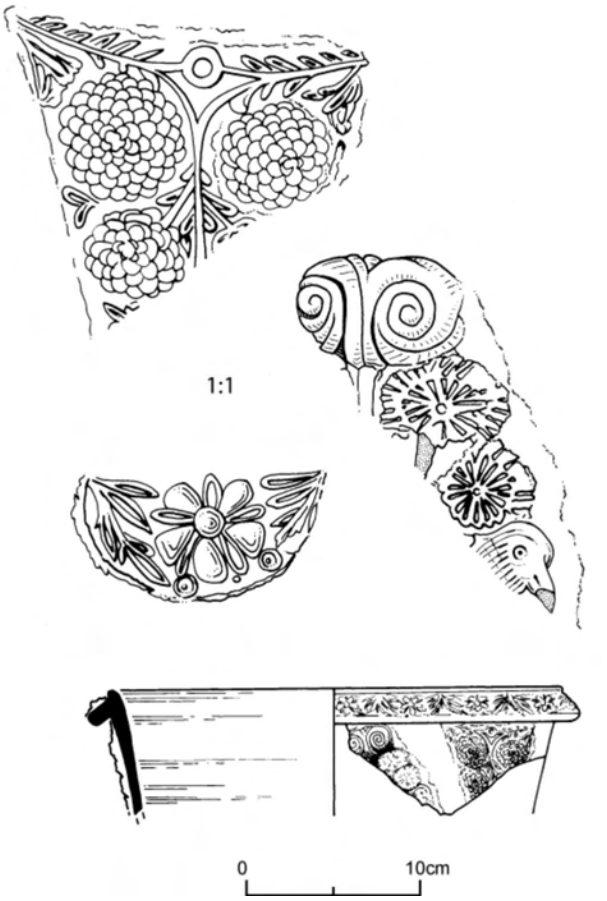


Figure 1

3.0 ASSESSMENT

3.1 STRATIGRAPHY

The finds come from seven contexts and the *terminus post quem* for each context is given in Table 1. Given the long lifespan of the earliest pottery types present, it is quite possible that the earliest activity represented on the site dates to the first half of the 13th century. The dating of C1066 depends on the single sherd of Humberware without which it too would date to the early 13th century.

Table 1

Context	Date	Comments	Grand Total
1009	Early 17th century or later		**3**
1057	Late 13th century or later		**2**
1065	Mid 11th century or later		**2**
1066	Late 14th century or later	Mostly later 12th to early 13th century	**10**
1094	Mid 18th century		**2**
1099	Early 17th century or later		**1**
1100	Late 12th century or later		**3**
Grand Total			**23**

3.2 CHRONOLOGY

The bishop's palace at Bishopthorpe was built following the purchase of the manor from the monks of Kirkstall Abbey by Walter de Grey, Archbishop of York, in 1226. By 1241 de Grey had built his house and chapel on the site. The pottery does not include any types which need pre-date 1226 and most of the pottery could have still been current in 1241, although soon after that one would imagine that many of the types would have ceased to be used. It is likely, therefore, that the bulk of the pottery is associated with the construction and early use of the bishop's house (or possibly with the occupation and destruction of earlier buildings levelled by the archbishop).

With the exception of the stoneware jardinière, the pottery and clay pipes are unexceptional for any site in York and it does not seem that the high status of the occupants is reflected in the quality or function of the finds. The jardinière, however, is a type which in the mid-18th century was probably only used in high status houses, where it might be found in an ornamental garden, an orangerie or even in the interior of the house.

4.0 FURTHER WORK

The Westerwald stoneware vessel is unusual and has been illustrated and photographs taken of the sprigged decoration. None of the other finds requires further work.

5.0 RETENTION

All of the finds should be retained for future re-examination.

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Appendix 1

Ref	Context	class	Cname	Description	Form	Part	Nosh	NoV	Wt	Use
1	1009	PIPECLAY	PIPECLAY	17-18TH CENTURY BORE	CLAYPIPE	STEM	2	2	5	
1	1009	PIPECLAY	PIPECLAY	17TH CENTURY BORE	CLAYPIPE	STEM	1	1	1	
7	1057	POTTERY	BRAN		JUG	BS	1	1	8	
7	1057	POTTERY	YORK		JUG	BS	1	1	15	
	1065	POTTERY	YG		JAR	BS	2	2	2	Sooted Ext
9	1066	POTTERY	YORK	APPLIED STRIP SEAL/STAMPED	JUG	BS	1	1	15	
9	1066	POTTERY	YORK		JUG	R	1	1	5	
9	1066	POTTERY	YORK		JUG	BS	3	3	9	
9	1066	POTTERY	YG		JAR	BS	1	1	2	
9	1066	POTTERY	HUM	STRAP HANDLE 5 GROOVES; 31 ACROSS	JUG	H	1	1	27	
9	1066	POTTERY	YORK	RECT RST	JUG	BS	1	1	2	
9	1066	POTTERY	BEVO2B		JUG	BS	2	1	4	
10	1094	POTTERY	YORK	RST	JUG	BS	1	1	8	
11	1094	POTTERY	WEST	SPRIGGED FLORAL/BIRD DEC	JARDINIER E	R	1	1	137	
13	1099	PIPECLAY	PIPECLAY	17TH CENTURY BORE	CLAYPIPE	STEM	1	1	6	
12	1100	POTTERY	YORK	ROD HANDLE 21 DIA	JUG	H	1	1	32	
12	1100	POTTERY	YORK		JUG	BS	2	2	44	

APPENDIX H ASSESSMENT OF LEAD WASTE

Cath Mortimer

Three objects and three samples of lead-rich materials were examined from Intervention 2.

The objects comprise two small pieces of waste (sf19 and 20) and one large piece (sf21). One of the small pieces (sf20) is a strip of lead-rich material wound around a core to form a coil about 44mm long. It weighs 11g. The strip has a medial ridge and could be a reused lead came. It is not clear what the core is or was and it may have been organic (wood or string), as there are no metal traces. The piece is not precisely made but is probably still too deliberate in its form to be merely waste folded up prior to remelting. It may possibly be a weight. The lack of cracking suggests the lead was still quite fresh and pliable when the object was formed. This implies, for example, that it could not have been formed after the lead cames had been in use for several decades or centuries. The other small piece (sf19, weighing 11g) is an irregularly-formed piece of lead spillage, with no discernable post-casting working. Both of these pieces were from the top soil.

The large piece of lead waste (sf21) weighs 7.172kg and has an irregular outline, where the molten lead took the shape of the pit in which it settled. It is 330mm long, at its widest dimension. There are occasional specks of charcoal. There is no evidence for a specific shape being intended, and no evidence for any working after the melt froze. It was found in a mortar-lined pit (context C1064).

The three samples of lead-rich mortar came from the mortar-line pit, C1064. The samples include some lumps large enough and solid enough to see structure within it, in the form of layers with different colours, including pale pink and grey. These pieces are still friable however, and there is no sign of vitrification so it is unlikely that the material was heated in situ. The other material in the samples is much finer in texture, but still noticeably heavy where the lead has been absorbed.

Lead was involved in many different processes during the medieval and early post-medieval periods. At Bishopthorpe, we can discount precious metal refining, such as cupellation when debased silver is refined. Cupellation would normally be carried out in a carefully-controlled manner, within a small furnace or ceramic container, not at the bottom of a roughly formed pit. The lead block appears to be solid lead, not lead-oxide absorbed within something like crushed bone (a common lining). There is no sign of a depression where silver coalesced, and no sign of high-temperature within the pit (*eg* vitrification). There is also no evidence for conflagration at the site, when lead from roofing might have accidentally ended up pooled in a pit. The most likely explanation is simply melting lead scraps together as part of salvage during rebuilding, although it is not clear why such a significant quantity of lead would have been collected, melted and then forgotten.

The finds should be kept in a suitably-labelled sealed container, and handled with gloves.

APPENDIX I OSTEOLOGICAL ANALYSIS

1.0 INTRODUCTION

Bishopthorpe Palace is located in the village of Bishopthorpe to the south of York. The village draws its name from the residence here of the Archbishops of York from the 13th century, and the first Archbishop's palace on this site was built in 1241 by Walter de Gray. A nearly constant succession of Archbishops have lived at and made alterations to the palace ever since, and the most recent refurbishment, in preparation for Archbishop Sentamu's residence, provided the impetus for a full historic buildings assessment of the palace by Field Archaeology Specialists in June 2006 (FAS 2006, 1).

The inhumation at Bishopthorpe was discovered during the digging of a narrow east-west service trench from the south end of the palace up to Bishopthorpe Road. A watching brief had been detailed, but the excavation of this trench was to be carried out by machine. Human remains were not expected in this area, and the machine driver was surprised to suddenly find himself disturbing what appeared to be a human burial, between the gatehouse and the main building. The machine was immediately stopped, and the skeleton photographed and recorded *in situ*, before careful excavation by trowel. The grave cut and fill were also recorded. The soil from the machine was sieved to recover as many as possible of the bones of the lower limbs (Spall, 2007, pers. comm.).

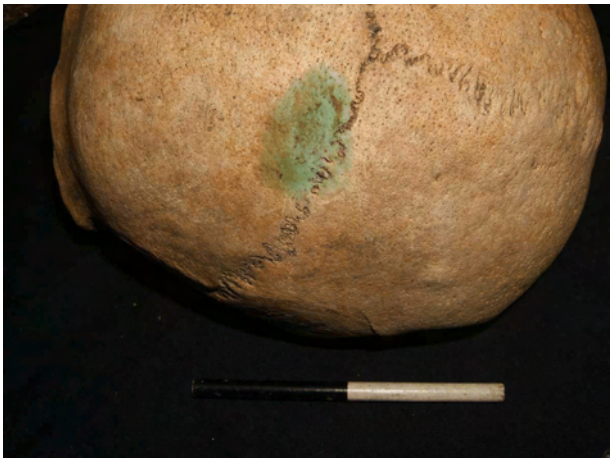

Plate 1 Copper stain on the skull of the Bishopthorpe skeleton, possibly the result of contact with a shroud pin (scale 10cm)

The inhumation lay in a very well cut rectangular grave, which suggested to the excavator the use of a large coffin (*ibid* pers. comm.). The skeleton was extended and supine, with the head to the west and the feet to the east – the position associated with normal Christian burial. The hands were neatly folded across the torso, the arms were unconstricted, and the knees seem to have originally been close together. The presence of copper staining on the upper surface of the skull (Plate 1) and posterior surface of the femur have been suggested as resulting from the use of a pinned shroud – the most common positioning for a shroud pin appears to have been on the top of the head. Burial shrouds were certainly frequently used in the medieval period from the 14th century onwards, both combined with coffin burial and used for loose burials (Jupp and Gittings 1999, 97-99). The position of the skeleton, in particular the widely spread elbows, is not what would be expected of a shroud burial, as these were usually tightly bound. However, it has been pointed out that looser shrouds may have been used for coffin burials (*ibid* 99), and this may be the case at Bishopthorpe.

No associated grave goods were found with the skeleton, as would be expected from a medieval Christian burial. However, this has made dating the skeleton closely very difficult. Excavation revealed no trace of activity above the inhumation, apart from some evidence of 19th-century landscaping of the gardens, which had not penetrated deep enough to disturb the skeleton. Pieces of medieval pottery thought to date between the 13th and 15th century were recovered from just below the

inhumation, and seem to point to a likely burial date in the later medieval period (Spall, 2007, pers. comm.). This would certainly make sense in terms of known other activity on the site – both the palace and St Andrew's church at Bishopthorpe, which lies only a short distance from the discovery of the inhumation, were constructed in the 13th century (FAS 2006, 8). Although evidence of activity from the preceding early medieval period is known from Bishopthorpe (*ibid* 7), the palace and church provide the most likely contexts for the institution of burial at this particular site, and the inhumation therefore seems most likely to post-date the 13th century. Unfortunately, however, this was as precisely as the skeleton could be dated.

It was decided that the skeleton should be re-buried in consecrated ground, after full osteological analysis. As the only human burial so far recovered from the palace at Bishopthorpe, the skeleton was clearly an important archaeological find, and it was felt to be worthwhile to record the age at death, sex, stature and pathology of this individual for the benefit of future study.

2.0 OSTEOLOGICAL ANALYSIS

2.1 CONDITION AND PRESERVATION

The Bishopthorpe skeleton was in good condition, and very well preserved. Although some bone fragmentation had occurred during excavation and washing most bones were intact. Bone surfaces were generally hard, non-friable and light brown yellow in colour. This burial was found in an apparently undisturbed condition, and over 90% of the bones of the body were recovered. The survival of part of the hyoid bone, a small bone from the throat that is especially small and fragile, shows the extent of the preservation. The legs were the only part of the skeleton to have suffered post-mortem damage, from machine digging during excavation, but most of the lower limb and foot fragments were recovered from the digger soil.

2.2 AGE ASSESSMENT

Archaeological methods of estimating age rely on steady changes in the skeleton and dentition, based on the biological processes of growth and deterioration. Neither of these processes advances at a universal and predictable rate, but growth appears to be much more reliable an indicator of age than deterioration, and the estimation of age for juveniles is therefore considered to be more accurate than that for adults (Bass 1995, 12). The estimation of age from the adult skeleton after the completion of growth relies on measuring the progress of degeneration, and is much less reliable and precise (Bass 1995, 12).

Some of the most successful methods for the determination of age in adult skeletons developed so far are the measurement of tooth wear, which although affected by food components and other cultural factors seems to provide a relatively constant method of assessing age (Brothwell 1981, 71) and the stage of degeneration of the pubic symphysis and auricular surface, which undergo a regular metamorphosis from puberty onward (Bass, 1995, 200). Both of these methods were used in this analysis. Tooth wear was assessed using the method of Smith, and age calculated from this using the Miles system (Hillson, 1996, 241). The condition of the pubic symphysis was scored and calculated using the Suchey-Brooks method, and the auricular surface using the method developed by Lovejoy et al (Buikstra and Ubelaker, 1994, 23-5). These methods together

were used to estimate age within a 10-year age band; this is considered to be the most precise estimation possible for most adult remains.

The extent of the tooth wear in the Bishopthorpe skeleton suggested an age between 30 and 42 years. This method was, however, slightly compromised by the absence of five of the twelve molars, and the near destruction of the occlusal surface of three of the remaining teeth by caries (see below). The condition of the pubic symphysis placed the skeleton in the characteristically wide age bracket of 23-57 years. Finally, the deterioration of the auricular surface gave an estimated age of 40-44 years. The last of these ageing methods would seem to be the most useful in this case. Overall, the Bishopthorpe skeleton has therefore been given an estimated age of 35-45 years.

2.3 SEX DETERMINATION

Studies have unsurprisingly shown pelvic morphology to be the most effective method of determining the sex of a skeleton, followed by the morphology of the skull, and finally the dimensions of the other post-cranial bones and joint surfaces. In the case of pre-pubescent juveniles these criteria are not generally applicable, and no precise methods of determining juvenile sex has been found to date (Bass 1995, 25).

The sex of the skeleton in this study was decided using primarily the pelvis, with reference to the skull. Four features of the pelvis were used to give an indication of sex; the shape of the sciatic notch (which is wider in females), the shape of the pubis (longer in females, and narrow and ridged below the symphyseal surface) the presence or absence of a ventral arc (an elevated ridge of bone across the ventral surface of the pubis, found only in females) and the extent of sub-pubic concavity (greater in females) (Bass, 1995, 208-210). These elements are easily observable, and have been shown to give a high degree of accuracy in sexing, ranging from 86.8% to 89.6% individually, and much higher when combined (ibid, 217-8).

Although the morphology of the skull is not directly affected by biological sex as the pelvis is, some features relating to the general greater muscularity of males do seem to be highly sexually dimorphic. The features used in this study were the size of the mastoid processes, glabella and the occipital process and nuchal lines (all more pronounced in males), and the shape and robusticity of the mandible (Brothwell 1981, 59-61).

The pelvis of the Bishopthorpe skeleton was very well preserved, and presented every one of the diagnostic features listed above. Overall the pelvis appeared very male, with a narrow sub-pubic concavity, no ventral arc and a short, wide, pubis. The sciatic notch was, however, surprisingly wide. The skull was rather small, and on all of the features listed above appeared neither particularly male nor female. The pelvic morphology was, however, felt to be strong enough to justify a sex determination for this skeleton as a probable male.

2.4 STATURE CALCULATION

The estimation of the height of past populations from skeletal remains is clearly of great value in telling us about past appearance and health, as height is determined by both genetic and environmental factors (Ortner 2003, 41). Methods for determining height are based on long bone length, with the femur, as the single bone that makes up the greatest proportion

of standing height, generally found to be the most reliable bone to use. The problems with establishing living height from dry bone length have been discussed by Bass (1995, 33) but it must be reiterated that calculations based on bone length are simply functions of that length designed to give a likely measurement within the normal range of human stature rather than an accurate estimation of living height.

The skeleton from Bishopthorpe posed a particular problem for stature estimation as both femora had been machine damaged, and neither survived intact to full length. Almost all the femoral fragments were recovered, and it was possible to reconstruct the bones to very near original length. However, it was decided that it would be safer to also use the measurements of both tibiae, which did survive intact.

Height was calculated in this study from maximum femoral and tibial lengths, using the regression equations provided by Trotter and Gleser for white males:

White male: 2.32(femur) + 65.53 = stature +- 3.94 cm
2.42(tibia) + 81.93 = stature +- 4.00 cm (Bass, 1995, 233, 250)

Using these equations the four heights produced for the Bishopthorpe skeleton from the left and right femora and left and right tibiae respectively were: 169.5 cm, 170.4 cm, 169.8 cm and 169.5 cm. These estimates all agree well, suggesting that the reconstruction of the femora was reliable. The overall estimated stature for the Bishopthorpe skeleton was 169.8 cm, about 5'8". Though not tall, this was probably at or slightly above the average for medieval England (Roberts and Cox, 2003, 248).

2.5 NON-METRIC TRAITS AND ENTHESOPHYTES

Non-metric traits, a term referring to traits that are measured as simply present or absent rather than on a scale, are believed to be important in determining genetic origins, although the mechanism by which traits are inherited - for example whether they are controlled by one or many genes, and to what extent they are affected by environment - is still poorly understood (Brothwell, 1963, 90). The only unusual traits noted in the Bishopthorpe skeleton were two ossicles in the lambdoid suture of the skull.

The ossification of entheses (muscle attachments) can be due to a number of factors, including trauma, conditions such as DISH and a natural propensity to form bone. If enthesophyte is found in more than 30% of possible locations the individual is categorised as a bone former. The ossification of entheses also seems to increase with advancing age (Rogers and Waldron, 1995, 24-5). The Bishopthorpe skeleton displayed slight enthesophyte at several muscle attachments, most notably on the linea aspera and right radial tuberosity. This skeleton would, however, not be categorised as a bone former, and the enthesophyte noted could be perfectly well explained by the age of the individual, and a life of moderately hard physical activity. Interestingly, this is also suggested by the presence of cortical defects around several muscle insertion sites on the Bishopthorpe skeleton. These defects are thought to be caused by ‘chronic mechanical stress’ (Larsen, 1996, 188) and add to the picture of a life of physical exertion.

2.6 PALEOPATHOLOGY

Given the relatively advanced age of the Bishopthorpe inhumation, very little pathology was visible on the skeleton. No signs of degenerative joint disease or infection were noted. Of course, this does not mean that the individual was in perfect health throughout his life – only a small minority of chronic conditions are ever visible on the skeleton (Ortner 2003, 113).

The only clear sign of injury in this case was found on the left clavicle or collarbone. This bone had been fractured some time before death, and had healed extensively but in a slightly deformed position (Plate 2). This deformity was most probably caused by the two fractured sections of the clavicle being drawn sharply together immediately after the injury by muscular contraction. This phenomenon is seen in many fractures, resulting in misalignment and the need for reduction of the affected bones to their correct anatomical position (Ortner 2003, 132). In this case reduction was clearly not carried out, though this is not surprising – even in modern conditions the clavicle is a difficult bone to reduce effectively.

Plate 2 The clavicles; superior view, showing the slight shortening and deformation of the left clavicle, below (scale 10cm)

Apart from this deformity there are no signs of complications, such as infection or joint deterioration, resulting from this fracture, and the individual appears to have experienced no problems in the continued use of this arm – all other joint surfaces and bones of the arm appear normal. The deformity had, however, resulted in the left clavicle being 9mm shorter than the right (see Plate 2). This shortening is easily explained by the overlapping of the remaining bone during healing (Plate 3), and there is no sign of the injury affecting the growth of the clavicle. It could therefore be reasonably inferred that the fracture occurred after adulthood had been reached. The injury was clearly suffered some time before death, however – the completeness of healing visible on the superior aspect suggests a period of years, rather than months.

Plate 3 The fracture site on the left clavicle: frontal view, showing well healed but overlapping bone (scale10cm)

The clavicle is one of the most frequently fractured of bones today, and skeletal evidence suggests this was also true in the medieval period. This particular injury seems to affect men much more frequently than women (Roberts and Cox, 2003, 238), and is generally caused by accidental rather than intentional injury (Larsen, 1997, 110).

2.7 DENTAL PATHOLOGY

The Bishopthorpe inhumation upon analysis had 25 teeth present out of an expected 32. Of these, two - both upper third molars - seemed to have been lost post-mortem, as the cavities for the teeth were vacant, although it is possible these teeth had been lost shortly before death. The other five missing teeth had clearly been lost ante-mortem, as the cavities for these teeth had healed over.

Three faint lines of hypoplasia were visible on the teeth of the Bishopthorpe skeleton. These defects in the tooth enamel are usually caused by an interruption in enamel production due to a period of stress or ill health during childhood (Larsen, 1996, 44-6). This suggests that the individual found at Bishopthorpe experienced illness or nutritional deficiency at several points in their youth.

Dental caries is a disease in which the enamel, dentine, and cement of a tooth become demineralised, eventually leaving a cavity. It is caused by the acids produced by the processing of carbohydrates by dental plaque bacteria, and is therefore related to the amount of sugar in the diet. Caries develops most commonly on the crown of teeth, and the molars are especially susceptible (Hillson 2005, 290-3). The Bishopthorpe skeleton had four teeth affected by caries; pit caries on the lower right 3rd molar, gross caries revealing the pulp cavity on the lower left second molar (Plate 4) and upper left second molar, and an upper left canine almost completely destroyed by this disease (Plate 5). There can be little doubt that this individual would have experienced extremely painful toothache during their life from these diseased teeth.

Plate 4 Gross dental caries on the lower left second molar, exposing pulp cavity (scale 10cm)

Plate 5 Complete destruction of the upper left canine by caries, with periapical abcess in the maxilla above. The cavity above the teeth behind is probably due to post-mortem damage (scale 10cm)

The carious infection of the upper left canine also seems to have penetrated through to the bone above this tooth – a small cavity is visible in the maxilla around the root (see Plate 5). The rough, ill-defined walls of this cavity suggest that it may have been caused by a cist with a developing abscess. Abscesses usually occur due to the accumulation of pus, which forces its way out through the bone of the jaw (Hillson 1996, 285). Caries or trauma are the most likely routes by which infection could have entered into the pulp cavity (Hillson 2005, 310), and in this case caries is clearly the explanation.

The Bishopthorpe skeleton also displayed evidence of alveolar disease. Alveolar bone loss is most commonly the result of periodontisis, caused by an overenthusiastic response of the periodontal tissues to the presence of dental plaque bacteria.

The early stages of periodontal inflammation involve only the soft tissues. However, if this process disrupts the collagen supply and causes a loss of attachment at the periodontal ligament the underlying bone may start to be resorbed - this loss of bony support often results in tooth loss (Hillson, 2005, 262-7, 305). A measurement between the cemento-enamel junction and alveolar surface of more than 2mm is usually taken as indicating periodontal disease (Hillson, 1996, 267); the Bishopthorpe skeleton produced a maximum measurement of 7mm.

The Bishopthorpe skeleton also displayed considerable supra-gingival calculus formation, especially on the lower incisors. Calculus is formed by the mineralisation of dental plaque, and the extent of calculus can therefore give a clue as to the level of dental plaque in the living individual. It is built up over a lifetime, and therefore found more commonly in older individuals (Hillson, 1996, 254-60).

The ante-mortem tooth loss, dental caries, alveolar disease and calculus of the Bishopthorpe skeleton all contribute to the picture of dental ill health. It is likely that this individual practised poor dental hygiene, as most people would have in medieval England. The dental caries also suggest the consumption of quite high levels of sugary foods by this individual. Roberts and Cox have discussed the generally poor dental health of the inhabitants of late medieval England (Roberts and Cox, 2003, 265) and the Bishopthorpe skeleton seems to fit well within this pattern, although perhaps suffering slightly more than average.

3.0 DISCUSSION AND SUMMARY

The accidental discovery of the Bishopthorpe inhumation raises some interesting questions about burial in this area during the medieval period. St Andrews church and Bishopthorpe palace were both built in the 13th century, and the burial seems unlikely to predate these buildings. Although the church of St Andrews is close to the palace, the current graveyard is a considerable distance away from the find-spot of the inhumation. The presence of a burial so far from the church therefore suggests one of two things; either the churchyard of St Andrews was once much more extensive, encroaching well onto the grounds of the Archbishop's palace, or a separate burial ground existed associated with the palace.

The first possibility is made unlikely by two facts: firstly, that there is little evidence that the population of Bishopthorpe was ever much greater than the present day, and thus a much larger burial ground should never have been necessary, and secondly that it seems intrinsically unlikely that the Archbishops resident on this site during the medieval period would have been happy with the church taking over ground lying directly between the entrance to their manor house and the road for burial. The institution of another burial ground on the grounds of the manor may seem a strange concept, especially given the proximity of St Andrew's graveyard. However, there is evidence for the building of a chapel on the site in the 13th century, which survives, in much modified form, to the present day (FAS 2006, 8-15). Clearly, the provision of a separate area for worship on the grounds of the palace was seen as desirable, and the same may have been true of burial.

The Bishopthorpe inhumation is, however, the only skeleton to have been recovered from the palace grounds so far, and unlikely as it may seem that this skeleton was buried in isolation, it would be dangerous to assume from a lone inhumation the presence of a large cemetery. The lack of human remains found from the rest of the service trench should be noted, and

a parallel service trench to the south, dug in May 2006 by the York Archaeological Trust, also revealed no trace of burials (Spall, 2007, pers. comm.).

Whether alone or, as seems more likely, part of a small burial ground on the grounds of the palace, this skeleton was buried purposely on the palace grounds rather than in the neighbouring churchyard, and this seems to suggest some association with the palace. The medieval Archbishops themselves were generally buried at York Minster, and the lack of elaborate memorials makes it unlikely that this local burial ground was used for particularly eminent burials. Possible candidates for burial in this separate burial ground seem more likely to have been members of the household such as servants, of whom there must have been a considerable number.

It is therefore interesting to note what the osteological analysis can reveal about the Bishopthorpe inhumation. This individual was male, of average height, and lived to a relatively respectable middle age. He had experienced periods of stress in his childhood that resulted in slight dental hypoplasia, although this must have been true of many children in the medieval period, given the poor quality of diet and healthcare experienced by much of the population. He had broken his clavicle at some time in his life, resulting in a degree of deformity, but this had healed well and with no apparent long-term effects. He was not obviously suffering from any chronic diseases or joint degeneration at the time of his death, but must have suffered from his bad teeth. This individual seems to have led an active life judging by the marking of his muscle attachments, which may suggest a slightly low social role, although it would be dangerous to draw too firm a conclusion from this.

It is unfortunate that the dating evidence for this burial is so poor, so that we cannot know under which Archbishop's regime the palace grounds were being used for burial. It is tempting to suggest, however, that the Bishopthorpe inhumation may be one of several retainers or servants given the honour of burial within the grounds of the palace where they worked, rather than having to share the general burial ground of St Andrew's church nearby. The simple nature of the burial and marks of stress on the skeleton are perfectly compatible with the idea of this individual fulfilling a fairly manual role in the household. In the end, however, this must remain speculation. Unless more skeletons are revealed from the palace grounds in future years, this may be all we will ever know about the individuals interred in the Archbishop's grounds.

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