

**TOWER GREEN**

**TOWER OF LONDON**

**LONDON EC3**

**LONDON BOROUGH OF TOWER**

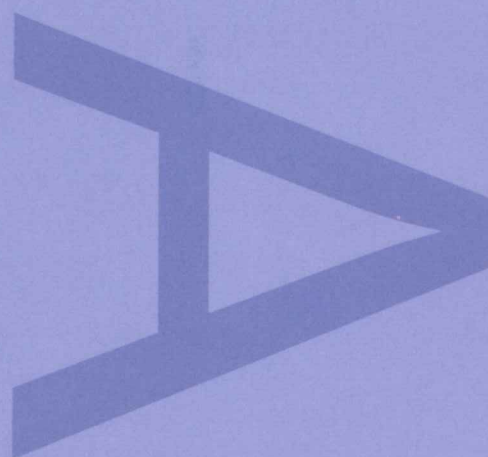
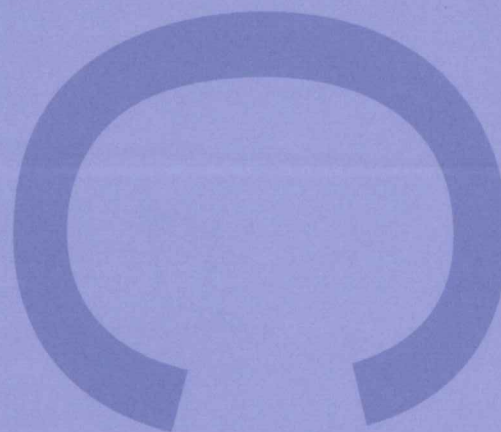
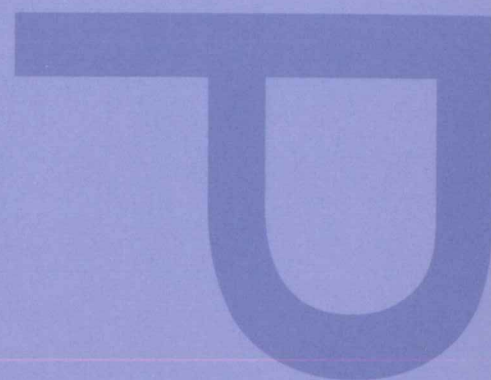
**HAMLETS**

**ARCHAEOLOGICAL WATCHING**

**BRIEF**

**TOL 103**

**APRIL 2008**



**PRE-CONSTRUCT ARCHAEOLOGY**

TOWER GREEN  
 TOWER OF LONDON  
 LONDON EC3  
 LONDON BOROUGH OF TOWER HAMLETS  
  
 WATCHING BRIEF

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**An Assessment of an Archaeological Watching Brief on Tower Green,  
Tower of London, London EC3, London Borough of Tower Hamlets**

**Site Code: TOL 103  
Central National Grid Reference: TQ 3355 8056**

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Pre-Construct Archaeology Limited, April 2008**

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## 1 ABSTRACT

- 1.1 This report details the results and working methods of an archaeological watching brief undertaken by Pre-Construct Archaeology Limited at the site of Tower Green, Tower of London, London Borough of Tower Hamlets.
- 1.2 The archaeological work was implemented in advance of improvement to the access and surfaces of the paved areas of Tower Green.
- 1.3 The study area was sub-divided into three zones, Areas A, B and C. Area A was located on the central paved area of Tower Green, east of the Beauchamp Tower. Area B was located in the southeast corner of Tower Green, northwest of the Bloody Tower and Area C was located immediately south of Area A, on the lawned area of Tower Green.
- 1.4 The earliest phase of activity revealed on site consisted of the stone foundations and cellar walls of a late medieval / early post-medieval building in Area A. Several phases of rebuilding work or alterations were apparent with the latest phase consisting of a late 17<sup>th</sup> century brick building with associated brick lined drains which is presumed to be the remains of the Old Main Guard which is documented to have been situated in this part of Tower Green. Later activity consisted of tree planting holes and service trenches.
- 1.5 In Areas B & C 17<sup>th</sup> century dumped deposits to level off the hill were revealed.

## 2 INTRODUCTION

- 2.1 An Archaeological Watching Brief was conducted by Pre-Construct Archaeology Ltd. at Tower Green, Tower of London, London Borough of Tower Hamlets (Fig. 1). The work was undertaken in advance of the re-laying of paving setts to improve access of the paved areas of Tower Green. In addition, an archaeological watching brief was undertaken during the excavation of a soakaway pipe trench bisecting the lawned area of Tower Green, south of the paved area.
- 2.2 The Tower of London is a World Heritage Site and a Scheduled Ancient Monument (Greater London No. 10).
- 2.3 The investigation was conducted between the 14<sup>th</sup> May and the 13<sup>th</sup> August 2007 and was commissioned by The Historic Royal Palaces, Tower of London. The watching brief was supervised initially by Stuart Holden and thereafter by Stuart Watson. The project was managed by Jon Butler and Chris Mayo for Pre-Construct Archaeology Limited. The archaeological works were inspected and monitored by Jane Spooner, Historic Royal Palaces curator of the Tower of London.
- 2.4 An archaeological watching brief had previously been conducted on the excavation of service trenches in 1975. This work revealed masonry remains of the Old Main Guard and the boundary walls of the Upper and Lower Gardens<sup>1</sup>. More recently the Execution site immediately to the north of the present main watching brief area was the subject of an archaeological investigation<sup>2</sup>.
- 2.5 The investigation covered three areas, sub-divided into Areas A, B and C (Fig. 2). In Area A, which was located on the central paved area of Tower Green, east of the Beauchamp Tower, contractors lifted the existing paving setts and reduced the ground to a project depth of c. 0.60m from current ground level. During the work the partial remains of 16<sup>th</sup>-17<sup>th</sup> century wall foundations were observed, which were further investigated via a limited excavation of sondages. The features are presumed to be the foundations of the building known as The Old Main Guard.
- 2.6 In Area B, which was located in the southeast corner of Tower Green, northwest of the Bloody Tower contractors lifted the existing paving setts and reduced the ground to a project depth of 0.30m below current ground level. The southwest corner of the trench

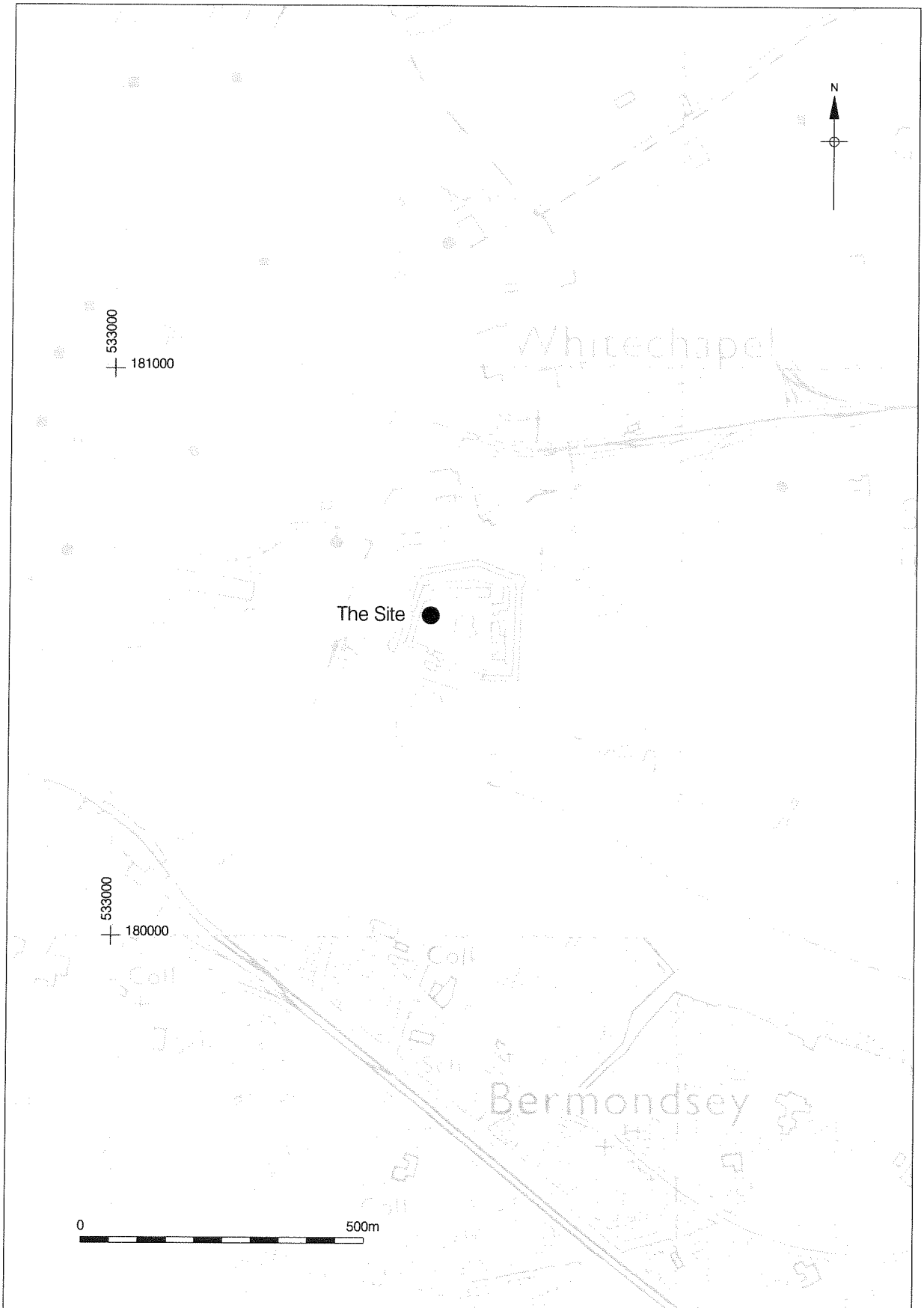
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<sup>1</sup> Parnell 1979

<sup>2</sup> Holden. 2006; Watson 2006

was further reduced to a depth of 1.40m to replace drainage. A 17<sup>th</sup> century archaeological horizon was observed.

- 2.7 In Area C, which was located immediately south of Area A, on the lawned area of Tower Green, one trench measuring 16.00m long by 0.80m wide by 1.00m deep was excavated for the provision of a new soakaway pipe connected to a run off gully in Area A. Various 16<sup>th</sup>-17<sup>th</sup> century dump/demolition layers were observed overlying an earlier ground surface.
- 2.8 A Temporary Benchmark (TBM) was established in the northwest corner of Area A (value: 10.74m OD). This was transferred from an Ordinance Survey Benchmark, located on the northwest corner of the White Tower, Tower of London (value: 11.63 m OD). In Area B a TBM was established on the northern limit of the trench (value: 9.52m OD), which was transferred from the TBM already established in Area A.
- 2.9 The National Grid Reference of the site centre is TQ 3355 8056.
- 2.10 The site was allocated the unique site code TOL 103.
- 2.11 The completed archive comprising written, drawn and photographic records and artefactual material from the excavation will be deposited at the Historic Royal Palaces store at Hampton Court Palace.



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Figure 1  
Site Location  
1:10 000 at A4



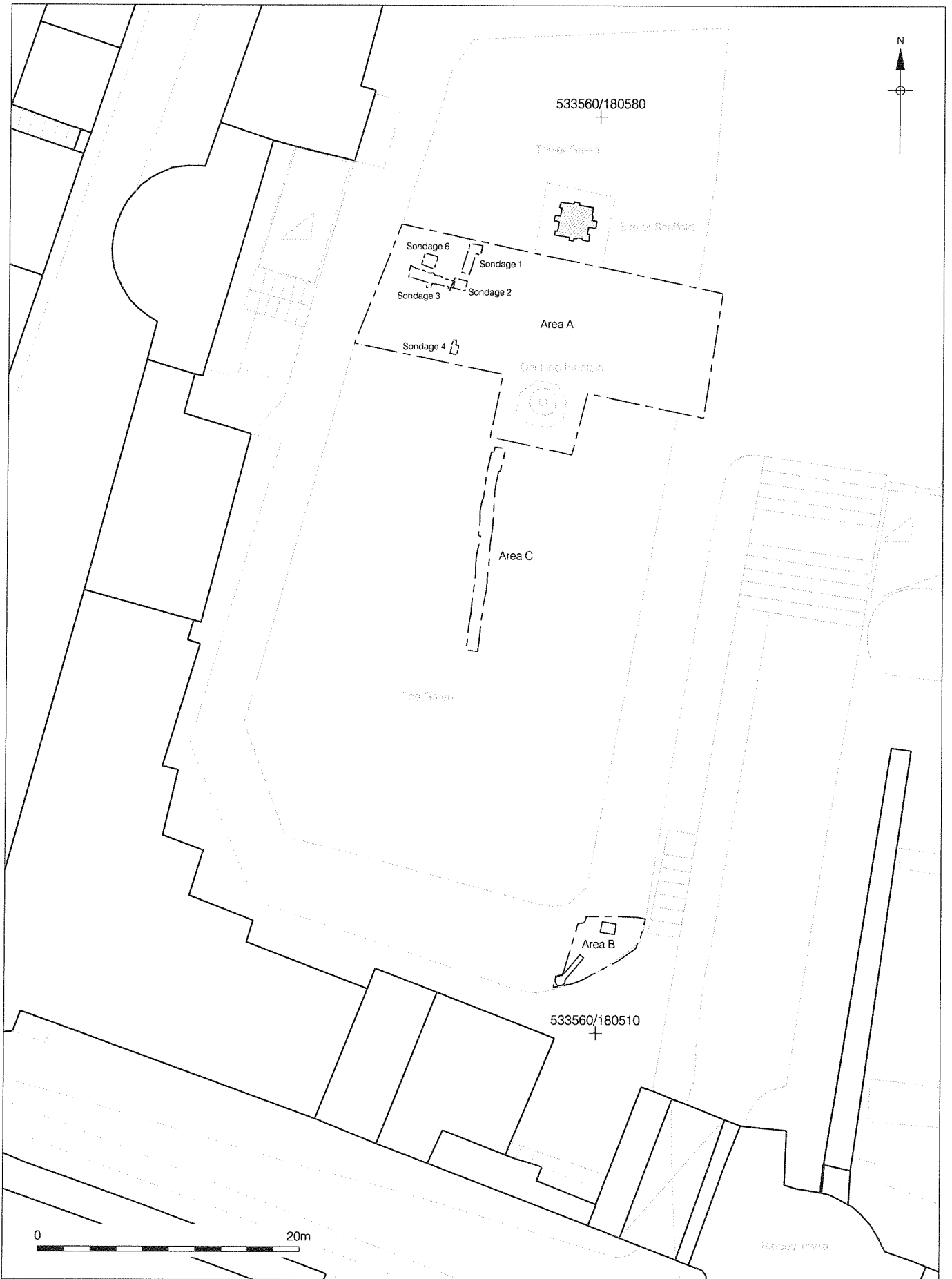


Figure 2  
Trench Locations  
1:400 at A4

### **3 GEOLOGY AND TOPOGRAPHY**

- 3.1 The British Geological Survey 1:50,000 Series Sheet 256 (North London) indicates that the site is likely to be underlain by Quaternary Post-diversionary Thames River Deposits, known as 'Taplow Gravel'. However, due to the limited depth of the excavation (0.60m below the current ground level in Area A and 1.00m in Area C) no natural formation levels were reached.
- 3.2 The site is located on Tower Green, within the inner ward of the Tower of London. Situated on the northern bank of the river Thames, the Tower is located in a dominant position overlooking the river. The site of the study area is generally flat with a gradual slope to the south. The current ground level at Area A is at a height of between c. 10.74m OD and c. 10.35m OD, the current ground level in Area B is at a height of approximately 9.52m OD and the current ground level in Area C is between 10.34m OD and 9.85m OD.

## 4 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND

4.1 Numerous studies have been conducted at the Tower of London, therefore this section seeks only to provide a historical summary of the development of Tower Green.

### 4.2 A Summary of the Development of Tower Green.

4.2.1 Tower Green is located within the western half of the Inner Ward of the Tower of London and is bounded to the north by the Chapel Royal of St. Peter ad Vincula, to the west by the Beauchamp Tower, to the south by the Queen's House and to the southeast by the Bloody Tower.

### 4.3 Roman

4.3.1 During the Early Middle Roman Period (c.200 AD) *Londinium* was protected by a defensive wall, and the site of the future Tower of London lay within the southeast corner of the Roman city defences<sup>3</sup>.

### 4.4 Medieval

4.4.1 With the arrival of the Normans, William The Conqueror (1066-1087) consolidated his authority over Saxon London by establishing a motte and bailey castle utilising the surviving Roman city walls to the south and east and adding defensive ditches to the north and west. During the last decade of William's rule, the building that was to form the core of the Tower of London, the White Tower, was constructed<sup>4</sup>.

4.4.2 The first significant expansion of the defences of the Tower date to the end of the 12<sup>th</sup> century in the reign of Richard I (1157-1199). During this period the fortifications extended west to encompass the positions later occupied by the Bell and Beauchamp Towers (12<sup>th</sup> and 13<sup>th</sup> centuries respectively). By approximately 1190 the southern half of Tower Green lay within the defences of the Tower.

4.4.3 During the reign of Henry III (1216-1272), the Tower of London underwent extensive alterations and expansions, and by c.1220 the whole of the area that was to become Tower Green lay within the Inner Ward of the castle<sup>5</sup>. Included in this area was the parish church of St Peter ad Vincula, which was first mentioned in 1128-34<sup>6</sup>.

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<sup>3</sup> Parnell. 1993, 13-16

<sup>4</sup> Parnell. 1993, 17-22

<sup>5</sup> Parnell. 1979, 322

#### 4.5 Post-medieval

- 4.5.1 In the early 16<sup>th</sup> century the area that was to become Tower Green was occupied by gardens and orchards attached to the residence for the Constable of the Tower of London (later known as The Queens House).
- 4.5.2 By the late 16<sup>th</sup> century, the area of the site to the east of the Beauchamp Tower was occupied by the Old Main Guard. This building is depicted on five maps of the 16<sup>th</sup> and 17<sup>th</sup> centuries, the Agas c.1562, the Braun and Hogenberg, the Haiward and Gascoyne 1597, the Hollar of 1667 and the Ogilby and Morgan c.1676. The building occupied this location for over a century until its demolition and relocation, as the New Main Guard, to a site adjacent to the Waterloo Barracks in the 1680s.
- 4.5.3 During the 1860s, on the instructions of Queen Victoria, a memorial to the victims of execution was established on Tower Green. Over time this became the traditional execution site. The memorial itself has only recently been renewed.
- 4.5.4 Up until the late 19<sup>th</sup> century the area now occupied by Tower Green was a large open space, possibly cobbled. It is not until the 1890s that a 'green' was created and it is from this date that the site assumes its current form, i.e. a central paved area bisecting lawns to the north and south<sup>6</sup>.

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<sup>5</sup> Parnell. 1993, 33

<sup>6</sup> Keevill. 2006

## 5 ARCHAEOLOGICAL METHODOLOGY

- 5.1 The fieldwork was designed to assess the presence or absence of significant archaeological remains.
- 5.2 The site was sub-divided into three; Areas A, B & C (Fig. 2). Area A is defined as the central paved area of Tower Green, located approximately thirty metres south of the Chapel Royal of St Peter ad Vincula, and east of the Beauchamp Tower, within the Inner Ward of the Tower of London. Area B is defined as an area of paving located in the southeast corner of Tower Green, approximately 10m northwest of the Bloody Tower, while Area C is defined as the lawned area of Tower Green, south of the paved area, Area A.
- 5.3 The original excavation of Area A totalled 177m<sup>2</sup> at its base, while a later extension to the east added a further 25m<sup>2</sup>, giving a total of 202m<sup>2</sup>. Its final dimensions were north-south 15.00m by east-west 17.30m. Contractors from Paye Stonework & Restoration Limited lifted the stone setts and set them aside for reuse. The underlying hardcore was excavated by mechanical mini-excavator to a depth of c. 0.20m under archaeological supervision and removed off site. Collectively these layers measured c.0.40m in thickness from current ground level. Where archaeological deposits were revealed field staff of Pre-Construct Archaeology limited continued limited excavation in agreed designated areas (sondages) by hand to the final excavation depth of 1.62m from the current ground level. The extension to the east was excavated to a project depth of c. 0.40m and was monitored and recorded by an attendant archaeologist.
- 5.4 At the conclusion of the archaeological works, the exposed foundations were protected *in situ* with protective layers of Terram geo-technical fabric and soft sand, before final backfilling.
- 5.5 The excavation in Area B totalled 20.25m<sup>2</sup> at its base. Contractors from Paye Stonework & Restoration Limited lifted the stone setts and set them aside for reuse. Following removal of the cobbles, the underlying ground surface was reduced by approximately 0.30m, while the southwest corner was reduced to a depth of 1.40m from current ground level. The work was monitored and recorded by an attendant archaeologist.
- 5.6 The excavation of Area C totalled 12.80m<sup>2</sup> at its base, and its final dimensions were north-south 16.0m by east-west 0.80m. Contractors from Paye Stonework & Restoration Limited excavated the trench by mechanical excavator to a project depth

of c. 1.00m from current ground level. The removed material was set aside to be utilised later as backfill. The work was monitored and recorded by field staff of Pre-Construct Archaeology.

- 5.7 All archaeological features (stratigraphical layers, cuts, fills, structures) were recorded in plan at a scale of 1:20 and in section at a scale of 1:10. All written data was entered on *pro-forma* sheets following standard recording methods, and a photographic record using 35mm colour transparencies, back and white print film and digital mediums was also made as appropriate.
- 5.8 Temporary Benchmarks were established in convenient locations at both Areas A & B. These were transferred and reduced from the Ordnance Survey Benchmark, located on the northwest corner of the White Tower, Tower of London (value 11.63m OD).
- 5.9 The work was undertaken following English Heritage (GLAAS) guidelines<sup>8</sup>.

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<sup>8</sup> English Heritage GLAAS. 1998

## **6 ARCHAEOLOGICAL SEQUENCE**

### **6.1 Summary of Area A**

- 6.1.1 Only archaeological features relating to the medieval and post-medieval period were identified in the trench excavated.
- 6.1.2 The archaeological remains observed relate principally to the 16<sup>th</sup>-17<sup>th</sup> century foundations of the Old Main Guard located to the east of Beauchamp Tower, on Tower Green, Tower of London.
- 6.1.3 The total excavated area (Area A) measured 15.0m north-south by 17.30m east-west. Five sondages (Sondages 1-4 & 6) were excavated by hand to further investigate the foundations exposed in Trench 1 of Area A.
- 6.1.4 The limited excavation and only partial exposure of many of the fragments of masonry meant interpretation of their function and date was difficult if not almost impossible. The western part of Area A was particularly complicated with many different phases of activity present, but without being able to remove each phase of masonry the sequence and interpretation was very difficult to determine.

### **6.2 Phase 1: Late Medieval-16<sup>th</sup> Century (Figs. 3 & 6)**

- 6.2.1 The earliest phase of activity was represented by a rectangular stone cellar, which was largely exposed only in a series of sondages excavated against the face of its east and south walls. The southern wall of the cellar consisted of wall [50], which was constructed from a wider range of materials (Sandstone, Limestone, Chalk blocks, brick fragments and tile). The wall measured 3.45m in length (east-west) as exposed, by c.0.42m wide and 0.35m deep as exposed and was recorded at a highest level of 9.92m OD and a lowest level of was 9.82m OD.
- 6.2.2 The east wall of cellar consisted of wall [28] is aligned north-south, and was observed in a west facing section of sondage 2 abutting the east end of wall [50]. The masonry was constructed from Reigate stone, Kentish Ragstone and chalk blocks and measured 0.55m in length by 0.35m high by 0.32m wide, with the highest level at 9.85m OD and the lowest at 9.50m OD. Separated by an area of later blocking ([36] & [29], see Phase 2 below) the eastern cellar wall continued as wall [35] in Sondage 1 and extended for 0.89m in length.

- 6.2.3 Wall [35] had an east-west return continuing for a length of 0.50m at right angles on the northern end. Constructed from Reigate stone, Kentish Ragstone, brick and peg it had a highest level of 9.89m OD and a lowest level of 9.13m OD. The top part of the masonry was allocated a separate context number, [34]. This wall appeared to continue further to the west, where a short section of wall [63], which measured 1.56m in length by 0.24m wide at a height of 10.16m OD, was seen in plan only, on the same alignment.
- 6.2.4 In the base of Sondage 1 two auger bore holes were hand drilled through the cellar backfill [12] (see Phase 3 below) to ascertain the floor depth of the cellar. Auger hole 1, to the south of the sondage, and Auger hole 2, to the north, were both drilled to a depth of 1.02m from the base of the sondage (at 9.09m OD) and reached a solid surface at 8.07m OD. This is presumed to be the floor of the cellar, and would therefore indicate the depth of the cellar was c. 2.12m.
- 6.2.5 The excavation of Sondage 6 revealed a narrow brick wall [54] aligned east-west and of possibly late 15<sup>th</sup>-early 16<sup>th</sup> century date. This has been interpreted as an internal partition wall of the cellar.
- 6.2.6 At the western end of the cellar was an area of masonry [70] that appeared to curve outwards. At first sight this appeared to be an area of collapse, however further investigation showed this to probably represent the lowest courses of a barrel vault. Both the stonework and brickwork are curved and tiered and the masonry is mortared *in-situ* which would rule out the idea of a collapse. This is further supported by the presence of a thick (c. 200mm) layer of mortar/render with a curved face found attached to the wall. The brickwork of [70] is different to those used in later walls [69], [57] and [51] (see Phase 3 below) being more orange 3033 type, than the pinky-red brick used in those walls. It would thus appear that the cellar at one time had a brick barrel-vaulted roof.
- 6.2.7 In the western part of Area A a complicated series of masonry features was revealed. The lowest feature observed in this complex series of features was [86] a sloping Kentish Ragstone slab surface at 9.60m OD. This was a randomly laid rough hewn flagstone measuring 0.55m east-west by 0.45m north-south. This is probably the base lining of a drain and is associated with drain [85] and [98]. Overlying and associated with [86] was a well-constructed brick and stone drain gully [85]. At a level of 9.91m OD this was 0.56m long by 0.40m wide by 0.32m deep. The drain was constructed from re-used brick and stone laid on edge east-west forming a concave east-west channel. A large Reigate stone slab fronted the brickwork, and had a semi-circular



central section tooled out, which served to channel water down to [86]. This stone slab is re-used and has been interpreted as the lower half of a circular gun-port. A similar example exists *in-situ* within the walls of the Bell Tower. The stone slab was placed over a shelly limestone and peg tile packing layer. A southern east-west wall [98], formed of the same Reigate stone and shelly limestone, enclosed the drain on the south side, while a brick and stone wall [95] enclosed the north side. While [98] was built at the same time as [85], its possible that [95], a different fabric, was later.

6.2.8 To the south of drain [86] was a section of a north-south aligned wall [89]. The west face had been truncated by cut [68], a modern service trench. Well constructed from Reigate stone and Kentish Ragstone and re-used yellow medieval brick, its function is unclear, other than a foundation wall. This wall overlies the walls of the drain [98] and [85] and its construction would suggest an earlier rather than later date for it. However based on the available evidence it is not possible to determine with any certainty if the cellar, the drain and this wall are contemporary but they would appear all to predate the 17<sup>th</sup> century (Phase 3) phase of activity.

### 6.3 Phase 2: 16<sup>th</sup>/17<sup>th</sup> Century (Fig. 6)

6.3.1 Phase 2 activity consisted of later brick blocking, [36] and [29], inserted into the earlier, Phase 1 cellar eastern wall, [28]/[35].

6.3.2 [36] and [29] were parts of the same masonry, observed in different sondages (Sondages 1 & 2 respectively). [36] was a later phase post-medieval brick blocking wall inserted into cellar wall [35] & [28]. [36] extended for 0.45m in length and was aligned north-south, while [29] ran 0.35m north-south. Both were constructed primarily from brick with the addition of Kentish Ragstone and chalk blocks as infill. The highest level for [36] was 9.89m OD and the lowest was 9.12m OD. The highest level for [29] was 9.85m OD and the lowest 9.50m OD. Together they formed a blocking c. 1.3m in width, which suggest that it may be the infilling of a former doorway with further cellars continuing to the east.

### 6.4 Phase 3: Mid 17<sup>th</sup> Century (Figs. 4, 6, 7 & 8)

6.4.1 Once the cellar had gone out of use it was backfilled with a series of silty sand dumps which were largely encountered in Sondages 1, 2 and 6. In Soudage 2 against cellar walls [50] and [28] a sequence of six fills was encountered. Revealed at a height of 10.08m OD, the earliest deposit was a loose mid greyish brown sandy silt dump fill [24] with fragments of ceramic building material (CBM) and stone. Up to 0.54m in

thickness as exposed the deposit contained pottery with a suggested date of mid 17<sup>th</sup> century. Sealing [24] was fill [23], a thin silty sand dump deposit containing abundant oyster shell. This was covered by fill [22], a very dark grey silty sand dump deposit up to 0.10m thick containing abundant charcoal. Sealing [22] was fill [21], a mid greyish brown silty sand dump deposit containing abundant mortar and moderate fragments of CBM. This was in turn covered by fill [20], a mid greyish brown silty sand dump deposit up to 0.16m thick. This deposit has been dated to the mid 17<sup>th</sup> century from pottery dated to 1620-50 and clay tobacco pipes dated to 1640-60. Sealing layer [20] was a deposit of mortar [19] encountered at a top height of 10.11m OD.

6.4.2 In Sondage 1 against the same cellar wall to the north a similar sequence of cellar fills was revealed which were given one context number [12]. As exposed the deposit was up to 1.13m thick and was encountered at a top height of 10.23m OD. Two auger holes encountered a possible solid floor to the cellar at a height of 8.07m OD, which would suggest that the total thickness of cellar fills was 2.16m. Pottery recovered from the deposit was similarly dated to 1600-1650.

6.4.3 To the west in Sondage 6 a similar sequence of three cellar fills was encountered. The earliest fill revealed was a mixed demolition deposit of lime mortar and brickearth [62] at least 0.25m thick with a top height of 9.68m OD. This was covered by a 0.10m thick deposit of grey brown sandy silt [61] with a top height of 9.73m OD. This was in turn sealed by a similar deposit containing frequent oyster shell and pebbles [60], which was up to 0.20m thick and was revealed at a top height of 9.98m OD.

6.4.4 Overlying the earlier phase of cellar walls was a brick and stone wall [9], aligned north-south, measuring 3.17m long by 0.23m wide. This wall continued south on the same alignment, but was truncated by a large 19<sup>th</sup> century tree-planting hole [43]. The continuation was given the context number [52]. This continued to the southern limit of Area A for an additional 2.43m, which would give a total of 8.16m for the total exposed length of the wall. Constructed from up to two courses of unfrosted type 3033 brick in English bond on top of a Reigate stone, Kentish Ragstone and peg tile foundation, it had a maximum height of 0.55m. The difference in mortar and accumulation of soil between the stone and brickwork would suggest they were constructed at different times and represent two phases of building with the later brick walls partially respecting the wall lines of the earlier cellar. It is possible that wall [9] was contemporary with blocking wall [36] and [29]. Pottery recovered from the soil infill of [9] gives a spot date of 1550-1700.

- 6.4.5 Abutting wall [9] on its western side was brick wall [51]. This was an east-west return of wall [9] and was constructed on top of earlier stone cellar wall [50]. Of very similar construction to [9], it was almost certainly contemporary. The bricks used were type 3033 unfrogged with uneven bases and sunken margins which pre-dates 1700 (see Appendix 6), but have been re-used. Like [9], this wall was poorly built in an attempt at English bond but which degenerates into random coursing. Oddly, like wall [9], this wall was constructed over a soil infill. While it respects the line of the lower cellar wall [50], no attempt appears to have been made to excavate to, or directly build off, the cellar walls beneath. Wall [51] had a construction cut [75] which was backfilled by a grey brown silty fill, [72].
- 6.4.6 To the east of wall [52] was the heavily truncated remains of another north-south aligned wall [40]. Constructed from fragments of unfrogged brick, stone and chalk blocks, this wall has been severely truncated by modern service trench [45] and measured 2.00m in length by 0.30m wide with a top height of 9.81m OD. This would appear to be the same foundations exposed by Parnell in the 1970s<sup>9</sup> and would seem to run parallel to walls [52]/[9] and most likely form a corridor. The modern service run had removed all trace of the wall to the north.
- 6.4.7 Abutting wall [51] was wall [69]. While on the same east-west alignment, this wall had a clear join and different levels of brick courses. It was either a repair or an extension to wall [51]. Underlying wall [69] was a possible construction cut [74] for wall [69] (only seen in section) which was backfilled with dark grey brown sandy silt [73].
- 6.4.8 In Sondage 1 partially covered by the backfill of the cellar was a series of dump and possible bedding layers. The earliest deposit consisted of an up to 0.12m thick layer of crushed Reigate stone [49], possible demolition rubble, with a top height of 9.84m OD. This was sealed by a possible bedding layer of crushed Greensand [33] with a top height of 10.00m OD. This in turn was covered by a thin (0.03m thick) possible bedding layer of clay and mortar [32] for a floor or yard which was revealed at a height of 10.00m OD. This was covered by a 0.20m thick deposit of made ground [27] which contained pottery dated 1570-1650.
- 6.4.9 To the western side of Area A, and directly south of wall [51], was a complex series of masonry features. They had been severely truncated on the western side by a modern service trench [68] and a 19<sup>th</sup> century tree-planting hole [58]. The earliest deposits revealed were a thin layer of mid orange medium sand [103], observed at a

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<sup>9</sup> Parnell. 1979

top height of 9.74m OD which was sealed by a burnt deposit [102]. To the west was a layer of possible demolition material [101] which was sealed by a widespread layer of redeposited mid grey brown clay silt [100], including demolition material in small quantities, which was observed at a top height of 9.65m OD. This was covered by a 0.16m thick layer of brickearth [93] at a top level of 9.85m OD. This may be either a floor surface or a levelling layer.

- 6.4.10 Wall [87] was apparently built upon brickearth layer [93] and was a later east-west return of earlier wall [89]. A Kentish Ragstone and Reigate stone blocking wall, it contains a peg-tile levelling course. The stone was reused. The highest level was 10.24m OD and the lowest was 9.86m OD.
- 6.4.11 Wall [90] was constructed from whole and fragments of unfrosted bricks was badly degraded and truncated on its western face by modern pipe cut [68]. It capped earlier wall [89]. It is possible that walls [90] and [89] forms the western side of a passageway with wall [83] forming the eastern side. Abutting wall [89] and [90] was a possible brick built pier [104], which possibly served as strengthening to wall [90]. Between the walls [104], [90] and [89] to the west and wall [83] to the east, was the partial remains of a stone floor surface constructed from blocks of Reigate stone [91], at a level of 10.09m OD. This may form the floor to the passageway discussed above. Covering floor [91] was [92], a make-up levelling layer/demolition rubble, with a highest level of 10.24m OD.
- 6.4.12 Directly to the east of the earlier drain [98]/[86]/[85] was a brick-blocking wall [84]. This was constructed from type 3033 unfrosted stock bricks and was revealed at a top level of 10.26m OD and a basal level of 9.88m OD, but continuing deeper below the limit of excavation. This wall truncated drain [85], [86] and [98] and abutted wall [87] to the south and wall [95] to the north. Its purpose is uncertain. This wall appears to continue to the depth of a brick floor [80] and stone floor [86] observed through a void in the demolition layer [77], backfilling brick feature [79].
- 6.4.13 To the east of drain [85], [86] and [98] was a semi-circular feature that may be part of the same drain system, although unproven as wall [84] separated the two features. A brick floor [80] was overlain by a semi-circular brick wall lining [79], forming a possible drain. Overall this measured 0.14m east-west by 0.45m north-south and was 0.33m in depth. The brick floor was exposed at a level of 9.54m OD, while the top of the wall had a level of 9.88m OD. The drain was backfilled with a rubble sandy silt [77]. Adhering to the brick floor [80] was a rusty orange brown 10.0mm thick residue [78] that may have been deposited by iron panning.

6.4.14 Overlying the possible drain [80] and [79], and backfill [77] was a north-south aligned brick wall [83]. Its highest level was 10.20m OD and its lowest level was 9.99m OD. Truncated to the south, it survived to a maximum of three brick courses deep to the north. Poorly constructed of re-used unfrogged brick, it had no visible bonding pattern. This wall may have been added to create a passageway to the west with walls [89]/[90].

6.4.15 In the east of Area A, a long section of wall [1] aligned north-south, extending the full length of the trench, was exposed. Better built, and thicker (c. 0.50m wide) than the foundations to the west, this has been interpreted as the base of a garden wall, and such a feature is shown on Hollar's 1667 Survey.

#### **6.5 Phase 4: Late 17<sup>th</sup> Century Onwards**

6.5.1 Abutting wall [9] at its north end was a stub of brick wall [38], 0.80m in length by 0.23m in width, which formed an east-west return. The wall was truncated to the east by later activity. While similar in construction to [9], it appeared to be a later addition, as it overlay a brick built drain gully [11]. However, it is possible that the drain was contemporary with wall [38] with the wall built over the drain maintaining an access for the drain outside the building.

6.5.2 Aligned north-south for a length of 5.05m was a brick built drain gully [11]. This ran east of, and parallel with, wall [9]. Its northern end continued beyond the northern limit of Area A and was truncated at its southern end by a large cut [43] interpreted as a possible tree planting hole. There was no evidence of a continuation south of the modern cut. Finds recovered from the backfill, [10], of the gully include pottery that was dated to 1580-1650. Levels taken in the base of the drain, 9.71m OD at the northern end and 9.93m OD at the southern end, would indicate a direction of flow to the north.

6.5.3 To the east of, and adjacent to drain [11] was a small surviving area of a floor surface [13]. Consisting of square Flemish floor tiles (119mm x 119mm) laid onto a sandy lime bedding mortar, some of the tiles have a mid greenish brown glazed surface. These were dated by fabric to 1300-1700 and appeared to be the surviving remains of an internal ground floor of the Old Main Guard at c. 10.22m OD, possibly in a corridor formed by wall [40] to the east.

- 6.5.4 Running parallel with wall [51], but of a later date, was a brick built gully [57] which is aligned east-west for a length of 3.50m. This is presumed to be an external gutter or surface drain run off, being a shallow 'V' shape, constructed of brick and perhaps originally inserted within a yard surface. This feature overlies the backfill of the early phase cellar and is therefore of a later date.
- 6.5.5 Overlying gully [57] were a series of dump layers [18], [17] and [16]. [17] was the same as [26], which was dated to 1612/30-50 from pottery recovered from it.
- 6.5.6 Exposed in Sondage 6 was a rectangular brick built pier [55], which overlay the earlier cellar partition wall [54]. This was a badly built structure, part keyed into the earlier wall below, and part built over soil. A similar situation was seen in the construction of wall [51], and to a lesser extent in wall [9]. The form and fabric of the brick provided a late 17<sup>th</sup> century date.
- 6.5.7 Towards the west of Area A was the truncated remains of a north-south aligned brick stub wall [67], truncated on its western side by modern pipe trench [68]. Its height was 10.32m OD.
- 6.5.8 Fragments of earlier surfaces within the area were present at both the north and south of the area. To the south was an isolated Yorkstone paving slab [71] which was possibly a remnant of the 19<sup>th</sup> century paved surface of Tower Green. Its height was 10.20m OD.
- 6.5.9 To the north remnants of a cobbled surface [65] and [66] were observed which were possibly part of the 19<sup>th</sup> century surfaces of Tower Green. There was a shallow 'V' shape discernible, which may indicate that this was the remains of surface run-off. Aligned east-west its highest level was 10.23m OD and its lowest 10.19m OD.
- 6.5.10 Two sub-circular cuts, [58] and [31], at the west measuring 1.20m north-south by 0.98m east-west and 1.20m north-south by 1.95m east-west respectively are interpreted as 19<sup>th</sup> century tree planting holes that truncated several of the earlier masonry features [88], [94], [99] and [102].
- 6.5.11 Sealing all the features on site were layers [4] and [3]. These two layers were the same, [4] was west of garden wall [1], while [3] was east of it. This was an extensive layer of mid greyish brown silty sand made ground that extended across the entire site. It was also observed in Area C as [305] and Area B as [200]. Pottery recovered from [4] was dated 1630-1700 with clay tobacco pipes dated 1640-60, whilst pottery

from [3] was dated 1630-80 (excluding intrusive finds) with clay tobacco pipes dated to 1680-1710. This would suggest that the deposit was either laid down in the second half of the 17<sup>th</sup> century or at least used material that was originally dated to that time. The highest level for the layer was 10.50m OD and the lowest level was 10.09m OD.

## **6.6 Phase 5: Post-medieval / Modern**

6.6.1 Various modern services were located across the site; including cut [15] for a lead water pipe aligned north-south, a tree planting hole [43], a large trench [68] for a modern service, [105] a cut for a modern water pipe, [45] a large service pipe (possible fuel oil) trench running north-south that truncated the eastern side wall [40]. It was the excavation of the latter service run that was monitored by Parnell in the 1970s, which first revealed the presence of masonry structures beneath Tower Green. To the east of the area wall [1] was truncated by modern manhole [6] and a disused service trench [8].

## **6.7 Summary of Area B**

6.7.1 Only archaeological features relating to the post-medieval period were identified in the trench excavated.

6.7.2 The trench measured 4.50m north-south by 4.50m east-west and was cut from a height of between 8.90m OD and 9.18m OD.

6.7.3 The lowest deposit attained was [200], a mid greyish brown silty sand layer at a level of 8.76m OD and is likely to represent a post-medieval levelling layer beneath a modern mortar bedding layer for the modern setts above. Recovered from this layer were a few sherds of 17<sup>th</sup> century pottery and clay tobacco pipes. This context has been spot dated from the pottery to 1630-1680, and from the clay tobacco pipes to 1660-1680. This context is similar in colour and composition to layer [4], in Area A.

6.7.4 Sealing layer [200] was a layer of modern mortar and granite cobble setts, which formed the current ground surface at between 9.29m OD and 8.90m OD.

## **6.8 Summary of Area C (Figs. 5 & 9)**

6.8.1 Only archaeological features relating to the post-medieval period were identified in the trench.

- 6.8.2 The trench measured 15.80m north-south by 0.80m east-west and was cut from a height of between 10.34m OD and 9.87m OD.
- 6.8.3 The lowest deposit revealed was [317], a very hard compacted light yellowish brown sandy mortar layer at a level of between 8.77m OD and 8.70m OD. This is likely to represent a dump layer of demolition material which has been used to raise or level the ground of Tower Green. No finds were recovered from this context.
- 6.8.4 This layer was partially sealed by [300], a similar deposit of friable mid yellowish brown sandy mortar layer at a level of between 9.29m OD and 8.77m OD. No finds were recovered from this context. Cut into this layer were two features [316] and [304].
- 6.8.5 Cut [316] was a small rectangular pit, measuring 0.20m north-south by 0.40m east-west and c. 0.10m in depth. The level at the top of the cut was 9.17m OD and at the base 9.07m OD. The fill of this cut was a friable mid brownish grey clayey/ sandy/ silt [315]. No finds were present. Feature [304] was a small circular cut, measuring 0.25m north-south by 0.25m east-west and 0.10m deep. The level at the top of the cut was 8.98m OD and at the base 8.89m OD. This is likely to be a posthole. The fill of this feature [303] was identical to layer [311] and a medium sized mass of slag was recovered from it.
- 6.8.6 Sealing dump layer [300] was [311], a compact dark greyish black sandy/silty/coal layer, at between 0.15m and 0.30m in thickness. The highest level was between 9.22m OD and 8.87m OD. This represents a dump layer from an industrial process, probably waste from a furnace or kiln; the quantity of material and the presence of large conglomerates of slag would preclude the waste from domestic fires. Pottery dated to 1550-1700 and CBM dated 1480-1900 were recovered from this context.
- 6.8.7 Overlying [311] was a single Reigate stone worked block [313] at a level of 9.10m OD. It measures 290mm long by 150mm wide by c. 120mm deep (measurements are incomplete, as it was partially embedded in the section).
- 6.8.8 Covering [313] was a strip of whitish grey sandy mortar [314] at a level of 9.18m OD, which is possibly the remains of a surface. Pottery recovered from this context dated to 1480-1650. This context is the same as [312], a continuation of this surface strip to the north, but truncated by cut [302].



- 6.8.9 Cut [302] was a small rectangular pit that measured 0.40m north-south by 0.50m east-west and 0.35m deep. The level at the top of the cut was between 9.18m OD and 9.06m OD, while at the base the level was 8.68m OD. The fill of this feature [301] was a friable mid greyish brown silty sand containing moderate fragments of chalk, occasional flecks of charcoal and CBM and occasional animal bone. The function of this pit is unknown, but may be a posthole of 16<sup>th</sup>-17<sup>th</sup> century date.
- 6.8.10 Sealing cuts [302] and [316] was layer [310] which was a friable mid brownish grey clayey/sandy/silt c. 0.19m thick. This contained frequent fragments of brick, tile, mortar and oyster shell and had a highest level of 9.38mOD and a lowest level of 9.19m OD. This deposit continued at the southern end of the trench as [323]. This represents a post-medieval demolition layer. No pottery was found in this deposit to give a definitive date.
- 6.8.11 Overlying layer [310] was [309], a friable mid yellowish grey clayey/sandy/silt dump layer c. 0.40m thick with a highest level of 9.76m OD and a lowest level of 9.36m OD. This deposit represents an interface with overlying layer [308].
- 6.8.12 Layer [323] was sealed by [322], a compact mid greyish brown clayey/sandy/silt layer with very frequent oyster shell and CBM inclusions, c. 0.10m thick and recorded at a top level of 9.27m OD and a lowest level of 9.12m OD. This represents a thin dump deposit of domestic refuse consisting primarily of oyster shells and fragments of CBM. No dating evidence was available from this deposit.
- 6.8.13 This layer was covered by [321], a compact dark blackish grey sandy/silty/coal layer, c.0.13m thick at maximum with a highest level of 9.30m OD and a lowest level of 9.17m OD. This represents a layer of redeposited industrial waste, which while similar to [311] was finer in texture and 'cleaner' in appearance and is a distinct event.
- 6.8.14 Sealing this layer was [320], a mid brownish grey clayey/sandy/silt dump deposit. To the north of cut [319] at a similar level was deposit [308], a mid brownish grey clayey/sandy/silt dump layer c. 0.38m thick with a highest level of 9.97m OD and a lowest level of 9.59m OD. While the boundary between [308] and underlying deposit [309] was indistinct, [308] appeared to be an interface with it, suggesting that either the two layers were deposited simultaneously, or that [308] was a later disturbance to the existing layer [309] while it was exposed. No finds were observed in this layer.
- 6.8.15 Cutting through layer [308] / [320] was feature [319]. This was a moderate to steep cut only observed in section measuring 0.90m north-south by 0.52m deep with a top

level of 9.62m OD. This is possibly the cut of a boundary ditch, or perhaps a hedgerow planting ditch, as the layers, [308] / [320], were different on either side of this feature. The fill of this feature, [318], was a friable mid greyish brown clayey/sandy/silt. There was substantial root disturbance and fragments of pottery recovered were dated to 1500-1630.

- 6.8.16 Abutting [308] was [307], a friable mid greyish brown sandy silt demolition layer c. 0.25m thick. The highest level was 10.02m OD and the lowest level was 9.77m OD. This is possibly a variation in layer [308]. However, it is possible that this was the fill of a cut, but the relationship was obscured by the cut for a modern water pipe. Pottery recovered from this context was dated to between 1550-1650.
- 6.8.17 Cut [319] and layer [307] were sealed by [306] a moderately compact to friable light brownish grey clayey/sandy/silt layer c. 0.27m thick containing frequent fragments of brick, tile and mortar, which was recorded at a top level of 9.94m OD and a lowest level of 9.67m OD. It represents a rubble filled demolition layer. Pottery recovered from the layer was dated to 1630-1800.
- 6.8.18 Deposit [306] was covered by [305], a moderately friable dark greyish brown sandy silt layer c. 0.08-0.12m thick with a highest level of 10.02m OD and a lowest level of 9.94m OD and represents a levelling layer. This layer was probably the same as [4] in Area A, and [200] in Area B. No finds were observed in this layer.
- 6.8.19 Overlying all previous deposits was a layer of modern garden soil, between c. 0.12m and 0.25m in thickness. The top of this layer was laid to lawn, and formed the current ground surface of Tower Green, which gradually sloped down to the south. The current ground level is at between 10.36m OD at the northern end and 9.90m OD at the southern end.

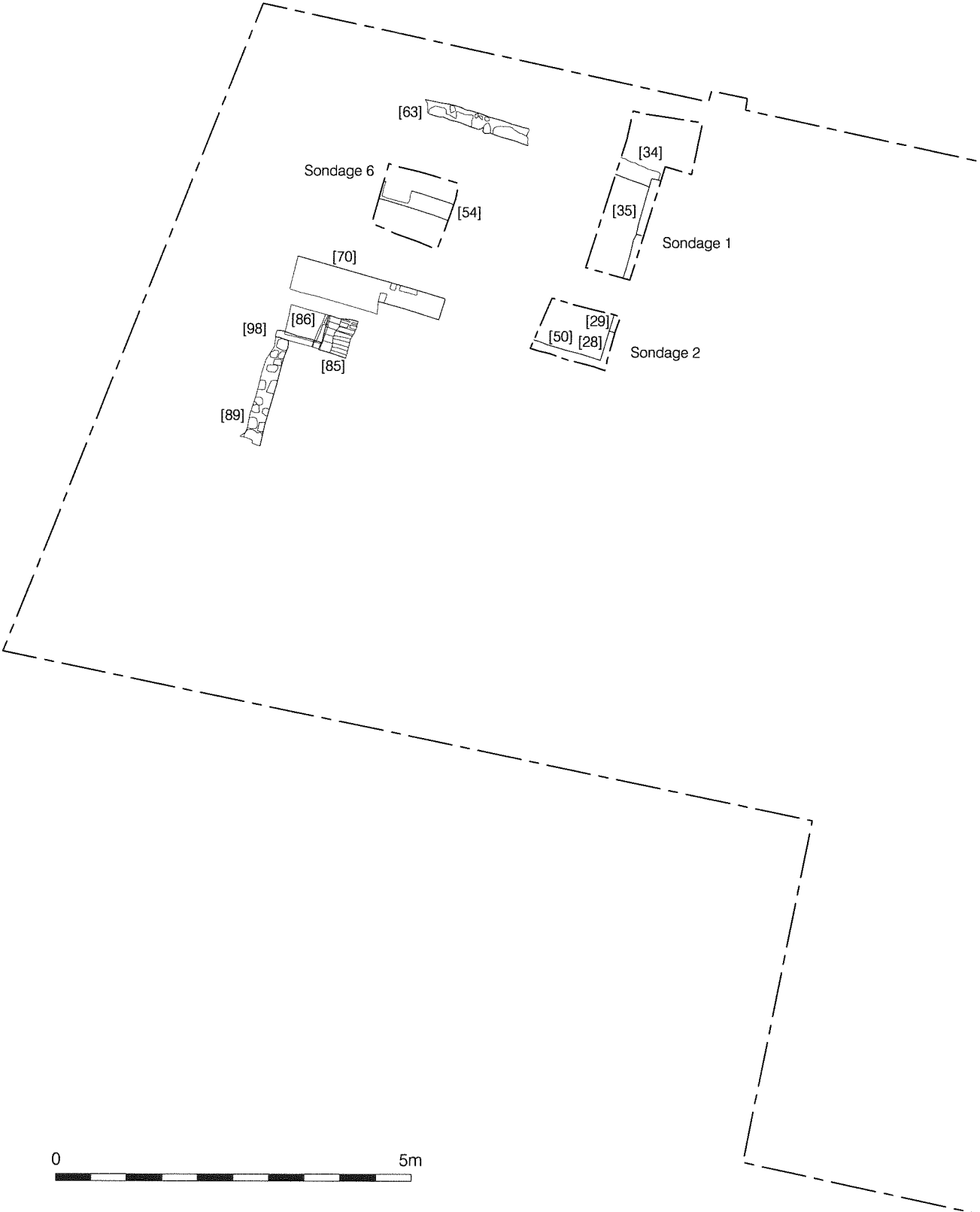
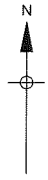
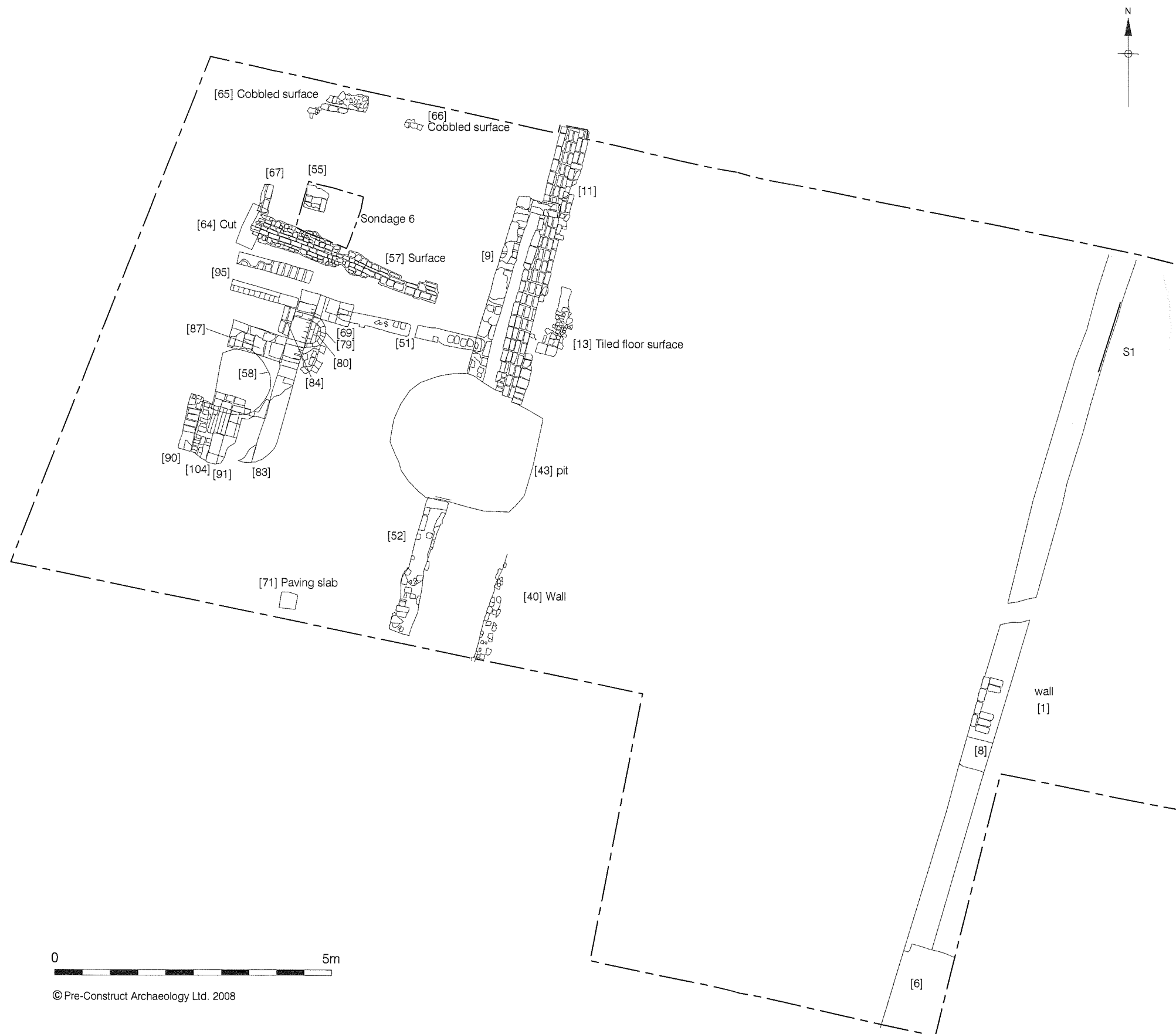
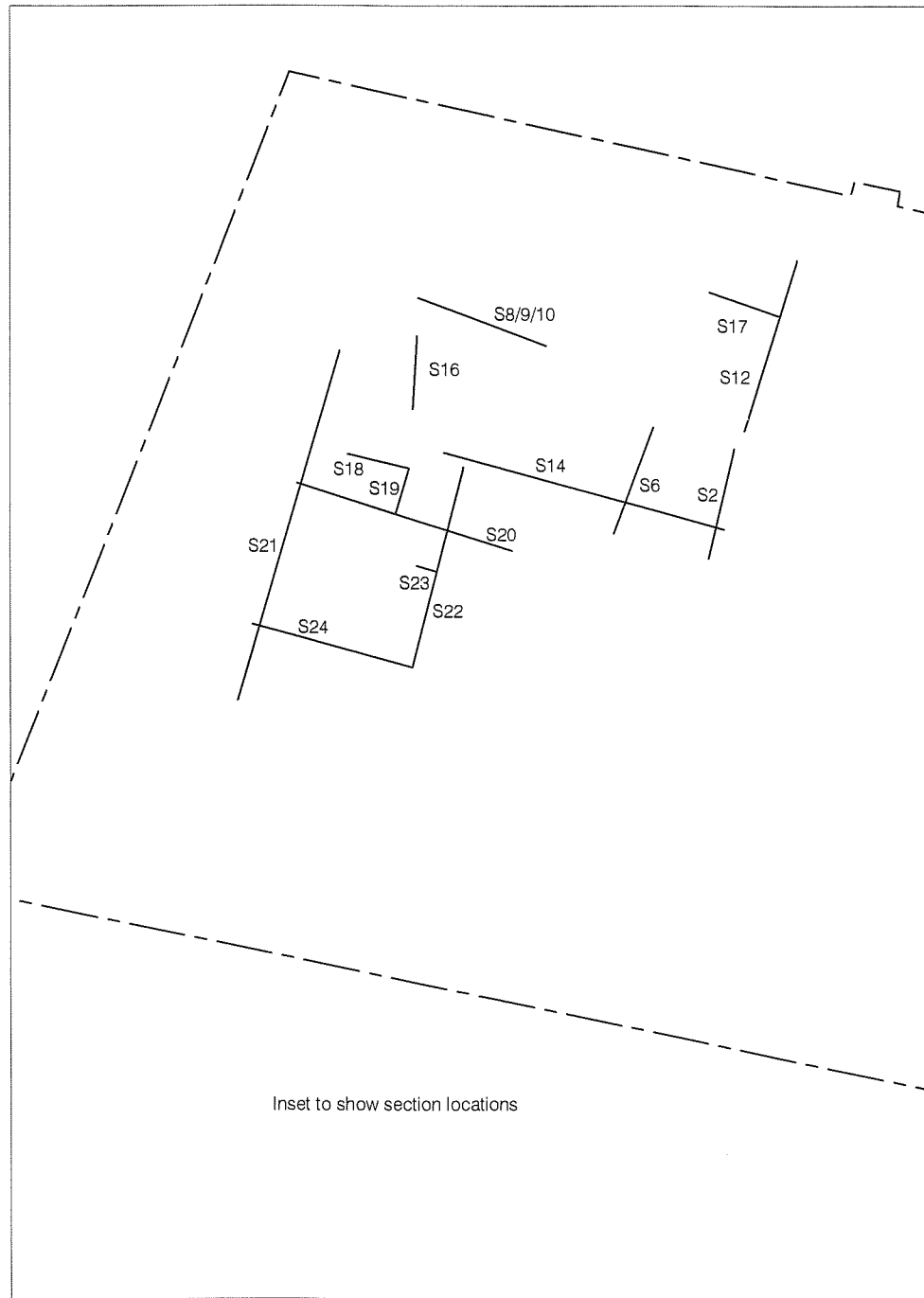


Figure 3  
Area A Phase 2  
1:80 at A4



0 5m

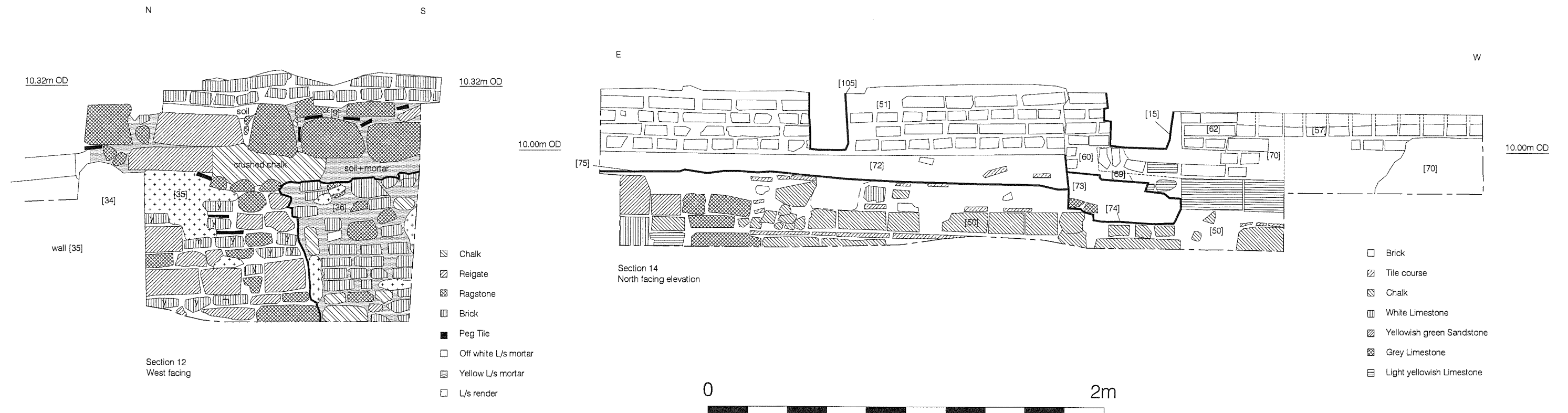
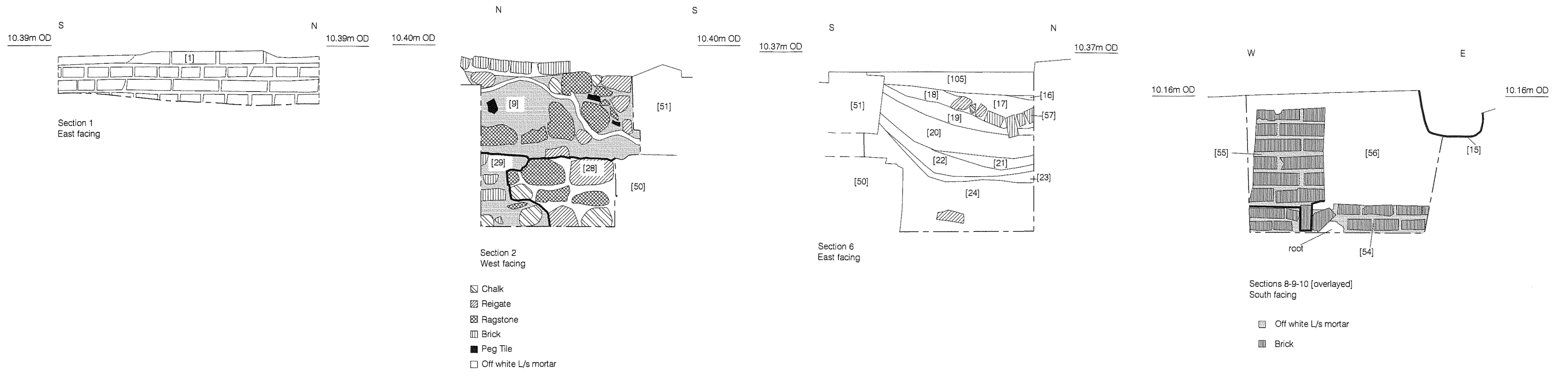
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Figure 4  
Area A later phases  
1:80 at A3



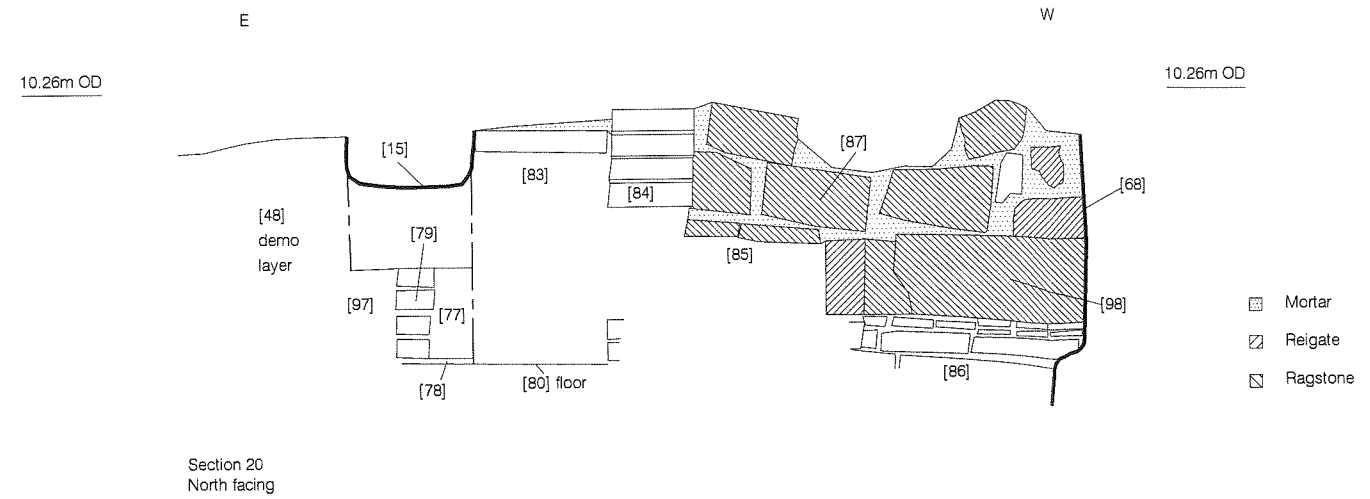
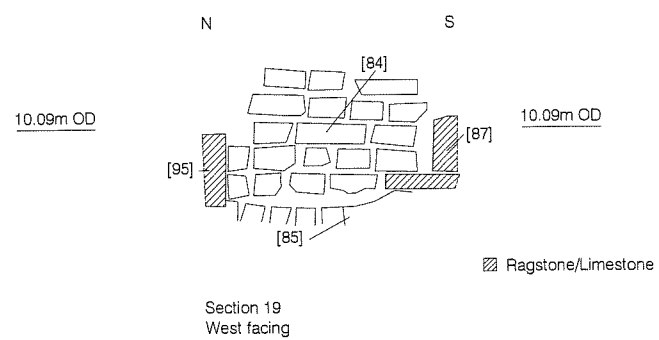
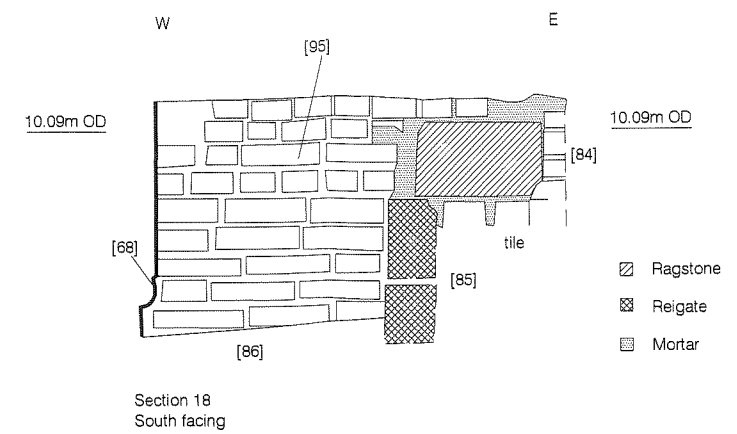
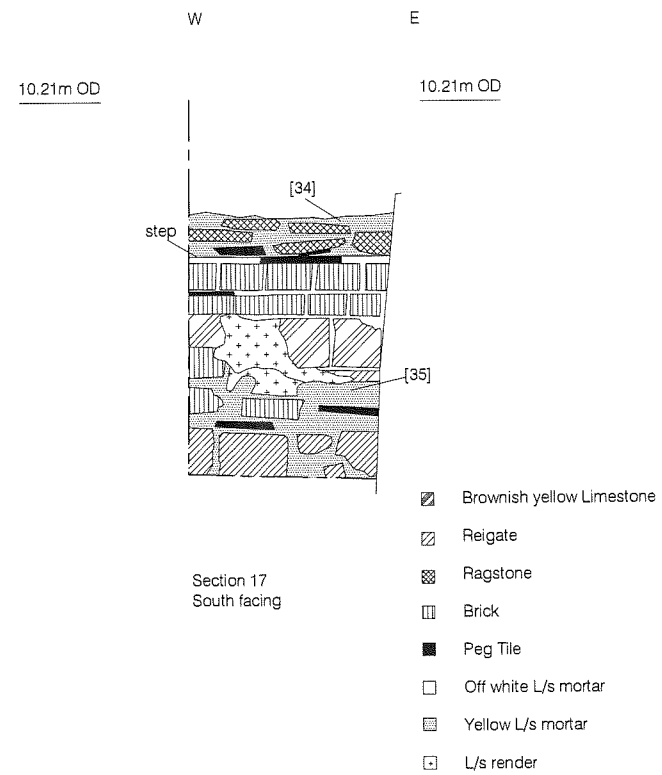
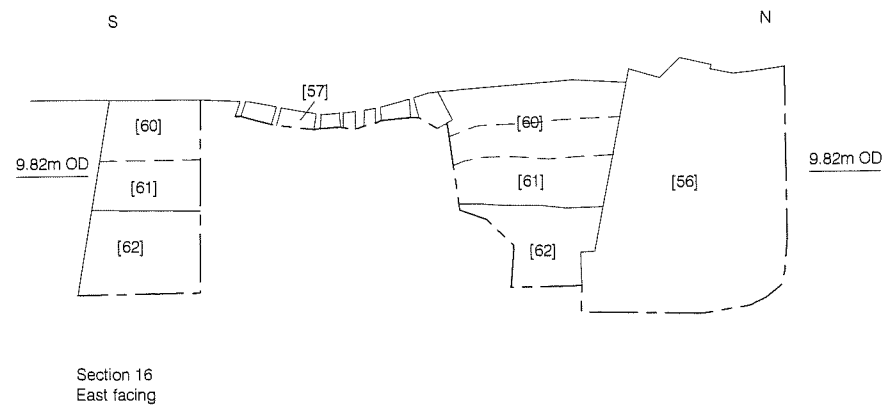
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Figure 5  
Area C  
1:80 at A4



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Figure 6  
Sections 1 to 14  
1:20 at A3



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Figure 7  
Sections 16 to 20  
1:20 at A3

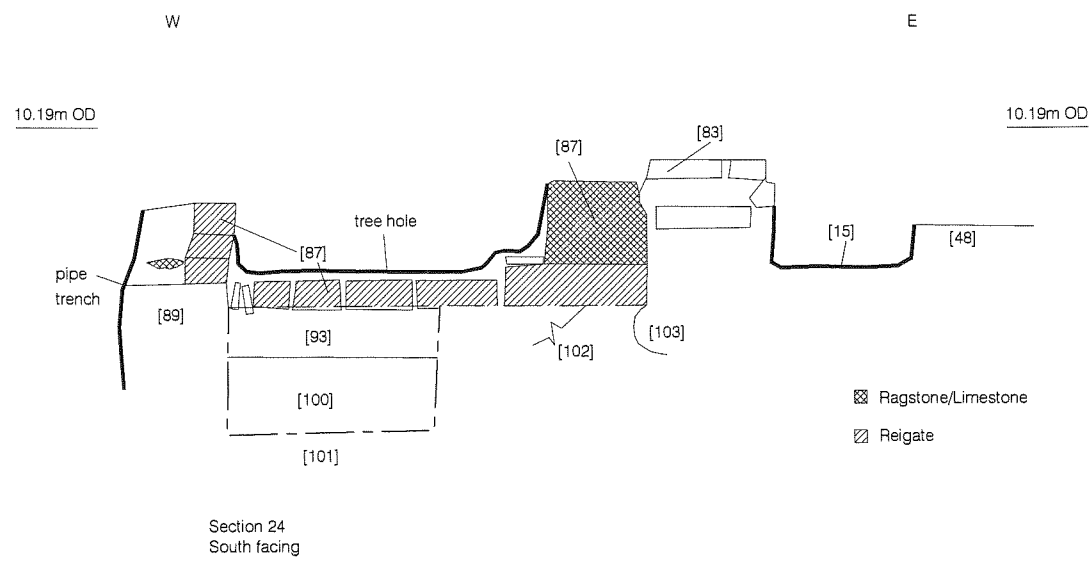
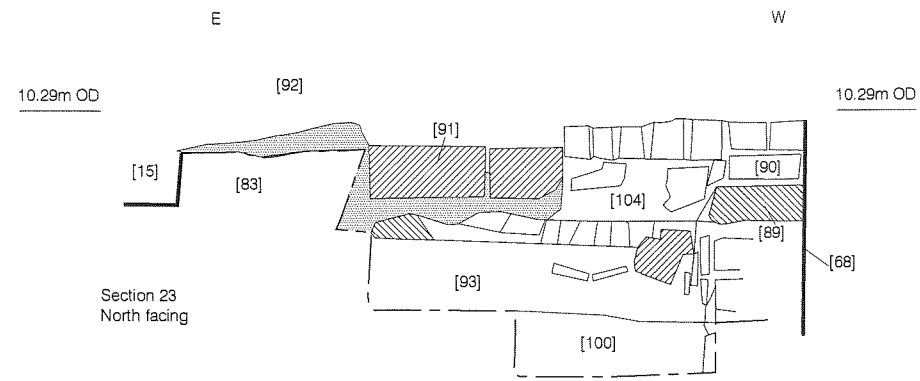
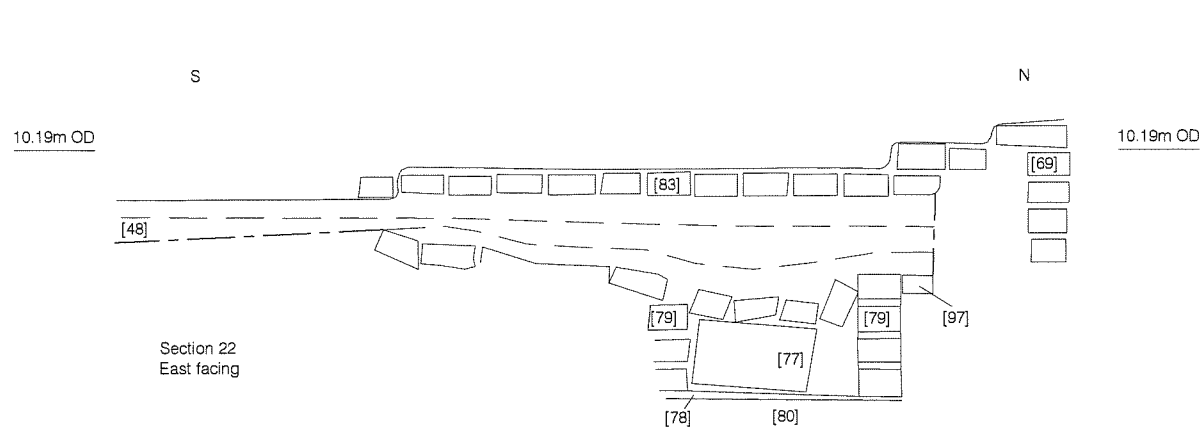
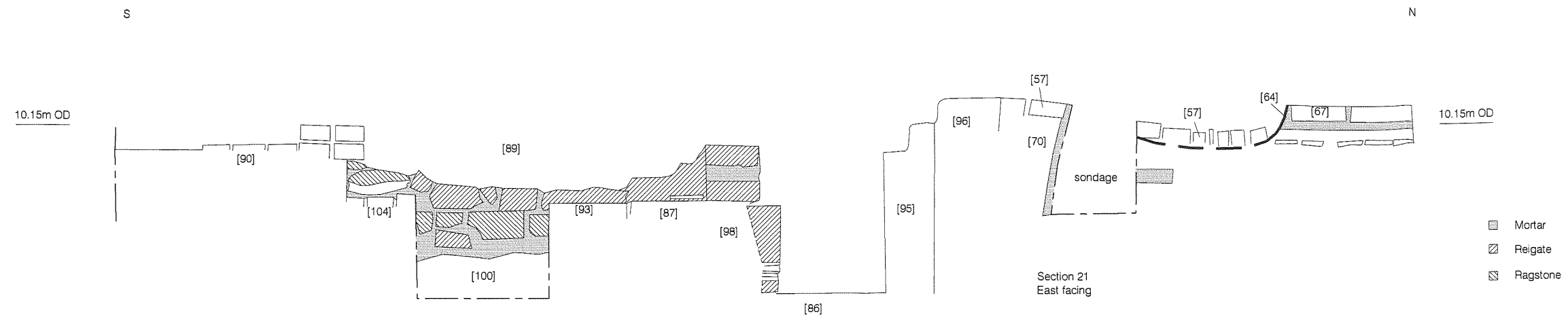


Figure 8  
Sections 21-24  
1:20 at A3



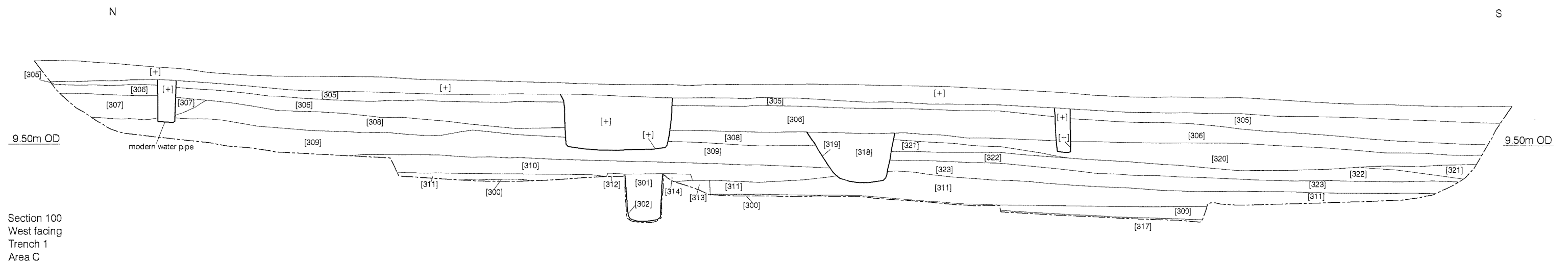


Figure 9  
Section 100  
1:40 at A3

## 7 DISCUSSION AND CONCLUSIONS

### 7.1 Discussion

- 7.1.1 The archaeological investigations at Tower Green revealed important structural remains with at least two main phases of building, whilst the area to the west exhibited a complex sequence of alterations to the structures.
- 7.1.2 The earliest phase of building was a stone built cellar measuring at least 4m east-west by 2.80m north-south by c. 2.12m deep. There is evidence of a brick barrel vaulted top to the cellar, a possible internal dividing wall and a door through to possible others cellars to the east. To the southeast of the cellar were fragments of stone masonry which may have been part of the superstructure of this early phase of building together with associated drains.
- 7.1.3 The doorway within the cellar was blocked during the 17<sup>th</sup> century and at some time later in the same century the cellar itself was backfilled. On top of the backfilled cellar a new brick structure was constructed. The walls of the new building respected the southern and eastern walls of the earlier stone cellar but did not wholly use them as foundations as there was a thick deposit of soil between the new brick build and the old stonework in the southern wall of the cellar. The brick building apparently consisted of a corridor to east with a room to the southwest. Possibly beneath the corridor was a brick lined drain which may have originally laid below a glazed tile floor. To the west a complicated sequence of stone and brick masonry revealed several phases of alteration to the structure. In the area of the earlier cellar there was no evidence of floors or walls to suggest it was internal and indeed the presence of a brick drain might suggest it was an external courtyard.
- 7.1.5 From documentary and cartographic sources it is probable that the masonry represents the remains of the Old Main Guard which is known to have occupied that location until its demolition to make way for a new Main Guard building in the 1680s. This is discussed at length in section 8 below.
- 7.1.6 With the exception of the stone built cellar the main activity on site was dated to the 17<sup>th</sup> century. This included the depositing of a sequence of ground raising dumps in Area C on Tower Green and the discovery of a length of wall to the east of the Main Guard which bounded a garden as depicted on the Ogilby & Morgan Map of 1676.

7.1.7 Later activity consisted of Victorian or later services and a series of tree planting holes for trees.

## 7.2 Conclusions

7.2.1 It had been assumed that the relatively shallow depth of the remedial work to the paving at Tower Green would have little or no impact on buried archaeological deposits. However, archaeological deposits and masonry associated with the Old Main Guard survived at a higher level than anticipated, immediately below the modern bedding deposits of the original setts. Any future work in this area must take this fact into account.

7.2.2 The discovery of the remains of the Old Main Guard have added to our knowledge of this structure and together with Parnell's observations in 1975<sup>10</sup> have contributed to a better understanding of its location, construction and history. However, many unanswered questions still remain regarding the Old Main Guard, and should form the basis of any future research. The limited nature of the archaeological works at the study site only partially exposed the remains of the Old Main Guard and their full extent has yet to be defined. It is presumed that the footprint of the building and associated features extends both north and south into the grassed areas, and further to the west towards the Beauchamp Tower. To the east, between the exposed foundations and the garden wall, it is possible that further foundations survive at a greater depth. The full extent and depth of the cellars was not established by this archaeological investigation. Further work will be required to answer these questions. The remains as exposed have shown that the building had a complex building history with evidence of at least two phases of construction and possibly several more with the western masonry, as exposed, exhibiting a multitude of alterations to the building. Any future work should make it a priority to try and unravel this complex history, which can only really be achieved by exposing the remains over a larger area and at a greater depth.

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<sup>10</sup> Parnell 1979

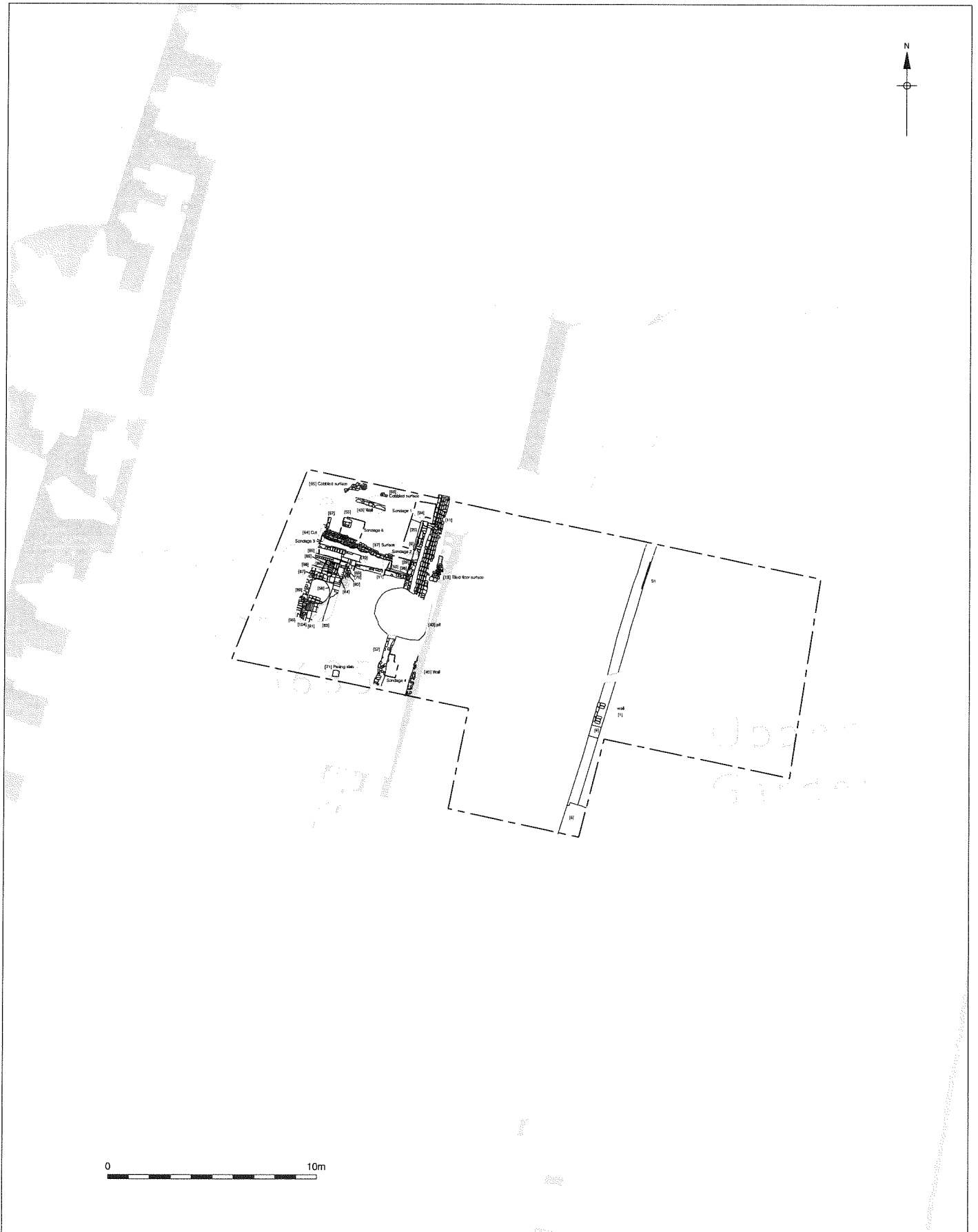


Figure 10  
 Overlay of Area A onto results of previous excavation  
 1:250

## **8 ORIGINAL AND ADDITIONAL RESEARCH OBJECTIVES**

### **8.1 Original Research Objectives**

- 8.1.1 The original research questions were to determine if any archaeological remains were present in the areas of contractors' work.

### **8.2 Revised Research Questions**

- 8.2.1 Following the archaeological investigation the following Research Questions might be posed:

#### **8.2.2 Is there any evidence of structures or features associated with the Old Main Guard building?**

During the archaeological works in Area A the remains of foundation walls were observed. These structures and features are presumed to be the surviving remains of the Old Main Guard building which is known from documentary and cartographic sources to have been situated in the general location. The Old Main Guard was located to the west of Beauchamp Tower and would appear from the maps to have been a series of buildings that occupied this site for over a century from at least c.1562 to 1685.

A building is depicted west of the Beauchamp Tower on the Agas Panorama of c.1562, the Braun & Hogenberg Map of c. 1570, the Haiward & Gascoyne Survey of 1597, Hollar's Survey of 1667 and the Ogilby & Morgan Map of 1676. With the exception of Ogilby & Morgan (a cartographic representation) all are 'birds-eye-views' and are essentially pictorial. Their accuracy is questionable; nevertheless they do provide evidence (and indeed a chronology) of the phases of building of the Old Main Guard.

#### **8.2.3 How does the map evidence relate to the archaeological remains as excavated?**

The earliest known representation of the Old Main Guard is the Agas Panorama of c. 1562, and shows a prominent, 'T' shaped, possibly single storey, building. A similar shaped building is depicted on the Braun & Hogenberg Map of c. 1570. A phase of re-building is evident in the Haiward & Gascoyne 1597 survey, just 20 years later, with a rectangular, possibly two storey, building depicted. By the mid 17<sup>th</sup> century, some 70 years later, a much larger building seems to occupy the site. Hollar's view of the

Tower of London in 1667 shows a 'L' shaped substantial structure, occupying almost one third of the area of Tower Green. The Ogilby & Morgan Map of 1676 also shows a substantial 'L' shaped building, larger than the Chapel of St. Peter to the north, but at variance with the earlier survey as the building extends beyond the northern structure to the east rather than to the east at south.

The earliest phase of building consisted of stone cellar walls constructed from Kentish ragstone and Reigate stone with re-used medieval bricks with possibly associated stone walls to the southwest. Although the cellar walls contained medieval brick it is probable that they were reused; however, there was no building material within the fabric of the wall which would preclude a late medieval or early post-medieval date for this phase of building. It is therefore probable that the cellar and associated stone walls may be the remains of the building shown on the Agas and Braun & Hogenberg maps. The Haiward & Gascoyne, Hollar and Ogilby & Morgan depictions are all different and the former two perhaps cannot be relied upon for accuracy as they are birds-eye views. Even the normal reliable Ogilby & Morgan Map which elsewhere in the City has been shown to be remarkably accurate does not maintain its accuracy in the Tower, perhaps through lack of access for the surveyor. Overlaying the results of the archaeological investigations on the this map is difficult as the various towers and curtain wall do not equate with present Ordnance Survey Maps, however if a best fit is attempted with the garden wall it places the walls in the northern part of the 'L' shaped structure with the eastern wall of the corridor forming the external eastern wall of the building. This might suggest that many of the brick walls relate to this last phase of construction. The complex masonry remains to the west which exhibited signs of constant alteration and rebuilding may be associated with the buildings shown on the Haiward & Gascoyne and Hollar maps.

#### **8.2.4 What is the nature of the wall that was revealed to the east of the area of investigation?**

A 13m length of brick wall was observed in the eastern part of the main area of investigation. In the Hollar and Ogilby & Morgan maps together with the Board of Ordnance Plan of 1681/2 beneath a later patch an area of formal garden is shown. The location of this masonry would suggest that it formed the western wall of the garden. A similar brick wall was observed by Parnell in 1975 to the south and interpreted as forming part of the western wall of the upper garden<sup>11</sup>.

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<sup>11</sup> Parnell 1979, 323

### 8.2.5 Does the work of earlier archaeological investigations correlate with the results obtained by this investigation?

The features observed in this investigation would largely confirm the earlier results obtained during Parnell's investigation in 1975, principally the foundations of the Old Main Guard<sup>12</sup> and the Garden Wall. However there is a problem with the location of several of the structural features found in 1975 as published in the London Archaeologist article in 1979<sup>13</sup>. The location of the vault, as published, would have placed it within the present area of investigation. Additionally the long north-south aligned brick wall was recorded as being largely to the south of Area A. However, during the present investigations the service trench, the excavation of which led to the observations in 1975, was revealed and part of the same wall was uncovered. The northern part of the wall found by Parnell was found to have a small room adjacent to it to the west floored with green-glazed tiles. The northern wall of this room and similar glazed tiles were observed during the present investigation.

It is obvious that the same features were being uncovered but their locations did not accord. A plan was created fitting the previous observations as a best fit with the current results (Fig. 10). This placed the present area of investigation (Area A) much too far to the south. Once the original records were consulted several inconsistencies between the original records and the published plans were discovered. In the original records the service trench is divided into 6 trenches annotated A-F. Trenches A & B to the south contained the boundary walls of the Upper and Lower Gardens, however, Trench C which is depicted in the published plan with a brick floored area at its northern end should have contained two east-west aligned walls at its northern end and a brick drain at its southern end according to the original records. The north-south wall with associated floor should have been placed in the trench to the north where the long wall and glazed tiles was located. This long wall and floor should have been placed further north in the trench where the vault was located. The published location of the vault is at complete variance with the original records which depict the northern trench extending in a spur.

It is therefore evident that although the same features have been observed there is little correlation in locations because of errors in locating the features in the published account. In order to create a complementary plan of the structural remains of the two phases of investigation from 1975 and 2007 it will be necessary to use the 2007

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<sup>12</sup> Parnell. 1979, 320

<sup>13</sup> Parnell 1979

plans, which were surveyed in to the Ordnance Survey and to the standing buildings of the Tower. It will therefore be possible to create a best fit by comparing the location of the service trench as re-exposed in 2007 and those features which were uncovered in both investigations.

#### **8.2.6 Can a general outline of the building at least latterly in its history known as the Old Main Guard be attempted?**

Although much work needs to be done adjusting the locations of the 1975 observations before definitive interpretations can be made some general comments can be attempted. The earliest phase of building on the site consisted of a stone cellar which lay outside the later brick building. Remnants of stone walls to the southeast demonstrate that buildings continued to the south. However, this area witnessed a complex history of rebuilding and alterations. Apparently the last phase of building was revealed with the brick walls that formed a corridor to the east with a return to the west. It is probable that the east-west brick wall which was constructed on top of the south wall of the earlier stone cellar formed the northern external wall of the Old Main Guard. That the area to the north of this wall was an outside yard area is suggested by the presence of a brick lined drain and patches of cobbled surface found in both 1975 and 2007. The northern part of the building had a small porch floored with green-glazed tiles, beneath which was another brick lined drain which probably fed the brick-lined vault to the north observed in 1975. It is probable that the long north-south aligned wall observed by Parnell formed the eastern wall of the Old Main Guard as no evidence of structural remains was found beyond it to the east at a similar level during the watching brief. It is probable that the brick floor and walls found in the service trench to the south also are part of internal walls and surfaces of the Old Main Guard, whilst two parallel walls, that were recorded further to the south but not published, may form the southern wall of the building and an internal corridor similar to that along the eastern wall. Indeed a rough distance between the possible northern wall as found in Area A and the possible southern wall would suggest a building some 25m long north-south which would equate well with the size of the Old Main Guard as shown on the Ogilby & Morgan plan of 1676.

While the Old Main Guard obviously served as a guard house, it is unknown as to why it required numerous phases of re-building; it was presumable never quite adequate for its function. A clue may be provided by the 19<sup>th</sup> century version of the Main Guard which required a building that could provide a guard room, an orderly



room, offices and stores, a recreation area, a mess and lecture rooms<sup>13</sup> It may be suggested that over time the Old Main Guard had to serve broadly similar roles. It can be surmised that the various phases of rebuilding were in response to the changing needs of what was a practical building and to some extent represents the working life of the Tower of London.

#### **8.2.7 What interpretation can be placed on the widespread dumped deposits revealed in Areas B and C?**

In Area C numerous post-medieval dump layers were observed. Area B confirmed the extensive nature of dump layers which are presumed to cover much of the area of Tower Green. A report on building work in the Tower referred to a 'new Guard on the hill' and it is probable that there was still a steep slope up from the south. The dumping of material to level the ground was probably carried out in more than one phase but the 17<sup>th</sup> century date of much of the material would suggest that it was either associated with one of the rebuildings of the Old Main Guard, perhaps the latest or is part of the process of forming a new parade ground in the area after the building was demolished in the 1680s.

#### **8.2.6 Is there any evidence of later structures or features?**

The remains of cobble setts, observed at the northern limit of Area A, while only fragmentary, may represent the cobbled surface that extended over the entire area of Tower Green in the mid to late 19th century<sup>14</sup>. Other fragmentary surfaces were observed including a flagstone to the south. A number of circular cuts were observed in Area A which were interpreted as possible tree planting holes. The Ordnance Survey Map of 1873 shows Tower Green as being covered with trees and it is probable that these holes relate to their removal.

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<sup>13</sup> Parnell. 1993, 108

<sup>14</sup> Parnell 1993, 3

## 9 CONTENTS OF THE ARCHIVE

### 9.1 PAPER RECORDS

Contexts	130 (Nos 1-105, 200, 300-323)
Sample sheets	2
Plans	64 (89 sheets)
Sections/Elevations	26 (35 sheets)
Photographs:	
Black and white prints (35mm)	0 frames
Colour slide (35mm)	37 frames
Digital	64 frames

### 9.2 THE FINDS

Post-Roman pottery	4 boxes
Glass	2 boxes
CBM	6 boxes
Animal bone	4 boxes
Clay tobacco pipe	1 box
Stone	1 box
Metal slag	1 box
Small finds	18 objects

## 10 IMPORTANCE OF THE RESULTS & PUBLICATION OUTLINE

- 10.1 The recent investigations have demonstrated that significant archaeological remains survive at a relatively shallow depth in Tower Green. Most of the remains are associated with the building latterly known as the Old Main Guard. The findings complement the results of the 1975 investigation and add more to the ground plan of the structure. The recent work has also revealed that there were several phases of building in the area with the earliest largely stone built and dating from the late medieval or early post-medieval. Further evidence of the boundary wall of the Upper Garden was also observed.
- 10.2 It is proposed that the results of the investigation be published in a suitable local archaeological journal such as the Transactions of the London & Middlesex Archaeological Society (LAMAS) or London Archaeologist.
- 10.3 The publication will consist of the following:
- Background to the archaeological investigation including the methodology.
  - Historical and archaeological background.
  - Description of the main archaeological sequence.
  - Integration of the results of the 1975 watching brief. The original records will be studied and incorporated into the present findings.
  - Discussion of the buildings focusing on the Old Main Guard and the Upper Garden.
  - Specialist reports will include reports on the pottery, clay tobacco pipe, the building material, the small finds, the metal slag and animal bone, some of which may be integrated into the main text.
  - Illustrations will include site location, trench location, phase drawings, a plan with previous archaeological findings combined with the present results, historic maps, finds illustrations.

## 11 ACKNOWLEDGEMENTS

- 11.1 Pre-Construct Archaeology Limited would like to thank Historic Royal Palaces, in particular Ms. Jane Spooner, Curator of the Tower of London, for commissioning the work. The help and advice of Graham Keevill, archaeological consultant for the Tower of London, is gratefully acknowledged. We would also like to thank the contractors of Paye Stonework & Restoration Ltd for their help and patience.
- 11.2 The author would like to thank Stuart Holden who supervised the initial part of the watching brief. Thanks also to the excavation team of Berni Sudds, Will Johnson, Ian Banks, Gosia Trelka and Rik Archer. Gratitude is expressed to Dave Harris, Angelo Indelicato and Josephine Brown who produced the AutoCAD drawings, Jon Butler and Chris Mayo who undertook the project management, the former who also managed the post-excavation and edited the present report, Lisa Lonsdale for logistical support, Jem Rogers for the surveying and the following specialists, Chris Jarrett (clay tobacco pipe), Berni Sudds (post-Roman pottery), Kevin Hayward and Berni Sudds (building materials), Kevin Rielly (animal bone), Märit Gaimster (small finds), John Shepherd (glass) and Lynne Keys (metal slag).

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### **Sources used.**

British Geological Survey. 1:50,000 Series, England and Wales Sheet 256. North London  
Solid and Drift Geology. Map.

Agas Map c.1562

Braun & Hogenberg Map 1572

Haiward & Gascoyne Survey 1597

Hollar's Survey 1667

Ogilby & Morgan Map 1676

## APPENDIX 1

### CONTEXT DESCRIPTIONS

Context No.	Plan	Section / Elevation	Type	Description	Date	Phase
1	MC 1	S.1	Masonry	Foundation of garden wall	17th century	3
2	MC1	N/A	Layer	Demolition layer	17th century	4
3	MC1	N/A	Layer	Made ground E of wall [1]	17th century	4
4	MC1	N/A	Layer	Made ground W of wall [1]	17th century	4
5	MC1	N/A	Fill	Fill of modern manhole [6]	20th century	5
6	MC1	N/A	Cut	Modern manhole	20th century	5
7	MC1	N/A	Fill	Fill of cut [8]	20th century	5
8	MC1	N/A	Cut	Truncation through [1]	20th century	5
9	9	S.2, 12	Masonry	Brick capping wall	17th century	3
10	N/A	N/A	Fill	Backfill of drain [11]	17th century	4
11	11	N/A	Masonry	Drain gully	17th century	4
12	N/A	N/A	Layer	Backfill of cellar	17th century	3
13	13	N/A	Masonry	Tiled floor surface	17th century	4
14	N/A	N/A	Fill	Fill of modern lead water pipe construction cut	19th/20th century	5
15	15	N/A	Cut	Modern water pipe trench	19th/20th century	5
16	N/A	S.4, 6	Layer	Mortar spread / dump	17th century	4
17	N/A	S.4, 6	Layer	Dump/backfill	17th century	4
18	N/A	S.4, 6	Layer	Dump/backfill	17th century	4
19	N/A	S.4, 6	Layer	Mortar layer / dump deposit	17th century	3
20	N/A	S.4, 6	Layer	Dump/backfill	17th century	3
21	N/A	S.4, 6	Layer	Dump/backfill	17th century	3
22	N/A	S.4, 6	Layer	Dump/backfill	17th century	3
23	N/A	S.4, 6	Layer	Dump/backfill	17th century	3
24	N/A	S.4, 6	Layer	Dump/backfill	17th century	3
25	Sond 1	N/A	Layer	Made ground	17th century	3
26	N/A	S.4, 6	Layer	Dump/backfill. Same as [17]	17th century	4
27	N/A	N/A	Layer	Made ground	17th century	3
28	Sond 2	S.2.	Masonry	Cellar wall	16th century	1
29	Sond 2	S.2.	Masonry	Brick blocking wall	17th century	2

30	31	N/A	Fill	Fill of tree bole	19th century	4
31	31	N/A	Cut	Tree planting hole	19th century	4
32	32/ MC 2	S.4.	Layer	Bedding layer		3
33	33/ Sond 1	N/A	Layer	Crushed Greensand bedding layer		3
34	N/A	S.17	Masonry	Capping wall of cellar = [63]	16th century	1
35	N/A	S. 12	Masonry	Stone wall of cellar	16th century	1
36	Sond 1	S. 12	Masonry	Brick blocking wall	17th century	2
37	37	N/A	Layer	Demolition layer	17th century	4
38	38		Masonry	Stub wall	17th century	3
39	39	N/A	Layer	Dump layer	17th century	4
40	40	N/A	Masonry	Wall truncated by modern services	17th century	3
41	N/A	N/A	Cut	Cut for Wall [40]	17th century	3
42	N/A	N/A	Fill	Fill of modern cut [43]	19th/20th century	5
43	43	N/A	Cut	Tree planting hole	19th/20th century	5
44	N/A	N/A	Fill	Fill of [45]	20th century	5
45	45	N/A	Cut	Modern service trench	20th century	5
46	46	N/A	Layer	Levelling layer	17th century	4
47	<b>VOID</b>					
48	48	N/A	Layer	Demolition layer	17th century	4
49	SON 6	N/A	Layer	Layer of crushed Reigate stone	17th century	3
50	N/A	S. 14	Masonry	E-W (Southern) Return of cellar wall	16th century	1
51	51	S. 14	Masonry	Brick capping wall. E-W return of [9]	17th century	3
52	52	S.5	Masonry	Brick wall = [9]	17th century	3
53	N/A	S.7	Layer	Fill of sondage 6	17th century	4
54	54	S.8	Masonry	Cellar partition wall	16th century	1
55	55	S.9, 11	Masonry	Brick built pier	17th century	4
56	N/A	S.10	Layer	Fill of sondage 6	17th century	4
57	57	S.14, 15, 16	Masonry	Gutter/surface run-off	17th century	4
58	58	N/A	Cut	Tree planting hole	19th century	4



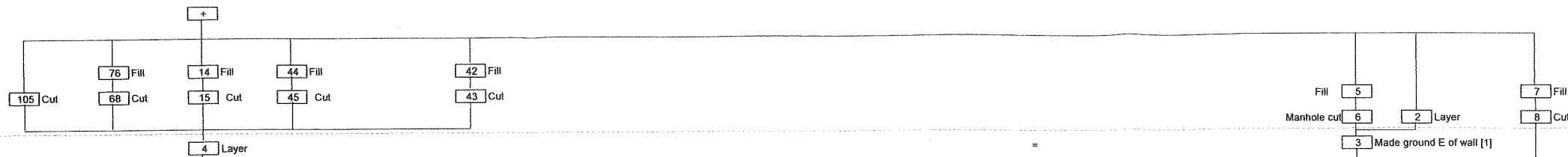
59	N/A	N/A	Fill	Fill of [58]	19th century	4
60	N/A	S.7, 13	Layer	Made ground	17th century	4
61	N/A	S.7, 13	Layer	Made ground	17th century	4
62	N/A	S.7, 13	Layer	Demolition layer, of cellar?	17th century	4
63	63	N/A	Masonry	Wall; continuation of [34]	16th century	2
64	64	N/A	Cut	Construction cut for [57]	17th century	4
65	65	N/A	Masonry	Cobbled surface, same as [66]	19th century	4
66	65	N/A	Masonry	Cobbled surface, same as [65]	19th century	4
67	67	N/A	Masonry	Stub Wall	17th century	4
68	68	N/A	Cut	Construction cut for modern services	20th century	5
69	69	S.14	Masonry	Brick wall abutting [51]	17th century	3
70	70	S.14	Masonry	Lowest course barrel vault	16th/17th century	3
71	71	N/A	Masonry	Single paving slab	unknown	4
72	N/A	S.14	Fill	Fill of [75]	17th century	3
73	N/A	S.14	Fill	Fill of [74]	17th century	3
74	N/A	S.14	Cut	Construction cut of [69]	17th century	3
75	N/A	S.14	Cut	Construction cut of [51]	17th century	3
76	68	N/A	Fill	Fill of [68]	20th century	5
77	N/A	S.20, 22	Fill	Fill of [79]	17th century	3
78	N/A	S.20, 22	Layer	Metal working residue	17th century	3
79	79	S.20, 22	Masonry	Brick lining; drain?	17th century	3
80	80	S.20, 22	Masonry	Brick floor to [79]	17th century	3
81	<b>VOID</b>					
82	<b>VOID</b>					
83	83	S.20, 22, 24	Masonry	Brick wall	17th century	3
84	84	S.18, 19, 20	Masonry	Brick blocking wall	17th century	3
85	85	S. 18, 19, 20	Masonry	Drain/gully	16th century	1
86	86	S. 18, 20, 21	Masonry	Drain floor of [85]	16th century	1
87	87	S.20, 21, 24	Masonry	Stone blocking wall =[88] & [94]	17th century	3
88	87	S.20, 21, 24	Masonry	Same as [87]	17th century	3
89	89	S.21	Masonry	Stone and brick wall	16th century	1
90	90	S.23	Masonry	Brick capping of [89]	17th century	3

91	91	S.23	Masonry	Stone floor surface	17th century	3
92	91	S.23	Layer	Demolition/levelling layer	17th century	3
93	N/A	S.21, 23	Layer	Brickearth floor? Levelling layer?	17th century	3
94	87	S.20, 21, 24	Masonry	Same as [87]& [88]	17th century	3
95	95	S.18, 19, 21	Masonry	Brick capping wall to [85]	17th century	3
96	96	N/A	Masonry	Rubble in-fill between [57]&[95]	17th century	4
97	97	S.22	Masonry	Mortar surface associated with [79]?	17th century	3
98	98	S.20, 21, 24	Masonry	Stone wall/drain lining of [85], [86] [95]	16th century	1
99	N/A	N/A	Masonry	Brick masonry pier? Same as [104]	17th century	3
100	N/A	S.21, 23	Layer	Dump layer	17th century	3
101	N/A	S.24	Layer	Demolition layer	17th century	3
102	N/A	S.24	Layer	Burnt deposit, associated with [83]	17th century	3
103	N/A	S.24	Layer	Sandy layer, associated with [83]	17th century	3
104	N/A	S.21, 23	Masonry	Brick masonry pier? Same as [99]	17th century	3
105	105	N/A	Cut	Cut of modern service pipe	20th century	5
<b>AREA B</b>						
200	TR1 B	S.50	Layer	Made ground. Same as [4]	17th century	4
<b>AREA C</b>						
300	TR1 C	S.100	Layer	Ground surface. Associated with [317]	16th century	1
301	TR1 C	S.100	Fill	Fill of [302]	17th century	4
302	TR1 C	S.100	Cut	Cut of possible posthole	17th century	4
303	TR1 C	N/A	Fill	Fill of [304]	17th century	4
304	TR1 C	N/A	Cut	Cut of possible posthole	17th century	4
305	N/A	S.100	Layer	Levelling layer	17th century	4
306	N/A	S.100	Layer	Demolition layer	17th century	4
307	N/A	S.100	Layer	Demolition layer	17th century	4
308	N/A	S.100	Layer	Dump layer. Same as [320]	17th century	3
309	N/A	S.100	Layer	Dump layer	17th century	3

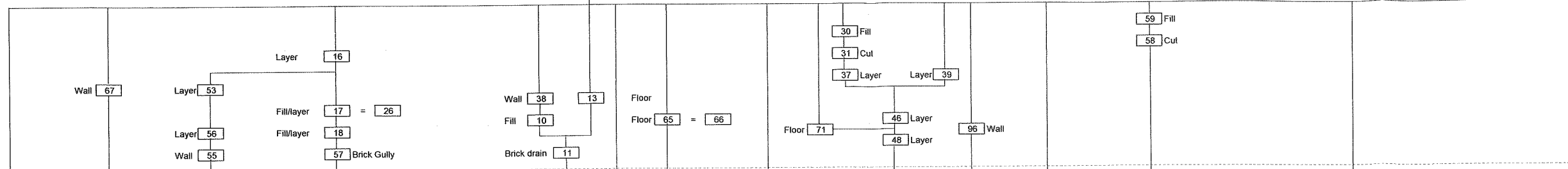
310	N/A	S.100	Layer	Demo layer	17th century	3
311	311	S.100	Layer	Industrial dump layer	17th century	3
312	N/A	S.100	Layer	Mortar surface. Same as [314]	17th century	3
313	TR1 C	S.100	Masonry	Dumped Reigate stone	17th century	3
314	TR1 C	S.100	Layer	Mortar surface, same as [312]	17th century	3
315	TR 1 C	N/A	Fill	Fill of [316]	17th century	4
316	TR 1 C	N/A	Cut	Cut of small rectangular pit	17th century	4
317	TR 1 C	S.100	Layer	Ground surface layer, associated [300]	16th century	1
318	N/A	S.100	Fill	Fill of [319]	unknown	4
319	N/A	S.100	Cut	Cut of boundary bedding trench	unknown	4
320	N/A	S.100	Layer	Dump layer same as [308]	17th century	4
321	N/A	S.100	Layer	Industrial waste layer	unknown	4
322	N/A	S.100	Layer	Dump shell layer	unknown	4
323	N/A	S.100	Layer	Demolition layer same as [310]	17th century	4

TOL 103 Area A Tower of London

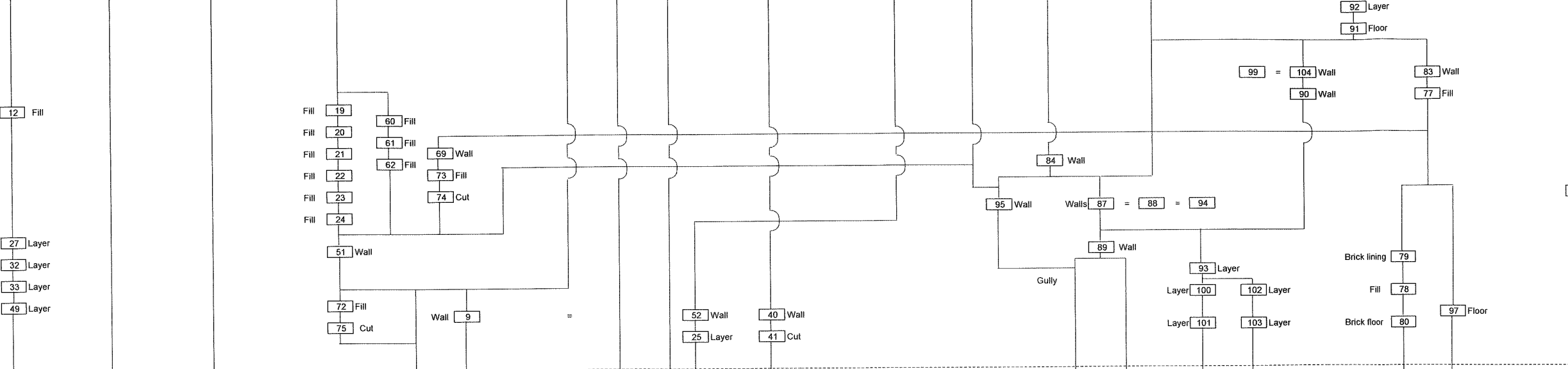
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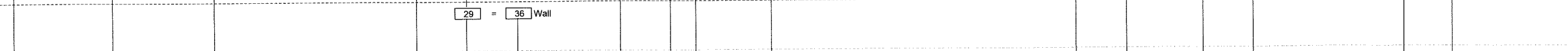
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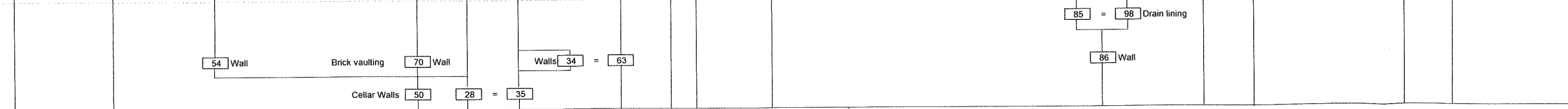
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PHASE 2

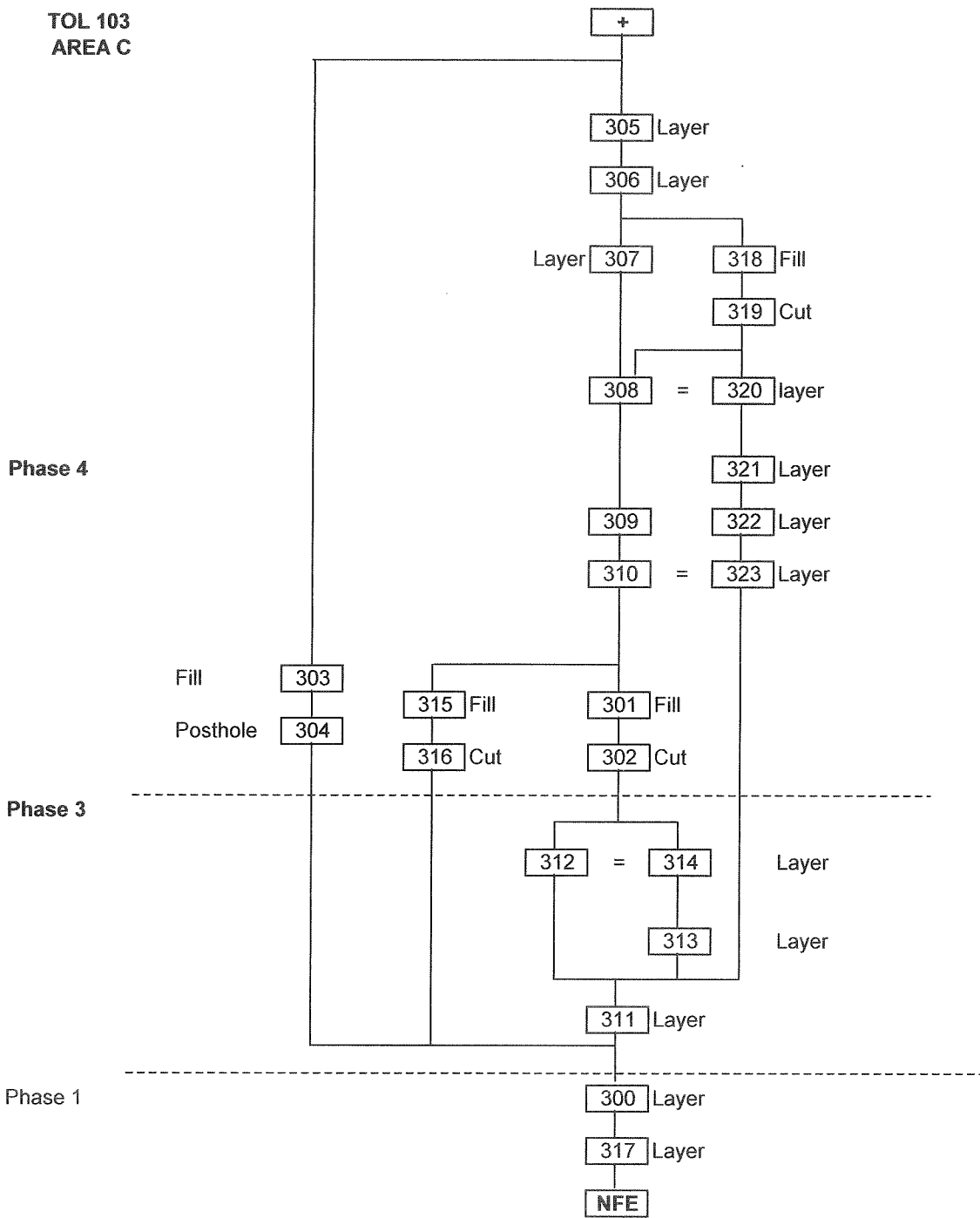


PHASE 1



NFE

TOL 103  
AREA C



## **APPENDIX 3**

### **THE POST-ROMAN POTTERY**

By Berni Sudds

#### **Quantity**

Total number of boxes: 6 boxes.

Total sherd count: 415 sherds (254 vessels).

Total number of contexts producing pottery: 22 contexts.

#### **Methodology**

The Museum of London Specialist Service's (MOLSS) pottery type codes have been used to classify the ceramics. The material was quantified for each context by fabric, vessel form and decoration using sherd count (with fresh breaks discounted) and estimated vessel numbers. Examples of the fabrics can be found in the archives of PCA and/or the Museum of London. A ceramic database cataloguing these attributes has been generated using Microsoft Access.

#### **Introduction**

The assemblage of pottery excavated from Tower Green is almost exclusively dated to the late 16<sup>th</sup> to mid 17<sup>th</sup> century. The remainder of the group is comprised of a small quantity of medieval pottery and a single 19<sup>th</sup> century sherd. With the exception of the fragmentary residual medieval material the assemblage consists of large sherds in good condition. The two largest groups, accounting for half of the assemblage, were derived from the backfill of a cellar and made-ground. The latter groups, in particular, demonstrate a number of complete profiles.

### **THE POTTERY**

#### **Medieval**

The small assemblage of residual medieval pottery, amounting to 13 sherds, can be well paralleled both in the immediate vicinity of the Tower and more broadly across London (Blackmore 1996; Brown and Thomson 2004). The group includes both local and regional products from London, Essex and the Surrey/ Hampshire border. The earliest is a local sherd of Coarse London-type ware dating from c.1080 to 1200. The regional pottery includes a Mill Green-type ware jug sherd from Essex and a group of Surrey whitewares comprising

Kingston-type slipware and Coarse-border ware, all dated a little later, from 1250 or 1270. The whiteware forms include a Coarse-border ware jug and bunghole jug. The final and latest dated sherd is another local product, Late London-type ware, and is dated from c.1400 to 1500.

### Post-medieval

The post-medieval assemblage is quantified by source in Table 1 below. The ratio of local and regional products is fairly typical for the early post-medieval period in London. Local products, namely redware and some tin-glazed ware, occur in roughly equal proportion to regional Surrey / Hampshire border wares with both groups together comprising the bulk of the assemblage. More notable is the relatively high proportion of imported pottery, accounting for 18% of the group. The sources of origin for this material are not unusual, but although the assemblage is not large enough to be statistically reliable, the relative quantity is of some interest.

	Source	SC	MNV	Totals
Local	Local	138	80	138 (80)
Regional	Essex	24	15	189 (110)
	Midlands	26	3	
	Surrey/ Hampshire border	138	91	
	Great Britain	1	1	
Imported	France	13	2	71 (50)
	Germany	40	33	
	Italy	3	3	
	Low Countries	9	9	
	Spain	1	1	
	Un sourced	5	2	
Un sourced	Miscellaneous	4	3	4 (3)

Table 1: Breakdown of the post-medieval assemblage by source.

### Local pottery

The local post-medieval pottery excavated at the Tower is listed in Table 2, primarily comprised of redwares with a smaller quantity of tin-glaze accounting for the remainder of the assemblage. The early and developed London area post-medieval redware forms are restricted largely to food preparation and storage, namely cauldrons, pipkins, jars and deep bowls. A smaller number of dishes were also recovered, one decorated with an incised wavy

line to the rim. With the slipped redware the range of functions is more mixed with a variety of bowl and dish forms, a high proportion of jugs and only a handful of cauldrons or pipkins. As more decorative, it is quite common to find a greater proportion of serving forms in this fabric. The rim of a fuming pot was also identified in slipped redware (with green glaze).

As expected the tin-glaze assemblage also includes a high-proportion of decorative serving or display vessels in the form of bowls and dishes. The decoration is largely geometric given the date although Chinese influenced and fruit based designs are also evident. The only other tin-glazed form type identified, and present in nearly equal number in the assemblage, are pharmacy vessels. These include plain glazed ointment pots and storage jars or albarellos with painted geometric or cable designs. The limited and specialised range of forms is a reflection of both the early date and suitability of the fabric.

Source	Fabric code	Common name	SC	MNV
Local	PMR	London area post-medieval redware	45	16
	PMRE	London area early post-medieval redware	12	6
	PMSL	London area post-medieval slip-decorated redware	2	1
	PMSR	London area post-medieval slipped redware	1	1
	PMSRG	London area post-medieval slipped redware with green glaze	13	10
	PMSRY	London area post-medieval slipped redware with clear glaze	33	25
	TGW	English tin-glazed ware	11	10
	TGW A	English tin-glazed ware with Orton type A decoration (Wan li)	5	2
	TGW C	English tin-glazed ware with Orton type C decoration (plain white glaze)	6	3
	TGW D	English tin-glazed ware with Orton type D decoration (polychrome/ geomtr)	10	6

Table 2: Local post-medieval pottery

### Regional pottery

The regional pottery assemblage is dominated by Surrey/ Hampshire border products with smaller quantities of material from Essex and the Midlands. The single sherd of English stoneware with Bristol glaze could have been produced at a number of centres across Britain but is out of place in the stratified sequence and considered to represent contamination.

The Surrey/ Hampshire border products are predominantly whitewares with either yellow, or slightly less frequently, green glaze (BORDY/G). Bowl and dish forms occur most commonly, although tripod pipkins, skillets, porringers, chamber pots and a single drinking jug were also



recovered. The dishes have broad flat rims, usually thickened above and below, and gently rounded bodies. The base sherd of one dish is incised with a random curvilinear design. The bowls have rounded or flared profiles and three are handled. Two of the latter also demonstrate incised semi-circular designs to their everted rims. The tripod pipkins generally have internally lid-seated rims, although two with external lid-seating, dating from the mid 17<sup>th</sup> century, were also identified. The few porringers recovered were carinated and the single skillet flared.

A few sherds of residual Early border whiteware (EBORD) and an equally small number of Border redware vessels, including a tripod pipkin, account for the remaining products from the Surrey area.

Source	Fabric code	Common name	SC	MNV
Essex	METS	Metropolitan slipware	1	1
	PMFR	Post-medieval fine redware	19	10
	PMFRB	Post-medieval fine redware with brown glaze	4	4
Midlands	MPUR	Midlands purple ware	26	3
Surrey / Hampshire	BORD	Surrey/ Hampshire border whiteware	4	4
	BORDB	Surrey/ Hampshire border whiteware with brown glaze	1	1
	BORDG	Surrey/ Hampshire border whiteware with green glaze	38	25
	BORDO	Surrey/ Hampshire border whiteware with olive glaze	4	3
	BORDY	Surrey/ Hampshire border whiteware with clear (appearing yellow) glaze	78	51
	BORD BICR	Surrey/ Hampshire border whiteware with bichrome decoration	2	2
	EBORD	Early Surrey/ Hampshire border whiteware	3	2
	RBOR	Surrey/ Hampshire border redware	8	3
Great Britain	ENGS BRST	English stoneware with Bristol glaze	1	1

Table 3: Regional post-medieval pottery

The pottery from Essex includes a Metropolitan slipware rounded bowl and a small quantity of Post-medieval fine redwares. The latter group produced a few diagnostic sherds including those from a jug, porringer and rounded skillet. A small number of brown glazed, thin-walled Post-medieval fine redwares were found scattered between more than one context. These probably derive from the same mug or drinking vessel. Finally, the Midlands purple ware is represented by two unspecified jar forms and a possible butterpot.

#### Imported pottery

The majority of the imported assemblage originates from Germany and of that group, as can be well-paralleled on other sites across London during the late 16<sup>th</sup> and 17<sup>th</sup> century, the greatest quantity derives from Frechen. Indeed, none of the other fabrics identified represent unusual finds but the relative proportion of imports to local and regional products, and the diversity within the group is of interest. Excavations on a number of sites in the Tower Hill area and in the Tower Moat have similarly produced a relatively broad range of imported pottery (Blackmore 1996; Brown and Thomson 2004). At Tower Hill this was suggested to be the result of mercantile activity, due to proximity to the waterfront and more specifically the landing points for foreign ships at Custom House, Wool Key and Galley Key (Blackmore 1996). In the same way the location, but also the status of the Tower, would have meant it was well placed to receive a steady supply of imports.

Source	Fabric code	Common name	SC	MNV
France	MART3	Martincamp-type ware type III flask (red earthenware)	12	1
	NORS?	Normandy stoneware	1	1
Germany	FREC	Frechen stoneware	24	20
	FREC INSCR	Frechen stoneware inscribed band jug	3	2
	FRECW	Frechen whiteware	1	1
	GERW	German whiteware	2	2
	KOLFREC	Cologne or Frechen stoneware	7	5
	RAER	Raeren stoneware	1	1
	SIEG	Siegburg stoneware	1	1
	WEST	Westerwald stoneware	1	1
Italy	LIGU	Ligurian berettino tin-glazed ware	2	2
	NIMS BICR	North Italian bichrome marbled slipware	1	1
Low Countries	DUTR	Dutch red earthenware	8	8
	DUTSL	Dutch slipped red earthenware	1	1
Spain	SPGR	Spanish green-glazed coarseware	1	1
Un sourced	XXIMP	Un sourced import	5	2

Table 4: Imported post-medieval pottery

The stoneware forms are almost exclusively drinking vessels or containers. The group includes two early Siegburg and Raeren drinking jugs, three Frechen inscribed band jugs of varying size dating to late 16<sup>th</sup> century and the ubiquitous *Bartmannkrug*. The fragments of a single Normandy stoneware jar were also recovered. The two sherds of German whiteware are non-diagnostic, although one represents part of the lid-seated rim of a jar-type form. Typically the Italian marbled slipware and Ligurian berettino are represented by decorative

bowls and dishes. Of the two Ligurian bowls one is fluted and both appear to demonstrate 'a quartieri' designs internally.

## **DISTRIBUTION**

The pottery recovered derives almost entirely from backfill, demolition and made ground deposits. The largest assemblage was collected from the backfill of the stone-walled cellar and would suggest this was filled in around the mid 17<sup>th</sup> century, possibly just after 1650. The other large group derived from made ground relating to the subsequent phase. As with the cellar backfill this contained a significant proportion of early to mid 17<sup>th</sup> century and even late 16<sup>th</sup> century material. Indeed, with the exception of a few earlier and later sherds, the dating is very similar for the entire assemblage. The freshness of the pottery, particularly within the cellar would, suggest the late 16<sup>th</sup> century material was old when deposited and not residual.

## **Potential and recommendations**

The pottery not only provides dating evidence for individual contexts but also importantly a snapshot of the Tower during the late 16<sup>th</sup> to mid 17<sup>th</sup> century. Utilitarian and decorative pottery, ubiquitous to many sites across London, is evident alongside more unusual imports. As discussed above this would tie in within other excavations in the vicinity and is no doubt explained by the keystone location and perhaps status of the Tower.

Any future publication work should include a small report on the pottery recovered from the Old Guard. The apparent discrepancy in status between the clay pipe and pottery assemblages should form a focus of discussion and what, if any, implications this difference has in understanding the guardroom or Tower more generally. The small group of unsourced pottery will require further research. Approximately 20 illustrations will be necessary.

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Context	Phase	Size	Date range of pottery		Latest dated pottery type		Suggested date of deposition
0	-	17	1270	1700	1550	1700	-
3	4	11	1480	1900	1830	1900	Contamination. 1630 – 1680
4	4	104	1080	1900	1630	1700	M. 17 <sup>th</sup> century
9	3	1	1550	1630	1550	1630	1550 – 1630
10	4	7	1480	1900	1580	1900	1580 – 1650
12	3	88	1250	1900	1600	1650	1600 – 1650
18	4	24	1400	1900	1600	1750	M. 17 <sup>th</sup> century
20	3	48	1400	1900	1620	1700	1620 – 1650
24	3	12	1480	1900	1580	1900	M. 17 <sup>th</sup> century
26	4	24	1400	1900	1612	1650	M. 17 <sup>th</sup> century
27	3	6	1480	1846	1570	1846	1570 – 1650
30	5	16	1550	1900	1580	1900	M. 17 <sup>th</sup> century +
37	3	9	1550	1900	1580	1900	1580 – 1700
42	5	2	1580	1900	1580	1900	1580 – 1700
53	4	2	1550	1700	1550	1700	1550 – 1700
56	4	11	1550	1846	1630	1846	1630 – 1700
82	Void	2	1480	1700	1550	1700	-
200	4	10	1480	1846	1630	1680	1630 – 1650
306	3	2	1630	1846	1630	1846	1630 – 1800
307	3	8	1480	1700	1550	1700	1550 – 1650
311	3	10	1270	1900	1550	1700	1550 – 1700
314	3	1	1480	1650	1480	1650	1480 – 1650
318	3	1	1300	1630	1300	1630	1500 – 1630

**Table 5. Dating table. All contexts containing post-Roman pottery listed. Size = sherd count.**

## **APPENDIX 4**

### **THE GLASS**

By John Shepherd

#### **INTRODUCTION**

Forty-six fragments of glass were submitted for identification. The following assessment covers all these fragments.

#### **ASSESSMENT**

One possible Roman base fragment, from a beaker or bowl, can be identified. It is a standard Roman shape. It is, however, residual in its context, associated with many post-medieval window glass fragments (Context [20]).

Two Late 17<sup>th</sup> century English wine bottles are represented, both datable by the low kicks in their bases. One, from Context [56], is near complete.

No other diagnostic vessel fragments were identified.

The remainder of the glass consists of window glass fragments broadly dated to the post-medieval period.

#### **RECOMMENDATIONS**

This assemblage is not very informative, other than the close date of the two bottles perhaps indicating a general deposition date for most of the other fragments. If a catalogue were required, this would only take 0.25 person days. Only two illustrations are required, the near complete bottle (Context [56]) and the Roman base fragment (Context [20]).

Context	No. frags	Colour	Form	Technique	Date	Full catalogue entry
			English wine			
3	1	Olive green	bottle, base	blown	Late 17th	n
4	1	Natural green	Window	cylinder blown	post-medieval	n
4	1	Natural green	Window	cylinder blown	post-medieval	n
4	10	Natural green blue	Window	cylinder blown	post-medieval	n
10	1	Colourless	Vessel	blown	post-medieval	n
12	1	Natural green blue	Window	cylinder blown	post-medieval	n
20	18	Natural green blue	Window	cylinder blown	post-medieval	n
20	1	Colourless	Beaker/bowl, base	blown	Roman?	y
20	1	Natural green	Flask/bottle, base	blown	post-medieval	n
20	2	Natural green	Vessel	blown	post-medieval	n
53	1	Natural green blue	Window	cylinder blown	post-medieval	n
			English wine bottle			
56	8	Olive green	(complete profile)	blown	Late 17th	y

## **APPENDIX 5**

### **THE CLAY TOBACCO PIPES**

By Chris Jarrett

#### **INTRODUCTION**

A small assemblage of clay tobacco pipes was recovered from both sites (TOL103 and TOL103c) as one box. The material is fragmentary, but bowl forms were identifiable and were mostly deposited soon after breakage. All contexts contained small groups of clay tobacco pipes (under 30 fragments). The clay tobacco pipe types date to between 1610-1710.

The TOL103 assemblage consists of 73 fragments (one being unstratified) and consists of 31 bowls, 41 stems and one nib or mouthpiece. The TOL103c assemblage consists of six fragments (six are unstratified), comprises one bowl and five stems. The clay tobacco pipe bowls were classified according to Atkinson and Oswald (1969) and Oswald's general and Southern typologies (1975) and entered onto an ACCESS database.

#### **General characteristics of the assemblages**

A number of fragmentary 17th-century pipe bowls were recorded that could not be assigned to a type and are not discussed.

#### **THE CLAY TOBACCO PIPES**

##### *1610-1640*

AO6: one spurred bowl with quarter milling (damaged rim) and a fair quality finish (trimming, wiping and burnishing).

##### *1640-1660*

AO10: two heeled bowls, both have full milling and good finish, while one bowl has rouletted milling around the circumference of the stem.

##### *1660-1680*

AO13: four heeled bowls, one identified only by the surviving heel. Quarter milling on two damaged bowls and fair finish except for one bowl which is a broader variant with a good quality finish.

AO15: two spurred bowls, with three quarter to full milling and of a fair finish. One bowl is a taller variant.

AO18: ten heeled, straight-sided bowls, quarter to full milling of the rim and fair finish. Barrel shaped and tall variants present.

*1680-1710*

AO20: two heeled, rounded bowls, with half to three quarter milling and fair or good finish. Shorter variant present.

AO22: eight heeled, straight-sided bowls, with a quarter to half milling and fair to good quality. A number of variants are present and includes an intermediate type with a size between the previous AO18 type but with an acute angled bowl.

Non-local bowl

S1/AO16: one unstratified bowl of either Southern type 1 dated 1620-40 or possibly locally made AO16 West Country type bowl, dated c. 1660-80, with a heart-shaped heel and over hanging bowl. Full milling and excellent quality finish.

## **SIGNIFICANCE OF THE COLLECTION**

The clay tobacco pipe assemblages from both sites are of local importance and their source comes from on site activity. The clay tobacco pipes can be compared to other excavations at the Tower of London (Nelson 1996; Higgins 2004). No evidence of clay tobacco pipe production is recorded amongst the assemblage.

The 1660-80 dated clay pipe assemblages contain more AO18 pipes and indicate that supply of tobacco pipes to the Tower of London was local, as the distribution of this type of bowl indicates that it was more popular in the East London area. There are a greater number of AO22 bowls in the 1680-1710 dated contexts and although these bowls developed from the AO18 type, they were also the most common type produced across London at the end of 17<sup>th</sup> century and very start of the 18<sup>th</sup> century. There are no maker marked pipes and this may indicate a lower socio-economic group associated with these items and association with guards in the guardroom may be appropriate.

## **DISTRIBUTION**

Table 1 shows the distribution of the number of clay tobacco pipe fragments, the types and a spot date for the context they were found in.



Table 1. TOL103 and TOL103c. Distribution of clay tobacco pipe types.

Site code	Context	Phase	Area	No of fragments	Bowl types	Spot date
TOL103	3	5	A	11	AO13 x 1, AO18 x 2, AO20 x 2, AO22 x 6.	1680-1710
TOL103	4	4	A	6	AO10 x 1.	1640-1660
TOL103	12	3	A	1	Stem	1570-1910
TOL103	20	3	A	7	AO6 x1, AO10 x 1.	1640-1660
TOL103	42	5	A	2	Stems	1570-1910
TOL103	46	4	A	6	AO18 x3.	1660-1680
TOL103	56	4	A	5	AO15 x 1, AO22 X 1.	1660-80/1710
TOL103	200	1	TR1B	34	AO13 x 3, AO15 x 1, AO18 x 5.	1660-1680
TOL103c	306	4		3	Stems	1570-1910

## POTENTIAL

The clay tobacco pipes have the potential to date the contexts they were found in and contemporary groups of pipes exist on the site. A small number of bowls are required to show variants and unusual types.

## RECOMMENDATIONS FOR FURTHER WORK

If a publication text is required for the excavation, then a report should be compiled relating to the characteristics of the assemblage and what socio-economic implications there are to the smokers of the pipes. Approximately five bowls require illustration.

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## APPENDIX 6

### THE BUILDING MATERIAL

By Dr Kevin Hayward

#### Introduction and Aims

A small assemblage<sup>15</sup> (133 examples) of stone (25 examples) and ceramic building material (108 examples) was retained from a Watching Brief of the medieval/post-medieval Tower Green site of the Tower of London (TOL103). Most was loose material, presumed to be associated with the construction and demolition of the Old Main Guard (Area A) including samples taken from the cellar [35] where access was restricted together with some dump layers from the adjoining Area C (Watson 2007). In addition to this was the building material information recorded from 42 contexts<sup>16</sup> associated with in-situ stone and ceramic building material of the Old Main Guard i.e. walls and drains. Sampling was not permitted from the standing structures as the Tower of London is a World Heritage Site and Scheduled Ancient Monument. Both sets of data are included on an accompanying catalogue (TOL103).

This material was assessed in order to verify the dating of the foundation walls and cellars of a 16th/17<sup>th</sup> century building presumed to be the remains of the Old Main Guard and later additions to this building.

This assessment serves a number of other purposes.

- The identification (under binocular microscope) of the main medieval and post-medieval ceramic building material fabrics and forms at Tower Green.
- The identification of the main stone-types and sources (under binocular microscope) at Tower Green and whether these relate to materials identified from other excavations.
- The compilation of a stone catalogue (TOL103), which accompanies this assessment.

#### Methodology

Where possible, the standing building materials were examined and allocated a fabric number using the London system of classification.

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<sup>15</sup> 55kg (26.689kg Stone; 28.500kg CBM) 8 Shoe boxes 1 large stone fragment.

<sup>16</sup> [1; 9; 11; 13; 28-29; 34-36; 38; 40; 50-52; 54-55; 57; 63; 65-67; 69-71; 79-80; 83-91; 94-99; 104]. In catalogue standing building recording denoted by Rec or Recorded in Comment.

The same system of classification was also applied to fresh samples of loose stone and ceramic building material, obtained using a 1kg mason's hammer and sharp chisel. The fabric was examined at x20 magnification using a long arm stereomicroscope or hand lens (Gowland x10).

### **Ceramic Building Material Form and Fabric**

An overview of the ceramic building material assemblage from Tower Green by fabric and form serves to quantify the common fabrics and highlight the presence of any unusual or interesting fabric types that may provide valuable dating evidence in the phase summary at the end of this review.

### **Medieval and Post Medieval Ceramic Building Material**

The assemblage of medieval and post-medieval peg tile, brick and floor tile was examined in order to determine their form and fabric. As expected, all the material could be directly compared with examples of the London Fabric collection retained at Pre-Construct Archaeology Ltd.

### **Medieval/Post Medieval Brick**

Fabrics 3031; 3032nr 3033; 3033 (*pink and orange sub-groups*); 3034; 3043

Examples of these earlier medieval brick fabrics; the yellow 3031 [1350-1450] and swirly pink 3042 [1400-1600] are rare and almost entirely found in the cellar foundation [35] of the Old Main Guard, with one complete reused example of 3031 [26] – which is the backfill dump of the cellar and in a fragment of wall [89] associated with stone<sup>17</sup>.

The fabric 3033 dominates the brick assemblage from Tower Green. As all samples are unfrogged, narrow (50-58mm thick), with sunken margins and uneven bases, this would place them between 1480 and 1700, probably late 16<sup>th</sup> late 17<sup>th</sup> century. Apart from the earliest cellar walls [28; 35; 50] this fabric is found everywhere else, including the brick blocking walls of the cellar [29;36]; an adjoining garden wall [1] and all the walls of the main Old Main Guard (e.g. [9]; [51]), where evidence for English Bond would place it no later than 1630 which would corroborate a 16<sup>th</sup> to early 17<sup>th</sup> century date. (B.Sudds *pers. comm.*) . However, it is possible that these structures could have been rebuilt rapidly in this fashion following alterations during

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<sup>17</sup> This construction [89] contains no 3033 and could be contemporary with the late medieval cellar wall 5m to the east.

the mid 1650s. There is also some variability in form and fabric<sup>18</sup> and it is likely that there was some reuse of the earlier types (uneven base; sunken margin), for example in the later drains and blocking walls [87].

Finally, there is the association of two later brick fabrics 3032nr3033 and 3034 from the infill of the drain [77] and a later wall [83] which on the basis of fabric and form (narrow, sunken margin, unfrogged) can be dated to the late 17<sup>th</sup> century. An earlier form (uneven base; sunken margin) of the orange 3033 brick fabric found with these materials may well have been reused from an earlier phase of the Old Main Guard.

### **Medieval/Post-Medieval Peg Tile**

Fabrics: 2271; 2276; 2586

The common medieval and post-medieval sandy peg tile fabrics, which dominate this assemblage are of little use in dating the site as the date ranges e.g. 1480-1900 are so wide. Even fabric 2271 the medieval pre-cursor to 2276 has a wide date range (1180-1800). Most are fragmentary, and are either found reused in dumps associated with early-post medieval activity of Area C e.g. [311] or as levelling courses [87]. Complete examples are present at [48], [54], [55] in bonds associated with the walling of brick built piers (Watson 2007). Reused examples are present in the wall of the medieval cellar foundation [35] attesting to its use before the 16<sup>th</sup> century.

### **Floor Tile**

Fabrics: 1977; 2497; 3232

Complete, worn black glazed examples of the pale maroon Flemish floor tile fabric 2497 form the late 17<sup>th</sup> century floor surface [13] of the Old Main Guard. These date by fabric to 1300-1700 and correspond to a mid 17<sup>th</sup> century date from the pottery (Sudds 2007). Furthermore, their dimensions 180x180x26mm are not untypical of a 17<sup>th</sup> century date. Other Flemish fabrics, from context [4], the silty 1977, and the rarer calcareous 3232 date from 1400-1800 and 1300-1800 fit in with these dates.

### **Stone – Geological Description and Source**

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<sup>18</sup> The replacement of pink 3033 from the brick capping wall [69] by a more orange form in the overlying lower course of a barrel vault [70]

25 examples 10 rock types 26.7kg

### **Fabrics and Forms**

**Reigate Stone**, Upper Greensand Lower Cretaceous-East Surrey 3107: 14 examples moulding, chips, ashlar. Also recorded in quantity as reused rubble from walls of the cellar [9] [35] [50] [52] and in walls [28] [40] [57] [85] [87] [89] and flooring [91] elsewhere.

**Hassock Greensand**, probably Lower Greensand, Lower Cretaceous-West Sussex Hassock 3106 1 example moulding.

**Kentish Ragstone**, Lower Greensand Lower Cretaceous – Maidstone/Kent 3105: 3 examples walling rubble and chips. Also recorded in quantity as reused rubble from walls of the cellar [9]; [34-35] and 19<sup>th</sup> century cobbled floors [65-66].

**Chalk**, Upper Cretaceous – Upper Chalk South-East England 3116 1 example shot mould. Also recorded in quantity as reused blocks and rubble from walls of the early cellar [28] and elsewhere [36] [40].

**Flint** Upper Cretaceous – Upper Chalk South-East England 3117. Recorded in quantity as reused rubble from walls [40] [52]

**Possible Malmstone**, Upper Greensand Lower Cretaceous equivalent of Reigate Stone for West Surrey/Sussex e.g Sherborne 3120 4 examples Mouldings.

**Purbeck Marble**, ? Upper Jurassic- Isle of Purbeck, Dorset 3112 1 example Moulding.

**Shelly Purbeck Limestone**, Upper Jurassic – Isle of Purbeck Dorset 3126 1 example Paving. Also recorded in drain lining of [85].

**Caen Stone**, Bathonian Middle Jurassic – Normandy. 3119 Only recorded reused in walls [40] and gutters [59].

**York Stone**, 3120 [71] Paving slab unknown date.

In an area where the underlying geology is too soft to produce suitable building material and mouldings the number of rock types (10) are large. This reflects the importance of the Tower of London as one of the major medieval and post-medieval construction projects in the capital (Keevil 2004)

Reuse of stone, especially chunks of Reigate stone ashlar, moulding and rubble from the Upper Greensand of East Surrey, Kentish Ragstone/Hassock Greensand from the Lower Greensand of West Kent and chalk/flint from the Upper Cretaceous of South-East England are especially evident from observation of the cellar foundation [34-35] and examples from the overlying early 17<sup>th</sup> century wall [9]. During the main construction phase of the Old Main Guard, however, reused stone only forms a small part of the total building material assemblage with brick becoming important (see above). Blocks vary considerably in size and

shape from 5 to 50cm. From the outset, these materials were a very common building material for the Tower and it would seem probable that dumps of stone from elsewhere in the Tower would have always been available as a ready quarry of material for the Old Main Guard building.

Likewise, the more unusual reused stone materials at Tower Green, including a chunk of Purbeck Marble moulding, from the backfill of the cellar [12] and part of a Shelly Purbeck flagstone or “featherbed” [81] are represented elsewhere at Tower (Keevil 2004). Caen stone is identified too, but in much smaller quantity than one would expect again in the foundation of the cellar [50]– given its frequency in the White Tower. One surprising find, however, was the possible identification of a fragment of light grey moulding stone [26] from the backfill of the cellar. It is possible that this is a Malmstone (Upper Greensand, West Sussex), but the quality of the moulding would suggest otherwise. Other potential candidates could be Totternhoe Stone (Chalk Rock from Buckinghamshire), Beer Stone (Chalk Rock from Devon), French Dolomitic Chalk (Rouen) or even Magnesian Limestone (Triassic – Yorkshire). Apart from the use of French Dolomitic Chalk in the White Tower, I am not aware of any other of these materials being used at the tower. Petrological analysis of this material may determine which of these candidates it is.

### **General Comments on the Building Fabric and Phasing at Tower Green**

In this section it will only be possible to make general comments on how the building fabric and form relates to phasing at Tower Green. The standing masonry cannot be sampled for fabric identification, although it appears that the distinctive red brick fabric 3033 is ubiquitous.

An additional problem is the widespread reuse of building material associated with the backfill and dumping of the site coupled the complexity of the sequence masks most of this phases identified from the watching brief (Watson 2007).

What is clear is that the association of stone and ceramic building material from the walls of the cellar of the old Main Guard (Area A) – Phase 1 e.g. [28; 35; 50] are entirely different to the rest of the site. It is the reuse of medieval (1300-1500) brick fabrics (yellow 3031) and (purple swirly 3042) and the absence of the later medieval/post-medieval orange 3033 that are significant. This difference is made all the more clear from the assessment of the loose brick and from the watching brief of the standing walls in that the fabric 3033 is ubiquitous everywhere else, including the walls that block the cellar [29] [36] Phase 2.

This absence of 3033 would indicate that the cellar foundation may either be much earlier than the foundation of Old Main Guard (identified from text sources as being late 16<sup>th</sup> century) (Parnell 1979)<sup>19</sup> or that the cellar was constructed with reused brick and stone (Reigate, Hassock and Kentish Ragstone) quarried from demolition elsewhere at the Tower.

This discrepancy has also been identified from the post-Roman pottery (Sudds 2007).

Second, that the ceramic building material from the main phase of walling construction of the Old Main Guard can be securely dated on form, fabric and bonding to the late 16<sup>th</sup> to late 17<sup>th</sup> century (Phases 3-4). The widespread use of the thin-unfrogged 3033 brick fabric with sunken margins e.g. wall [9] is diagnostic of this period as is English Bonding, so characteristic of the late 16<sup>th</sup>/early 17<sup>th</sup> century. This bonding is not widespread after 1630 but it is possible that these structures could have been rebuilt rapidly in this fashion following alterations during the mid 1650s. This evidence fits in with the existence of the Old Main Guard identified from texts and from excavations (Parnell 1979).

The rarity of brick fabric and form from the late 17<sup>th</sup> century onwards e.g. 3032nr 3033 and the well made (thicker) 3033 reinforces the documentary evidence (Parnell 1979) that the Old Main Guard building went to into disuse at the end of the 17th century.

The evidence from the complete Flemish tiles used in the floor surface [13] of the Old Main Guard also corroborates with a 17<sup>th</sup> century construction date for the main building phase of the structure. The glazed fabric 2497 dates to between 1300 and 1700 corresponding with a mid 17<sup>th</sup> century date from the pottery (Sudds 2007). Other Flemish fabrics, from another context [4] the silty 1977, and the rarer calcareous 3232 date from 1400-1800 and 1300-1800 fit in with this dates.

The building material from Area C is very difficult to date as it is dominated by reused common sandy peg-tiles with a wide date range (1480-1900). It would be better to rely on evidence from other finds e.g. pottery.

## **Recommendations**

Should the site be published, I would suggest that a section on the main building fabrics types used in the Old Main Guard (especially medieval brick and some of the more unusual stone-types) be included. It may be worthwhile examining the geological character and source of the

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<sup>19</sup> Excavations from 1975 at Tower Green (Parnell 1979) identify a ragstone wall that seems to pre-date the tudor (red-brick) brick floor.



grey moulded stone [26] provisionally identified as Malmstone but may in fact be a Hard chalk (e.g. Beer Stone) or a Magnesian Limestone. The material may be unique to the Tower. Hand-specimen comparison with a geological reference collection or better thin-section<sup>20</sup> analysis would help.

## DATING TABLE

Context	Size	Date range of material		Latest dated material	
1	3	50	1950	1450	1950
4	11	50	1900	1480	1900
5	1	50	1800	1450	1800
9	2	50	1950	1400	1950
10	2	1480	1900	1480	1900
11	1	1450	1700	1450	1700
12	3	50	1900	1480	1900
13	7	1300	1700	1300	1700
20	1	1450	1800	1450	1800
26	7	50	1950	1350	1950
28	3	50	1800	50	1800
29	1	1450	1700	1450	1700
34	1	50	1666	50	1666
35	9	200	1800	1350	1800
36	3	50	1800	50	1800
38	2	50	1700	1450	1700
42	1	50	1666	50	1666
46	1	1480	1900	1480	1900
48	3	1480	1900	1480	1900
50	3	50	1800	50	1800
51	1	1450	1700	1450	1700
52	4	50	1800	50	1800
54	1	1450	1700	1450	1700
55	1	1450	1700	1450	1700
56	1	1480	1900	1480	1900

<sup>20</sup> As the material is so fine-grained.

Context	Size	Date range of material		Latest dated material	
57	4	50	1800	1066	1800
63	2	50	1800	50	1800
65	1	50	1666	50	1666
69	1	1450	1700	1450	1700
70	1	1450	1700	1450	1700
71	1	50	1950	50	1950
77	5	200	1900	1666	1900
81	5	50	1900	1630	1900
82	2	1450	1900	1480	1900
83	2	1450	1725	1666	1725
84	1	1450	1700	1450	1700
85	4	50	1700	1450	1700
87	3	50	1700	1450	1700
88	3	50	1700	1450	1700
89	3	50	1666	50	1666
91	1	200	1590	200	1590
94	3	50	1700	1450	1700
95	2	50	1700	1450	1700
98	2	50	1666	50	1666
104	3	50	1800	50	1800
301	2	1180	1800	1180	1800
305	2	1180	1800	1180	1800
307	2	1480	1900	1480	1900
310	32	1180	1900	1480	1900
311	4	50	1900	1480	1900
313	10	1100	1590	1100	1590
314	2	50	1950	1400	1950
318	10	1180	1900	1480	1900

Table 1: Dating table

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## APPENDIX 7

### THE METAL AND SMALL FINDS

By Märit Gaimster

Eighteen metal and small finds were retrieved from Tower Green; they are listed in Table 1. With the exception of a copper-alloy furniture handle (sf <16>), all finds come from 17th-century contexts where they represent a wide range of categories, including household furnishings, dress accessories, cutlery, objects with a military association and some that may be associated with production and trade.

Household-related objects are reflected in four copper-alloy rings (sf <3>; <8>; <15> and <16>), probably used for suspending curtains and hangings (Margeson 1993, 82), and a knife with ivory handle (sf <7>). Dress accessories are represented by two copper-alloy lace chapes (sf <10>) and a decorated strap-end (sf <5>); there is also the leather sole of a slender shoe (sf <14>). The presence of trade and accounting is reflected in a fragmented Nuremberg jeton (sf <12>), while the iron object sf <6> may be a tool; a similar object from Southwark has been interpreted as a possible crowbar (Egan 2005, 159 and Fig. 157). The military aspect of the site is reflected in the iron cannon ball (sf <18>) and spur fragment (sf <19>). A copper-alloy rumble bell (sf <9>) may have had a multitude of function, including the use on a horse harness. Similar bells were retrieved from Basing House, Hampshire, an assemblage dominated by finds with a military association, following its demise after a final siege during the Civil War in 1645 (Moorhouse 1972, Fig. 25 no. 163-64).

In addition, there are a few iron objects, including the possible railing sf <1>, and a larger piece of slag from context [27].

### RECOMMENDATIONS

The identified objects from Tower Green comprise a good 17th-century assemblage and should be included in any further publication of the site. For this purpose, the iron, the composite knife sf <7>, and some of the copper-alloy objects require x-raying for further identification and clarification; these objects have been listed in Table 1. The copper-alloy jeton sf <12> should be cleaned for full identification. The leather shoe sf <14> should be further identified by a specialist.

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**TABLE 1. METAL AND SMALL FINDS.**

context	sf	description	pot date	recommendation
3	16	complete copper-alloy T-shaped drop handle; W 80mm; from furniture	1835-1900	
4	17	copper-alloy curtain ring; complete; diam. 35mm	1630-1650	
4	18	iron shot/cannon ball; complete; diam. 60mm	1630-1650	
4	1	large iron ?finial; hollow with pointed end; L 130mm diam. 58mm; ?part of railing	1630-1650	x-ray
4	2	lead mount; incomplete; one hole for fixing; L 70mm	1630-1650	
4	3	copper-alloy curtain ring; complete; diam. 27mm	1630-1650	
10	19	probable iron spur; fragment with part of straight neck	1580-1650	x-ray
10		large iron object; L 85mm; possibly structural	1580-1650	x-ray
10	5	complete oval-ended copper-alloy strap end; incised with simple crosshatch; folded edges; three rivet holes; L 26mm W 26mm	1580-1650	
10	6	iron object; oval-section bar/handle with transverse flat ?blade; L 120mm; possible tool	1580-1650	x-ray
24	7	ivory knife handle; flat tapering ivory scale tang handle with iron rivets; part of iron knife blade extant; L 115mm	1580-1650	x-ray
26	8	copper-alloy curtain ring; complete; diam. 27mm	1612-1630/50	
27		iron object; square section; L 50mm; possible nail	1580-1650	x-ray
27	10	two complete copper-alloy lace-chapes; Type 3; L 28 and 35mm	1580-1650	
27	9	copper-alloy rumber bell; incomplete	1580-1650	x-ray
46	12	copper-alloy jeton; Nuremberg; incomplete; 16 <sup>th</sup> -17 <sup>th</sup> c	n/a	x-ray/clean
76	14	one-part leather sole of slender left shoe; riveted with metal nails along the edge; L c.240mm	n/a	
78	15	complete copper-alloy ?curtain ring; 28mm; corroded to iron	n/a	x-ray

## APPENDIX 8

### IRON SLAG AND RELATED DEBRIS

By Lynne Keys

#### Introduction and methodology

A small assemblage of iron slag was recovered at the site of the sixteenth or seventeenth century Main Guard building to the west of the White Tower, Tower of London. All had been recovered by hand during excavation. For this report the assemblage was examined by eye and categorised on the basis of morphology, colour and feel alone. Each slag type in each context was weighed; smithing hearth bottoms were individually weighed and measured to obtain statistical information. A magnet was used to test residues and soil for hammerscale and other micro-slags. Quantification data are given in the table below in which weight (wt.) is shown in grams; length (len.), breadth (br.) and depth (dep.) in millimetres.

#### Quantification table

		TOL 03			Tower of London		
cxt	< >	slag identification	wt.	len.	br.	dep	comment
27		smithing hearth bottom	841	170	105	60	possibly earlier than rest of assemblage
303		hammerscale	1				flake & one sphere
303		mixed fragments	8				iron flakes, charcoal, chalk frags.
303		undiagnostic	150				
311	1	burnt coal	30				
311	1	coal	68				cuboid
311	1	coal	164				laminated variety
311	1	fuel ash slag	197				
311	1	hammerscale	38				flake and spheres
311	1	mixed fragments	30				frags. coal, burnt coal, ash
311	1	mixed fragments	2442				small frags. coal, slag, cinder etc.
311	1	smithing hearth bottom	277	100	100	55	
311	1	smithing hearth bottom	644	120	90	70	
311	1	smithing hearth bottom	1456	160	130	120	
311	1	smithing hearth bottom	670	120	70	75	
311	1	smithing hearth bottom	725	130	80	65	
311	1	smithing slag	810				two frags from two smithing hearth bottoms
311	1	undiagnostic	191				sausage shape
311	1	undiagnostic	555				probably smithing slag

311	1	undiagnostic	1026			incomplete smithing hearth bottom?
311	1	undiagnostic	142			
311	1	vitrified hearth lining	217			
311		cinder	49			
311		coal	25			laminated type; slagged
311		hammerscale	11			flake & some spheres
311		mixed fragments	88			non-magnetic microslags, iron flakes, coal frags.
311		smithing hearth bottom	400	100	70	55
311		smithing slag	199			contains hammerscale
311		undiagnostic	1798			probably smithing slag

**total wt. = 13,252g**

### **Discussion of the slag**

The slag was produced by secondary smithing activity. The smithing hearth bottom from [27] may be earlier than the material from [303] and [311]. The quantity of hammerscale from [311] is such that it may indicate a smith was working somewhere here for a period of time or material from a focus of smithing not far away was dumped here. It also reveals the smith was carrying out both hot working (of a single piece) and high temperature welding (to join two or more pieces) of iron. To judge by its morphology and feel the slag from [303] and [311] is late medieval or post-medieval in date.

### **Importance of the assemblage**

If the slag is likely to be in-situ rather than deposited material then it is of local and national importance for what it reveals about an activity in Tower Green at this period. If re-deposited dumping it may have come within the Tower but is not as significant as an in-situ deposit.

### **The assemblage**

In view of its date and type, the slag was discarded after it had been quantified and recorded.

### **Recommendations for further work**

If the assemblage is to be carried forward as part of a publication, more contextual and historical information will be required. Any further work will take no more than one day at most.



## **APPENDIX 9**

### **ANIMAL BONE**

By Kevin Rielly

#### **Introduction**

A moderate quantity of animal bones were recovered from the three trenches excavated at Tower Green, almost all arising from levels associated with the 17<sup>th</sup> century Old Main Guard building and environs. The bones from these deposits are all well preserved and only minimally fragmented. All of the bones described in this report were recovered by hand.

#### **Methodology**

The bone was recorded to species/taxonomic category where possible and to size class in the case of unidentifiable bones such as ribs, fragments of longbone shaft and the majority of vertebra fragments. Recording follows the established techniques whereby details of the element, species, bone portion, state of fusion, wear of the dentition, anatomical measurements and taphonomic including natural and anthropogenic modifications to the bone were registered.

#### **Description of faunal assemblage by phase**

Counts of bone fragments and the number of identified specimens are shown in Table 1. As mentioned above, the great majority of the bones were taken from features associated with the Old Main Guard building, these taken from Area A (211 bones), this area also accounting for all the phase 3 bones. The phase 4 bones are divided between Area A (77 bones), Area B (1 bone) and Area C (13 bones). While there is a clear stratigraphic distinction between the phase 3 and 4 levels, there is very little difference in the dating evidence. All of the phase 3 bone bearing deposits, and all but one of the phase 4 deposits are generally dated to the 17<sup>th</sup> century. This period coincides with the construction and demolition of the Old Main Guard building, dating approximately to the late 16<sup>th</sup> and late 17<sup>th</sup> centuries respectively.

It can be assumed that these assemblages do not contain the full range of species that were either exploited or present at this site, due to the absence of sieved faunal collections. This is perhaps best demonstrated by the very poor representation of fishbones.

#### **Phase 3**

All but 3 of the phase 3 bones were taken from cellar backfills, the former arising from a levelling deposit [27] and the fill of a brick-lined drain [77]. These backfills contained a wide range of food species, mainly composed of animal and bird domesticates but also with a few

game species, as fallow deer, rabbit and partridge. The dove and mallard bones could represent either wild or domestic birds. There was a single fishbone, a cod cleithrum, from a rather large fish (possibly up to 1 metre in length). Rabbit bones are relatively abundant amongst these backfills, with [12] providing 23 fragments, comprising 2 tibia distal ends and a range of metapodials and phalanges, clearly representing the partially articulated fore- and hind-paws of at least 3 individuals. These can be interpreted as processing waste.

<b>Species/Animal size class</b>	<b>3</b>	<b>4</b>
Cattle ( <i>Bos taurus</i> )	14	28
Cattle-size	19	13
Sheep/Goat ( <i>Ovis aries/Capra hircus</i> )	35	26
Goat ( <i>Capra hircus</i> )		2
Fallow deer ( <i>Dama dama</i> )	2	1
Pig ( <i>Sus scrofa</i> )	6	2
Sheep-size	20	12
Dog ( <i>Canis familiaris</i> )		1
Rabbit ( <i>Oryctolagus cuniculus</i> )	25	
Chicken ( <i>Gallus gallus</i> )	5	5
Dove ( <i>Columba livia</i> )	2	
Goose ( <i>Anser anser</i> )		1
Mallard ( <i>Anas platyrhynchos</i> )	2	
Partridge ( <i>Perdix perdix</i> )	3	
Cod ( <i>Gadus morhua</i> )	1	
Grand Total	134	91

Table 1: Counts of animal bone in each occupation phase

Cattle and sheep/goat provided the greater proportion of the assemblage, here including the cattle- and sheep-sized collections, which were largely composed of rib and vertebral fragments. The sheep/goat assemblage features a notable absence of processing waste (head or foot bones) and a clear bias towards upper limb parts (scapula, pelvis, humerus and femur), these comprising 26 out of 35 bones. These collections could represent waste from imported meat joints, clearly favouring the better quality cuts, implying that processing took place elsewhere in the Tower or perhaps that a proportion of the meat demand was met by city butchers. Most of the sheep/goat bones are from adult individuals (see Table 2), at least two years of age, with the majority 3 years or older. In contrast, the cattle bones feature a large proportion of young animals (possibly veal calves), the remainder probably taken mainly from adult individuals (2 years or older). Unlike the sheep/goat collections, there is a greater mix of skeletal parts. However, their distribution appears to be age related, with all the

processing waste (limited to 4 metatarsals), arising from young calves. The assumption previously made regarding the import of particular cuts of mutton may therefore equally apply to the older cattle, while veal calves, for whatever reason, may have been processed in the vicinity of the Old Main Guard building.

The size of the major domesticates is rather typical of the period, where the majority of farm animals are not dissimilar in size to their medieval forbears. Of some interest, however, was the recovery of a humerus from a relatively large pig. Though not totally fused, it was possible to extrapolate a total length of approximately 226mm, which would then have represented an animal about 91.8cm at the shoulder (Boessneck and von den Driesch 1974).

#### Phase 4

The later phase of the Old Main Guard bone assemblage (Area A) was largely taken from a make-up deposit [4] adjacent to wall [1] (50 out of 77 bones), with the other major contributor being the backfill [10] of a brick-built drain [11] (14 bones). There is a noticeably constricted list of species in comparison to phase 3 and also a substantially greater representation of cattle relative to sheep/goat. In addition there appears to be a lesser proportion of veal bones, although again most of the cattle are clearly from adult individuals. The ageing evidence would suggest that a large proportion of these were culled as young adults (in their 3<sup>rd</sup> or 4<sup>th</sup> year). There is a continued bias towards upper limb parts (16 out of 28) and only a minor representation of head and foot bones. This does not however apply to the phase 4 sheep assemblage, which is thoroughly mixed anatomically.

Species	Phase	Very young	Early		Late		
			F	UF	F	JF	UF
Cattle	3	5	1	0	0	0	1
	4	2	2	0	3	1	5
Sheep	3	1	16	0	7	4	4
	4	1	10	0	2	1	2

Table 2. Distribution of cattle and sheep/goat age groups, using the following groups: - Very young – the number of bones identified by the porosity, state of epiphyses fusion and/or the stage reached in the tooth eruption sequence; Early – fusion of the P scapula, D humerus, P radius and pelvis acetabulum; Late – fusion of the P humerus, P ulna, D radius, P and D femur, P tibia and P calcaneus, where P is proximal and D is distal. F, JF and UF are the number of fused, just fused and unfused epiphyses respectively. Ages of fusion (from Schmid 1972, 75) are Early – 0.5 to 1.5 years in cattle and 0.25 to 0.5 years in sheep; Late – 3.5 to 4 years in cattle and 3 to 3.5 years in sheep.

This phase also provided one non-food item, a humerus from a large dog, which probably stood about 65.2cm at the shoulder (using Harcourt 1976), calculated from a length of 652mm. Such a large animal may have been used for guard duties and/or as a hunting dog.

### **Conclusion and recommendations for further work**

The interpretation of the animal bone evidence will obviously depend on the source or sources of this material. Their location within or adjacent to the Old Guard House building does not necessarily suggest that they derived from the occupants of this building, however, it is perhaps safer to assume that this was indeed the case for the earlier (phase 3) rather than the later (phase 4) collections. The latter bones could date to the demolition of this structure and the bones may therefore derive from various other Tower sources. This may explain the clear differences in species diversity and also in the relative abundance of the major meat providers. Such differences could however be an artefact of the present level of stratigraphic and dating knowledge and may alter following a more thorough analysis of these datasets.

The evidence, at least in the phase 3 assemblage, would appear to point to the provision of a wide choice of meats, some obviously quite costly (the fallow deer), and also perhaps to a meat redistribution network. Such a network may have been in place within the Tower, the occupants of this building being provided with choice cuts from local processing/butchery centres, or perhaps point to the import of processed carcasses from nearby city butchers.

Excavations at the Tower Moat provided a similarly diverse range of food species (Ingrem 2004, 186), these taken from levels dating between the 17<sup>th</sup> and early 19<sup>th</sup> centuries. Most of the meat was provided by cattle and sheep and, of particular interest, each of these species provided a wealth of head parts (mainly mandibles). This would follow the suggestion that the Tower processing waste was disposed of elsewhere with the provision of dressed carcass joints to various food outlets as for example as may have existed at the Old Guard House.

It is recommended that these conclusions be further researched and possibly revised following the completion of the aforementioned stratigraphic and dating analyses.

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## APPENDIX 10

### OASIS DATA COLLECTION FORM

12.1 OASIS ID: preconst1-31107

#### Project details

Project name Tower Green, Tower of London

Short description of the project An Archaeological watching brief was undertaken on the paved and lawned areas of Tower Green together with the paved area to the northwest of the Bloody Tower. The earliest structure found was a late medieval / early post-medieval stone cellar with possible associated stone walls to southeast. Evidence of several phases of alteration or rebuilding were observed culminating in the construction of the 17th century walls of the Old Main Guard. The western boundary wall of the Upper Garden was observed to east whilst to the south c.1m of 17th century dumped levelling deposits were found.

Project dates Start: 14-05-2007 End: 13-08-2007

Previous/future work Yes / No

Any associated project reference codes TOL 103 - Sitecode

Type of project Recording project

Site status World Heritage Site

Site status (other) Scheduled Monument

Current Land use Other 5 - Garden

Monument type	FOUNDATION WALLS Medieval
Monument type	FOUNDATION WALLS Post Medieval
Monument type	DRAIN Post Medieval
Monument type	CELLAR Medieval
Significant Finds	ANIMAL BONE Post Medieval
Significant Finds	BUILDING MATERIAL Post Medieval
Significant Finds	GLASS Post Medieval
Significant Finds	SMALL FINDS Post Medieval
Significant Finds	POTTERY Post Medieval
Significant Finds	CLAY TOBACCO PIPE Post Medieval
Investigation type	'Part Excavation','Watching Brief'
Prompt	Scheduled Monument Consent
Project location	
Country	England
Site location	GREATER LONDON TOWER HAMLETS TOWER HAMLETS

Tower Green, Tower of London

Study area 235.05 Square metres

Site coordinates TQ 3355 8056 51.5076687785 -0.075411437275 51 30 27 N 000  
04 31 W Point

#### Project creators

Name of Organisation Historic Royal Palaces

Project brief originator Historic Royal Palaces

Project design originator Jon Butler

Project director/manager Jon Butler

Project supervisor Stuart Watson

Type of sponsor/funding body Historic Royal Palaces

#### Project archives

Physical Archive recipient Historic Royal Palaces



Physical Contents	'Animal Bones','Ceramics','Glass','Industrial','Leather','Metal'
Digital Archive recipient	Historic Royal Palaces
Digital Media available	'Database','Images raster / digital photography','Survey','Text'
Paper Archive recipient	Historic Royal Palaces
Paper Contents	'Animal Bones','Ceramics'
Paper Media available	'Context sheet','Matrices','Photograph','Plan','Report','Section'
<b>Project bibliography 1</b>	
Publication type	Grey literature (unpublished document/manuscript)
Title	An Assessment of an Archaeological Watching Brief on Tower Green, Tower of London
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