

## **APPENDIX 5**

### **Archaeology study**

#### **Annex 5.1 - Archaeological gazetteer**



## **A5. ARCHAEOLOGY STUDY**

---

### **INTRODUCTION**

- 5.1. The immense cultural significance of the Tower is evidenced by the designations outlined in 2, and the historic, archaeological and architectural importance of the site is universally recognised. These are also the prime reasons for the castle being one of Britain's most important and popular visitor/tourist destinations. The archaeological assessment detailed in this appendix has been prepared by Graham Keevill of Keevill Heritage Consultancy. A summary of key issues is provided at the end of this appendix.
- 5.2. Trees can present a significant problem for both standing structures and buried archaeological remains. Deep root penetration can be extremely disruptive to the often-fragile buried archaeology, and can even cause major disruption to seemingly more robust features such as Roman mosaic pavements, or walls (of any age). The same roots can cause significant structural stress, especially where they run behind retaining walls. This was demonstrated at the Tower of London in 2003 when London plane roots were a major factor in the collapse of the wharf wall into the south moat close to the East Gate.
- 5.3. If existing trees may cause problems, so might new plantations. It is all but inevitable that these will involve new ground disturbance, for instance through the excavation of a pit to take the root bole of a sapling or semi-mature tree. The subsequent root growth of the new tree or trees also needs to be taken into account, though this can be mitigated in a number of ways such as using a membrane or barrier to restrict growth, especially downwards. It is extremely difficult, however, to assess the longer-term (100+ years) effectiveness of such measures. Thus trees are a conservation issue archaeologically and structurally because:
  - existing trees are likely to have caused and/or be causing disruption and damage, while
  - new plantations are likely to cause additional disturbance both during their introduction and their subsequent growth.
- 5.4. This does not mean that new (or existing) trees are automatically and always a problem. It does mean, however, that the archaeological, historical and architectural (structural) significance of a site needs to be clearly understood and articulated in considering the location, nature and penetration of existing and new plantations.

### **METHODOLOGY**

- 5.5. The study has consisted of a thorough review of published and archival information on the archaeology of the Tower of London, based on Graham Keevill's experience of working at the site since 1993. It has also taken account of known or suspected intrusions in archaeological remains such as service trenches, and has also assessed the impact of recent developments such as the Tower Environs Scheme. Wherever possible the appraisal has included information about the known or suspected upper

level of archaeological remains (i.e. how far down below the existing they are), as well as their thickness/depth. The result has been to provide a brief history, archaeological appraisal and assessment of existing disturbance for each of the areas in Figure A5.1 and Table 5.1. An attempt has been made to provide a reasonably objective index of the significance of each area in these three categories by assigning a score of 1 (low) to 5 (high).<sup>53</sup> The scores are then combined to give a total score. Higher scores reflect a greater, and lower ones a reduced level of importance.

- 5.6. This appendix provides a brief summary of the archaeological potential of each area, and a tabulated review of the significance indexes. The concluding section of this text provides recommendations for dealing with archaeological issues as the tree strategy is taken forward. A gazetteer, with extensive consideration of the history, archaeology and disturbance of each area appears in Annex 5.1 at the end of this appendix. Each gazetteer entry should be of use in its own right in guiding decision-making regarding tree planting area by area.

## SUMMARY OF THE ARCHAEOLOGICAL APPRAISAL BY AREA

**Table 5.1: Summary of sensitivity ratings from the Gazetteer**

Site	Scores			
	History	Archaeology	Disturbance	Total
Tower Gardens	2	1	4	7
Little Tower Hill	2	1	2	5
The Wharf	5	4	3	12
West Gate Area	5	5	3	13
Tower Hill West	4	4	4	12
Tower Green	4	4	3	11
Coldharbour	5	4	3	12
Area between the White Tower and the Waterloo Block	4	4	3	11
East of the White Tower	4	4	4	12
West of the New Armouries	4	4	3	11
South Lawn	5	5	3	13
Water Lane	5	4	3	12

<sup>53</sup> These are straightforward for the historical and archaeological categories, but the ranking for disturbance has been somewhat more difficult to define. A high score shows that an area is known to have been disturbed quite extensively by service trenches and other works. These will have reduced the capacity to insert new features such as tree pits, while also making the surviving archaeology all the more valuable. A low score, by contrast, reflects a relatively low level of known disturbance, which might enhance the potential for new planting. At the same time, however, less disturbance might imply better preservation of archaeological remains. This dilemma has been taken into account fully when assessing the index levels, and where necessary this is explained in the gazetteer text.

## **Tower Gardens**

- 5.7. Theoretically there is some potential for medieval and post-medieval moat-related remains in this area. The rear of the moat revetment wall is undoubtedly a sensitive area requiring protection, and there are some documented features such as the well to the west of the Postern Gate. Work during the Tower Environs Scheme (TES), however, suggested that all upper levels are modern (19<sup>th</sup> and 20<sup>th</sup> century), often quite disturbed. The TES works themselves included the removal of two London plane trees and re-landscaping of the gardens themselves. New trees have been planted towards the top of the north-western segment of the gardens, i.e. along the edge of Byward Street. Extensive engineering works were also inserted to support the north-west revetment, along with a new ramped walkway to the top (north-east) corner of Tower Hill. These would represent constraints (presumably severe) on any new tree works in this area.

## **Little Tower Hill**

- 5.8. The Tower authorities seem to have been successful throughout history in defending this as completely undeveloped space, unlike other areas such as the zones immediately to the north of the Postern Gate. Little or nothing of archaeological interest is known here either, and there seem to be few physical constraints from services or other disturbance. To some extent this site is peripheral to the castle and it may not be central to the tree strategy because of this, but it would be easier to justify new plantations here compared to any other location in the study area.

## **The Wharf**

- 5.9. The east end of the wharf was densely occupied by stores and workshops etc from at least the late 16<sup>th</sup> century (Haiward and Gascoyne) through to the mid-19<sup>th</sup> century. There were more isolated buildings elsewhere (e.g. opposite the Byward Postern) while the riverside edge of the wharf appears to have had numerous cranes, cannon etc installed. Investigations have shown that archaeological remains can lie very close to the surface (within 0.3m in places), while the discovery of two small cannons during the reconstruction of the wharf edge flood defences in 2002 highlights the potential for larger artefacts to survive here.
- 5.10. The effects of root penetration have been demonstrated to dramatic effect at the east end of the wharf, when its north wall adjacent to the café seating area collapsed in 2003. Extreme root penetration is also evident behind same wall to the west of St Thomas's Tower in photographs taken in the late 1920s and 1970s. All existing trees on the wharf therefore require careful control both to protect historic masonry and to mitigate the impact of root damage on buried archaeological deposits. New tree planting should only be considered if minimal or no impact can be demonstrated in both these areas of concern.

## **West Gate area**

- 5.11. The Lion Tower, its surrounding moat, and structures erected over the latter's backfill in the post-medieval period are major concerns in this area. As is often the case in the most historic parts of the castle, remains can lie very close to the surface. For instance the masonry wall of the Lion Tower was found within 0.3m of the

current paving in front/east of the pumphouse in 1999. The lawn in front of Middle Tower's south drum is also exceptionally sensitive again because of Lion Tower moat and, especially, because of post-medieval buildings erected after backfilling. The earlier LUC Tree Strategy report (1996) notes that three London plane trees were lost here as a result of the 1987 storm, and it might seem tempting to replace them. This should be resisted because of the archaeological sensitivity of the site, and also because trees here would soon intrude onto the fine views of the Middle Tower and its surroundings. There are no other immediately obvious locations for planting new trees below ground, not least since the completion of Stanton Williams' hard landscaping under the Tower Environs Scheme.

### **Tower Hill West**

- 5.12. This area is outside the main defensive enceinte of the castle, but it contains the Bulwark, an important late 15<sup>th</sup>-century element of the defences. The brick masonry of this structure lies quite close to the surface where it has not already been damaged by modern services such as drains and cables. Petty Wales, the other historically documented group of buildings on Tower Hill West, has not yet been located archaeologically but would be a significant constraint. Perhaps ironically, modern services are likely to be the most serious constraint on new trees in this area, as they are extraordinarily extensive throughout the Hill. Furthermore the impressive Stanton Williams re-landscaping of the area would make it difficult to justify further trees beyond the four that were planted in 2004. This is not an area where further planting would be advisable on any grounds.

### **Tower Green**

- 5.13. Tower Green is an area of considerable historic and archaeological interest, especially where the Main Guard is concerned. Parts of this building were exposed at much shallower depths than expected in 2007. It is also one of the main areas of historic garden interest, seemingly having been used in this way for much of its history. The London planes are an impressive feature, and their ongoing management will be important for the retention of the Tower's tree stock. Presumably at some point the trees will come to the end of their natural lifespan, at which time replacement will be a live issue. Given the historic character of this area, replacement would seem appropriate, though a reduction in the canopy height would be highly desirable to minimise the visual impact on views into the Tower. The existing trees are very dominant when in leaf, hiding the White Tower from many vantage points.

### **Coldharbour**

- 5.14. The Coldharbour area was the gateway (literally) into the medieval palace from the 1230s until 1675-6. The area in front of the Coldharbour Gate seems to have been maintained as open ground until the 1670s. Once the gate had been demolished, however, the burgeoning needs of the Board of Ordnance saw it (and indeed much of the old medieval palace area) being used for storage and offices. A fine new Main Guard was erected along the west face of the White Tower in 1717, and survived until the middle of the 19<sup>th</sup> century. There is one London plane tree on the lawn next to the north-west corner of the White Tower, seemingly the last survivor of a line of four planted in the mid-late 19<sup>th</sup> century. This area is extremely sensitive

archaeologically and visually, especially (but not solely) for views of the White Tower. That said, this tree needs to be seen as part of the group on Tower Green.

### **Area between the White Tower and the Waterloo Block**

- 5.15. This area has considerable (and indeed demonstrated) potential for Roman, Norman, later medieval and post-medieval archaeology. The defences of the early Norman castle extended across the western part of the area, and only seem to have been filled in after Henry III's expansion of the castle in the 1230s. Thereafter this zone largely seems to have been open ground through to the present day, though a Main Guard building stood to the north-west of the White Tower from the 1680s to 1717. This area was also part of the cemetery of the Chapel of St Peter ad Vincula. Though open ground for much of its history, there is cartographic, pictorial and photographic evidence for trees on parts of the area from the early 18<sup>th</sup> through to the mid 20<sup>th</sup> centuries.

### **East of the White Tower**

- 5.16. This is a very sensitive area because of its known Roman archaeology (the city wall and ditch, and buildings inside the defences) and the medieval range (later much altered) against the east side of the White Tower. Presumably the lawned area along the east side of the keep is not affected at the moment, but strategically this area needs to be protected from any new plantations. The Tudor Wardrobe building is another very important building in this area, and it undoubtedly deserves protection.
- 5.17. Experience has shown that there is considerable disturbance from modern services (19<sup>th</sup> century onwards) through the whole area to the east of the White Tower. Many, but by no means all of the services are fairly shallow, but all have been disruptive to some degree (e.g. the truncation of the Wardrobe building that must have occurred with some of these runs). The gradual erosion through this process makes surviving stratigraphy even more precious – not just major structural remains but also 'lesser' features such as cobbled surfaces, garden remains etc. Archaeologically, therefore, this area deserves a high level of protection and a presumption that no further trees should be planted.

### **West of the New Armouries**

- 5.18. Like the South Lawn, this area was part of the medieval palace complex, though in this instance it was largely a garden. Even so, medieval buildings have been exposed by excavations within the New Armouries building and externally just to the north of the Queen Elizabeth II Gate. The southern part of this area was taken over by the Board of Ordnance in the 17<sup>th</sup> century, and was used by them for offices etc until the 1880s. The whole area has been hard landscaped (mainly with cobbles) since then, though a single tree has been planted in relatively recent times. The northern part of the area may have been treated in this way for many years (perhaps even centuries) before this. As with the area to the east of the White Tower, this area has suffered extensive disturbance from the insertion of main services in the past, and once more this enhances the value of whatever archaeological remains do survive. Therefore the same comments apply here as for the area to the east of the White Tower.

## **South Lawn**

- 5.19. This is undoubtedly among the most sensitive zones in the Tower of London as far as history and archaeology are concerned. It has always been at the very heart of the castle, and has therefore been the site of some of its most important buildings. Several generations of these are known to have existed along the south side of the White Tower, for instance. These commence with the forebuilding, defending the first-floor entrance into the keep. There was also the medieval Jewel House adjacent to the forebuilding. Both were replaced by subsequent generations of Ordnance and other structures such as the New Horse Armoury. Furthermore the remainder of the Lawn was occupied by the medieval palace, with the Great Hall, royal apartments, service ranges and gardens all being present. These were replaced in the 17<sup>th</sup> and 18<sup>th</sup> centuries by Ordnance offices and accommodation. All of these were swept away in the late 19<sup>th</sup> century as part of the Tower's re-presentation as a medieval monument.
- 5.20. Post-medieval and Victorian construction work, followed by archaeological excavations from the 1950s through to mid-late 1970s, will have disturbed archaeological remains to a greater or lesser extent, but this is still a potentially fascinating area. Archaeological horizons appear to survive quite close to the surface, and they are likely to extend down for several metres wherever they survive. The South Lawn is therefore exceptionally sensitive both historically and archaeologically where tree planting is concerned, while the longer-term visual effect of new trees would also have to be borne in mind.

## **Water Lane**

- 5.21. As with most of the central parts of the Tower, Water Lane is very important historically and archaeologically. Excavations have shown that structures of medieval and later date can survive in exceptionally good condition. These relate to the medieval palace (including the documented Privy Garden between the Lanthorn and Salt Towers) and the post-medieval Ordnance offices. Most of the known structures appear to cluster round the major towers on the inner (Bell, Bloody/Wakefield, Lanthorn and Salt) and outer (St Thomas's) curtain walls. Cross-walls running between the two curtains in these locations appear to be a common feature, perhaps mostly of medieval origin. Post-medieval structures were largely built against one or other of the curtain walls, often in groups (e.g. around the Lanthorn Tower, and between it and the Salt Tower). Elsewhere cartographic evidence from 1597 onwards suggests that large expanses of Water Lane remained open and undeveloped throughout the Tower's history, though even here important features such as cobbled surfaces are likely to survive.
- 5.22. Water Lane is also one area where there is clear, very high potential for earlier archaeological remains. In particular, an excavation adjacent to the Salt Tower in 1977 exposed Thames-edge foreshore deposits, with evidence for reclamation of the river edge during the Roman period. Contemporary timbers (stakes etc) were also found preserved in the waterlogged lower deposits, perhaps relating to jetties or similar water's edge structures.
- 5.23. Water Lane is predominantly laid out as cobbled and paved surfaces, with two areas of lawn against the inner curtain wall towards the east end. Flower and shrub borders

are also to be found here, around the base of the Salt Tower. Therefore there would appear to be limited areas where new planting could take place. In fact there is evidence for clearance of small trees/shrubs against the inner curtain wall west of the Bloody Tower at some point in the past. Water Lane has also suffered quite extensive disturbance from mains services, as this is one of the principal means of access into the castle (via the south-western causeway).

## KEY ISSUES

5.24. The main archaeological issues that should be considered are:

- The Tower of London as a cultural heritage resource is highly sensitive and must be afforded the highest level of protection.
- Generally the whole of the castle is of a very high archaeological significance and sensitivity, but some areas are considerably less sensitive than others. Little Tower Hill in particular has little known archaeological interest and the Tower Gardens are of similarly low value.
- The large number of mains services (electricity cables, drains etc) are such a feature below ground at the Tower that it is more difficult to find areas where new trees might be planted and they increase the resource value of unaffected areas.
- Specific considerations by area include:
  - **Tower Gardens:** extensive engineering works to support the north west revetment, along with a new ramped walkway to the north east corner of Tower Hill represent significant constraints on any new planting proposals in this area.
  - **Little Tower Hill:** it would be easier to justify new planting here more than any other area at the Tower.
  - **The Wharf:** the effects of root penetration have been demonstrated to dramatic effect at the east end of the wharf, when its north wall adjacent to the café seating area collapsed in 2003. All existing trees on the wharf therefore require careful control both to protect historic masonry and to mitigate the impact of root damage on buried archaeological deposits.
  - **The West Gate Area:** this is a highly sensitive area and the replacement of historic planting or new planting should be avoided.
  - **Tower Hill West:** modern services and archaeological sensitivities suggest that this is not an area to consider further planting.
  - **Tower Green:** whilst this area is archaeologically sensitive its long association of being used as a garden suggests that tree planting should be retained and managed.
  - **Coldharbour:** this area is extremely sensitive in terms of archaeology.
  - **Area between the White Tower and the Waterloo Block:** this area has considerable (and demonstrated) potential for Roman, Norman, later medieval and post-medieval archaeology.

- **East of White Tower:** this is a very sensitive area because of its known Roman archaeology (the city wall and ditch, and buildings inside the defences) and the medieval range against the east side of the White Tower. This area deserves a high level of protection and there should be a presumption that no further trees should be planted.
- **West of the New Armouries:** this area is also highly sensitive and deserves a high level of protection and there should be a presumption that no further trees should be planted.
- **South Lawn:** this area is exceptionally sensitive both historically and archaeologically where tree planting is concerned.
- **Water Lane:** this area is very important historically and archaeologically and there would appear to be limited areas where new planting could take place.

**ANNEX 5.1 - ARCHAEOLOGICAL GAZETTEER**



## **THE GAZETTEER**

---

### **TOWER GARDENS**

#### **Descriptive notes**

A number of ageing London Plane trees were removed from the north-western section of the Tower (moat) Gardens as part of the Tower Environs Scheme during 2003-4. Indeed all trees, bushes and other greenery was removed from the west and north-west gardens as part of the re-shaping of these areas under TES. Structurally this has been beneficial, as at least two of the London Planes had been causing root damage, especially to the vulnerable north-western circuit of the moat revetment wall. The trees have been replaced with new plantations towards the top of the north-western gardens, however, so screening the new access ramp from Byward Street while also replenishing the tree stock here.

#### **Historical summary**

The gardens were formerly part of the sloping outer surrounding the moat. This appears to have been a simple earth feature, as shown on the 'Agas' map of c 1560, William Smith's 1588 bird's eye view of London, Haiward and Gascoyne's 1597 survey, and Dankerts's map of 1633. The latter is rather schematic (as indeed are many of the earlier depictions), notably in showing houses lining the entire perimeter of the earth bank. Nevertheless it seems clear that the outer edge of the moat was indeed a simple earth bank until Sir Bernard de Gomme built the revetment wall into it from 1670-83. Much of de Gomme's wall survives, especially on the west and north-east sides of the moat where its battered (sloping) face is characteristic. Initially the revetment seems to have been left standing proud of the bank behind it, but this gap was soon filled in to achieve a level closer to that on the rest of Tower Hill surrounding the moat. Paintings still show the area behind the wall as a barely-managed slope into the 1840s (eg George Bryant Campion's painting of the north moat – see Keevill 2004, fig 144). The ground behind it was soon transformed into a quasi-municipal formal garden as the Tower's defensive role declined significantly during the second half of the 19<sup>th</sup> century. Later 19<sup>th</sup>-century photographs show the west and north-west gardens in full bloom. The gardens were regularly re-planted right through to most recent, and most radical, overhaul in 2003-4.

#### **Archaeological issues**

A plan of the Tower drawn up by the Board of Ordnance in 1681/2 shows a feature described as the Postern Spring in what is now the north-west section of Tower Gardens (EBA 1996, text and figure for the period 1666-1726). No trace of this feature was seen in archaeological and geotechnical excavations for, and an archaeological watching brief during the subsequent implementation of, the Tower Environs Scheme during 1999-2004. Indeed these works showed that the upper several metres of soil horizons within the moat gardens are modern (19<sup>th</sup>/20<sup>th</sup> century) with little or no archaeological interest. The revetment wall is the most important historic feature/structure in this area, with the original de Gomme sections (west moat) being the exceptionally significant. The north-western section is a more recent (19<sup>th</sup>-century?) rebuild, but is still of considerable significance. Both sections require the greatest care when any work is done near them, and tree plantations should only occur if root damage to the revetment can be precluded in the short, medium and long terms (ie throughout the lifetime of the tree).

### Existing disturbance

A number of mains services cross the gardens on their way into the moat and thence to the castle. These vary from quite shallow to deep burial. There is also a network of hosepipes at surface level or dug slightly into the topsoil, providing a watering system for the gardens. The 2003-4 Tower Environs Scheme work represents the most significant disturbance, with the hard landscaping of the west garden and insertion of a ramp into the north-west garden. The ramp also necessitated substantial engineering support work for the revetment wall in the form of a continuous sheet-piled wall behind but attached to the revetment by means of a reinforced concrete bridging beam. A 3m+ deep drain was also inserted along this stretch of the garden to prevent build-up of groundwater behind the sheet-pile wall. These alterations presumably affect the feasibility of new plantations in this area.

### Summary of archaeological sensitivity

Category	Comment	Score
Historical interest	Relatively low due to the nature of the site from the 1280s at least onwards	2
Archaeological potential	Upper soil layers appear to be wholly modern	1
Existing disturbance	TES alterations restrict the potential for work	4
<b>Total</b>		<b>7</b>

## LITTLE TOWER HILL

### Descriptive notes

Little Tower Hill is (as it has been for many years) a simple lawned space surrounded by trees and crossed by a number of footpaths. Late 19<sup>th</sup>-century photographs show people playing tennis or badminton here, and it has had a feel of public open space like a municipal park at least since then. The tree cover now looks thinner than on plans in the LUC 1996 report, though this may be little more than a reflection of seeing the site during winter.

### Historical summary

Little Tower Hill has been part of the Tower Liberties since at least the later 13<sup>th</sup> century, when the castle's defences were extended by Edward I. The Liberties were an important extension of those defences, comprising a broad area of open ground on all three landward sides of the Tower. Control of this zone was vigorously upheld by the Tower authorities, who were determined to maintain its undeveloped nature so that attackers would have nowhere to hide as they approached the moat and outer curtain wall. This control was maintained successfully on the north and east sides of the castle well into the post-medieval period, though there were persistent complaints about encroachment onto the outer edges of the moat (especially on the west side). Haiward and Gascoyne's 1597 survey, for instance, shows that little or nothing had been built within the Liberties other than on Tower Hill West (the Bulwark and Petty Wales), the Nine Gardens site and just outside the Postern Gate. The triangular area now known as Little Tower Hill is shown as open ground in all subsequent maps and surveys through to modern times, though King Street had been established to its north-east by the time of a survey done in 1692. Indeed Ogilby and Morgan's 1676 map

seems to show this street in its infancy, with two short terraces of four houses each at either end of it.

Little or nothing is known of the physical and legal origins of the Liberties prior to the earliest documentary reference to disputes over control of the Tower's surroundings in 1343 (see Keevill 2004, Chapter 2 for more detailed consideration of the Liberties and environs). It is therefore impossible to know when Little Tower Hill came under the Tower's control, though this may have been at a quite early stage in the castle's development. This area is and was outside the city defences, and the surrounding land was either under monastic control or within the parish of St Botolph without Aldgate. St Katherine's Hospital, a monastic establishment immediately to the east of the Tower, was founded in 1147 (re-founded 1261). The north side of its precinct lay well to the south of Little Tower Hill (ibid, fig 7). The Cistercian abbey of St Mary Graces lay just to the east of Little Tower Hill, though separated from it by a narrow strip of land. St Mary Graces was a very late foundation (1350; Robinson 1998, 136-7), however, and so the Hill cannot be convincingly described as monastic land during the 13<sup>th</sup> century. Interestingly, the abbey was founded on the site of a plague cemetery, suggesting that much of this area had still been relatively open and undeveloped during the 13<sup>th</sup> and 14<sup>th</sup> centuries irrespective of royal interests. While Little Tower Hill may have been in private hands then, it is at least as likely that it had been taken over by the Crown earlier in the 13<sup>th</sup> century, or perhaps even before this.

### **Archaeological issues**

I am not aware of any archaeological fieldwork having been carried out within Little Tower Hill, and the Greater London Sites and Monuments Record does not have any references to finds from the site either. The historical and cartographic evidence suggests that there is minimal likelihood of medieval (or at least 13<sup>th</sup>-century or later), post-medieval or later archaeological remains being present, except perhaps for land or garden management features such as drains or earlier paths. As far as earlier remains are concerned, prehistoric evidence might be present (Iron Age material including a human burial has been excavated within the Tower – Parnell 1993, 12) but seems unlikely. Anything of this date would probably be buried at considerable depth. There is some potential for Roman archaeology even though the site obviously lies outside the urban area. In fact it is towards the southern limit of the Roman city's eastern cemetery.<sup>1</sup> No burials or other grave-related features such as tombstones are known from the gardens, though there have been a few finds fairly close by (see Hall 1996, fig 9.2 and table 9.3). Once again one might expect any features that might exist to be quite deep below ground. The extra-mural status of the site perhaps makes it unlikely that anything of Anglo-Saxon date can be expected, though discoveries from this period cannot be ruled out. From an archaeological perspective, therefore, there appear to be few significant barriers to new plantations in this area, subject as ever to the requirement for an archaeological mitigation strategy.

### **Existing disturbance**

There are likely to be some mains services crossing Little Tower Hill, but not with the intensity demonstrated elsewhere. The construction of the Byward Street dual carriageway in the mid-late 1970s might have affected the northern margins of the gardens, either through truncation (cutting away) of soil layers or through raising of the ground level. Victorian and modern garden usage will have involved some ground disturbance, including through tree root penetration.

---

<sup>1</sup> Under Roman law all burials other than those of very young infants had to be outside the formal limits of any settlement – in this case, outside the city walls.

### Summary of archaeological sensitivity

Category	Comment	Score
Historical interest	Part of the Liberties, kept as open ground	2
Archaeological potential	Appears to be very limited	1
Existing disturbance	Probably one of the least affected areas	2
<b>Total</b>		<b>5</b>

## THE WHARF

### Descriptive notes

Until very recently the wharf could be separated into three distinct zones as far as trees are concerned:

- west of St Thomas's Tower, where numerous London Plane trees survive;
- the central section in front and east of St Thomas's Tower, where several London Planes were removed either by or as a direct result of the 1986 storm, and
- the east end, with a group of trees along the river edge and a smaller group of four Planes in the café seating area close to the wharf/moat wall.

In recent months, however, this situation has been rationalised following the wharf/moat wall collapse in 2003, which was largely caused by root damage. Two of the trees were removed in 2004 to facilitate reconstruction of the wall, and the remaining two were cut down in March 2005. It will be interesting to see the visual effect of these removals. As for other wharf trees, it seems notable that girths are quite variable, with those on the inner (north) side generally being rather larger – these may be more mature, or the greater girth may reflect greater access to moisture. If the former is the case the trees are unlikely to be all of a single age and thus plantation, as is perhaps generally assumed.

### Historical summary

The greatest 14th-century creation relating to the Tower was the wharf, and thus the south moat. Mention is made of a 'King's Quay' at the Tower as early as 1228, but this clearly had nothing to do with the wharf itself. Nevertheless, the origins of the existing structure date from the great period of activity in the 1270s, when, it seems, a short length of quay was built out from the south-west flank of the Lion Tower as far east as the Byward Tower; 300 alder piles were delivered for its repair in 1312, and it occurs again in 1335. The accounts for the next few years contain abundant references to activity in this area, but remain to be fully understood. Clearly significant, however, is the payment of 111s made in 1338 for building an earth and timber wall between the 'Watergate' (presumably St Thomas's Tower) and the 'Postern beneath the King's mint', ie the Byward Postern. This was probably a dam, associated with water management, but can be seen as the precursor to the extension of the wharf along this route later in the century. At the same time work was in hand on the 'wall before the watergate', for which Kentish ashlar and flint had been purchased in the previous year. This may have surrounded or flanked some kind of basin in front of St Thomas's Tower, and the curious crested wall which abuts its western turret and its destroyed counterpart to the east may, perhaps, have been part of it.

Construction of the Wharf expanded rapidly from the 1360s, presumably spurred on by the demands of the French wars. In 1365-6 work began on stonework for the Wharf, large quantities of Kentish ashlar, ragstone, chalk and lime being bought for the purpose. In 1369 a large number of elms were purchased for piles, and payments were made to ditchers for 'making a certain ditch for the wharf' - perhaps a reference to digging away the former foreshore at the base of the outer curtain to make a more effective moat between it and the wharf. The contract made with three masons in June 1389 to build 'a wharf with two side walls' in stone extending 'from the corner of the east end of the wall of the Tower facing St Katharine's as far as the watergate of the said Tower' marks the final phase of its construction.

By 1400 the clutter of buildings which was to survive in one form or another until the 19th century was already being established. Maps and plans from the late 16th century onwards show a cluster of buildings at the east end of the Wharf, and there were buildings at the west end as well. A series of buildings occupied the site at the south end of the Byward Postern bridge, for instance. Finally several cranes lined the riverside frontage, and cannons pointed into the river. This clutter was only removed in the middle of the 19th century.

In 1928 the river Thames flooded spectacularly, with particularly severe consequences for the Tower of London. A series of remarkable photographs shows that the moat was under several feet of water for its entire circuit. A plan drawn up on a large-scale Ordnance Survey base at the time noted that several cellars within the castle had also been flooded. The wharf seems to have suffered the worst damage, with the destruction of several walls in the apron in front of St Thomas's Tower. The wharf wall to the west of this was also destroyed, exposing extensive root penetration behind the masonry. This would have contributed to the flood damage by weakening the bond between the masonry face and the earth behind it. It is notable that no such destruction occurred to the east of St Thomas's Tower where there were no trees.

### **Archaeological issues**

The flood damage suffered in 1928 included not only the collapse of most of the wharf wall west of St Thomas's Tower but also slippage of a large amount of earth from the wharf into the south moat. These combined factors exposed several brick walls in plan, section and elevation, and the remains of paving as well. These were recorded in plan and section (English Heritage Historic Plans Room, drawing reference 105 61A). Level information can be gleaned from the section, showing that the walls were only 0.6 m below the grass level behind the wharf wall. This is higher than the cobbling on the wharf itself, where walls could be as little as 0.3 m below the surface.

The Oxford Archaeological Unit undertook a watching brief on a new electricity main from the Bowling Green across the Wharf to Wharfinger Cottage (project code TOL 14, 1994-5). The work was superficial, with excavation being kept to 0.3 m in depth below the cobbles except for a manhole. Only modern fills and a bedding layer for the cobble sets were exposed. Similar deposits have been seen in other minor works on the wharf, and during the major project carried out along its full length in 2001-2. The main discoveries during the latter project were two small cannons.

A small but significant excavation was carried out in January-February 1996 (project code TOL 3) at the west end of the wharf as enabling work for consolidation of the Bowling Green wall. This excavation established the presence of at least one brick-walled cellar on the site of known post-medieval buildings. The archaeological remains lay immediately below the existing ground surface and its bedding, and extended down for several metres.

The Oxford Archaeological Unit excavated two trial pits at the east end of the wharf (café seating area) in 1998. This was followed by an excavation in the same area in 2003/4, following the collapse of the east wharf wall (OA 2004). These projects demonstrated that 19<sup>th</sup>-century and earlier buildings and associated remains survive at shallow depths below the existing ground level, and once again these remains extend to a depth of several metres.

### Existing disturbance

While the wharf does not have the same intensity of services seen elsewhere in the Tower, it is nevertheless an important route for several mains. Many of these are at relatively shallow depths below the existing surface (eg within 1m), but others are believed to be more deeply buried. The trees (most or all London Planes) surviving along the wharf are also physically intrusive, as the collapse of the east wharf wall in 2003 demonstrated. As noted above, the 1928 floods showed similar and extensive root disturbance behind the west wharf wall, and photographs taken during the mid-1970s suggest that this problem led to a further and comprehensive rebuild of the wall face at that time. While many London Planes were removed during or in the aftermath of the great storm in 1986, their boles and root spreads will still have disrupted archaeological levels, perhaps substantially in some cases.

### Summary of archaeological sensitivity

Category	Comment	Score
Historical interest	Exceptional, as the Tower's own dockside since the 14 <sup>th</sup> century, and as the location for stores, workshops and other buildings.	5
Archaeological potential	Very high in areas such as the east end and around the Byward Postern bridge. Less in other locations, though the recovery of two small cannon during work in 2002 is a caution against dismissing any part of the wharf.	4
Existing disturbance	Trees and services are the main factor, but the wharf is probably less disturbed than many other parts of the Tower.	3
<b>Total</b>		<b>12</b>

## WEST GATE AREA

### Descriptive notes

The area immediately to the west of the Middle Tower has undergone a radical transformation as part of the Tower Environs Scheme. A 1930s extension to the rear (west) of Salvin's pumphouse (see below) and other buildings of largely nondescript form put up at about the same time have been demolished. They have been replaced by a new glazed steel structure to the rear of the pumphouse, while the new paving on Tower Hill West has been extended down to and west of the pumphouse. The large London Plane just to the north-east of this building has been retained.

### Historical summary

The moat at the Tower of London was created in 1275-81 as part of a major enlargement of the defences under Edward I. A new entrance was made into the south-west corner of the Outer Ward at the Byward Tower, the moat being crossed by a bridged causeway. The west end of the causeway was defended by the Middle Tower, and this in turn was protected by a massive semi-circular barbican known as the Lion Tower. The moat was taken all the way around the barbican, and a second causeway bridged the north arm to provide access from the Liberties. The Lion Tower derives its name from its use to house the Royal Menagerie during the later medieval and post-medieval periods.

By 1400 the clutter of buildings which was to survive in one form or another until the 19<sup>th</sup> century was already being established. Maps and plans from the mid 16<sup>th</sup> century onwards show a cluster of buildings at the east end of the wharf, and there were buildings at the west end as well. Wyngaerde's panorama of 1543, for instance, shows a building in the approximate position of Wharfinger Cottage, though this does not re-appear on subsequent maps (eg Agas, c 1560; Braun and Hogenburg 1572). Agas also shows a range of buildings flanking the east side of the Tower Dock, running back from an arched gate controlling access onto the foreshore. Haiward and Gascoyne (1597) show a virtually identical scene, but with the considerable advantage of their corrected perspective and broadly accurate 'ground plan'. The survey of 1597, therefore, may be taken as a reasonable representation of this part of the wharf at the end of the medieval period.

The situation does not appear to have altered significantly until the latter decades of the 17<sup>th</sup> century. Hollar's bird's-eye view of 1667 is little more than a re-drawing of Haiward and Gascoyne as far as the Tower is concerned, although he does show that extensive urban development had occurred to the north and west. Ogilby and Morgan's map of 1676 provides a reasonably accurate groundplan of the Tower, and seems to show a building in the approximate position occupied today by Wharfinger Cottage.

Both the Board of Ordnance plan of 1681/2 and Holcroft Blood bird's-eye view of 1688 show that the Lion Tower moat immediately to the north of the Middle Tower had been infilled by the late 17<sup>th</sup> century, and buildings had been put up over the fill. The rest of the moat seems to have survived, although the entire north arm may have been blocked off as the gate on the wharf had now been extended across the moat to join the Lion Tower itself. The 1682 map perpetuates the Ogilby and Morgan omission of the range against the east side of Tower Dock, but this is 'restored' by Holcroft Blood. The range seems to be longer than before, and conceivably he shows us a new building on a site which had been derelict for the previous decade or so.

Greater importance attaches to the two depictions of the Wharfinger Cottage area. The 1682 plan shows that the Tower Stairs were contained in an inlet within the riverside wall, with a single flight running down from west to east. Immediately to the east of the inlet a wall ran across the wharf to the Lion Tower moat, with a gate at the extreme north end. A simple rectangular building sat against the east side of the wall, fronting onto the riverside but with its long axis running north-south. Holcroft Blood shows exactly the same arrangement, though the gate position is obscured by the elevation of the building. The structure was apparently known as the Banbury Castle (an inn?), and the view presents it as a two-storey crenellated building. Holcroft Blood diverges slightly from the earlier map by showing a short single-storey extension running eastward along the river front. The extension has a single window; the ground floor of the main block has two lights, with a further one in the first floor. The east facade does not appear to be fenestrated.

The southern quadrant of the moat around the Lion Tower was evidently still open into the 1720s. A plan of the Tower and its drainage system in 1760 shows that it had been backfilled by then. Indeed a porter's lodge (Parnell 1993, 94 and colour plate 10) and barrack blocks (the

Spur Barracks - Parnell 1993, 85) had been erected over the backfill already. The 1760 plan shows these and other buildings very clearly.

The menagerie which had given the Lion Tower its name was still in residence there until 1835, when it was closed and the last animals were removed to Regents Park (a lion had been accused of biting a soldier). There was immediate pressure to clear the whole area as part of a campaign of demolitions around the tower at this time (Parnell 1993, 90-4). Mr Kops, the Keeper of the Menagerie, had the right to remain in his house at the west entrance for life, however, and he evidently exercised this right to the full. A map of 1845 notes the large square building at the south-east corner as the residence of “Mr Copps”, and the same tenant is noted on a drainage plan of *c* 1850. Both these surveys demonstrate that all the 17<sup>th</sup>- and 18<sup>th</sup>-century buildings in the area of the Lion Tower survived into the middle of the 19<sup>th</sup> century. Mr Copps died in 1853 and immediately thereafter the area was cleared of buildings.

Anthony Salvin was a well-respected architect active from the late 1820s into the early 1880s whose work is particularly associated with the late Gothic revival (Allibone 1987). He was commissioned to undertake a string of projects at the Tower of London (and Windsor Castle) during the 1850s and 1860s (Allibone 1987, 138-43, and 176-92 [for catalogue raisonné]; Parnell 1993, 98-103). The pumphouse he erected over the west half of the Lion Tower is a fine Gothic revival two-storey red-brick structure of four bays (extended north by two bays in the 1930s) with an accumulator tower to the south and an attached single-storey range to the west (since demolished). There was also a detached chimney at the north-west corner (also since demolished).

### **Archaeological issues**

The Oxford Archaeological Unit excavated a 6m x 4m trench on the pavement immediately to the east of the West Gate shop in April 1999. The excavation followed on from several test pits dug in 1996, and successfully revealed a segment of the Lion Tower’s half-moon outer wall and the ground-plan of one complete lion’s cage. This had been built against an existing embrasure in the tower wall. The project was carried out to provide information and film footage for a television programme on the Royal Menagerie. The work was therefore designed to be as minimally intrusive as possible, and in accordance with the terms of its Scheduled Monument Clearance only post-demolition rubble of later 19th and 20th-century date were removed. Some of the Lion Tower masonry was found barely 0.3 m below the modern paved surface (which was subsequently reinstated), but in general the remains were 0.6-0.8m below ground. Both the tower and its surrounding moat are known to extend down for 5m or more.

Subsequent watching briefs by OAU during implementation of the Tower Environs Scheme in 2003-4 revealed significant remains of the Lion Tower moat and buildings set within its backfill. These had been affected by the construction of Salvin’s pumphouse and its subsequent extension, as well as by the insertion of mains services. Nevertheless preservation was reasonably good, with structural remains being found within 0.5m of the (pre-*TES*) existing surface and extending down for several metres.

There have been few opportunities to examine the lawn immediately to the south of the Middle Tower archaeologically. A small excavation to the west of this in the 1940s exposed structural remains just below the surface, but there do not appear to have been any subsequent investigations. Nevertheless historic map evidence shows that the lawn has very high archaeological potential, with remains of the moat, its backfill and subsequent generations of buildings all being likely to survive. Deposits and structures are likely to survive from just below the turf and topsoil down to a depth of several metres (perhaps 5-6m to the base of the moat).

### Existing disturbance

This area is something of a pinch-point as far as mains services are concerned. Some highly damaging trenches are known to have been dug in the past, for instance to take water, drains and gas mains into/out of the castle via the south-west entrance causeway. Generally these services sweep northwards to Tower Hill. The various TES-related excavations have demonstrated the extent of services very clearly, but it is important to recognise that they have not been as destructive of archaeological remains as might be expected. The deepest trenches (as just noted) will unfortunately have been very destructive, but elsewhere many trenches seem to have been kept shallow, presumably deliberately so as to minimise damage to the historic fabric of the site.

There was a small group of London Plane trees on the lawn to the south of the Middle Tower until the 1980s. These were removed by or in the aftermath of the storm in 1986. Their roots will have damaged the underlying archaeology in this area, though by how much is not known. The significance of the surviving archaeological remains here is such that no new plantations should be considered. This may be taken to extend to the whole West Gate area (including the gun salute area, irrespective of whether this is considered under the wharf or West Gate).

### Summary of archaeological sensitivity

Category	Comment	Score
Historical interest	Exceptionally high for the Lion Tower, its moat, and the long history of buildings associated with and replacing these features.	5
Archaeological potential	Generally very high, with exceptionally good preservation of remains despite later intrusive features.	5
Existing disturbance	Some very intrusive services, and generally they are extensive here. A few trees also survive, but the losses on the lawn to the south of the Middle Tower should not be replaced.	3
<b>Total</b>		<b>13</b>

## TOWER HILL WEST

### Descriptive notes

Like Tower Gardens, Tower Hill West has undergone a complete transformation during 2003-4 through the Tower Environs Scheme. Traffic has been excluded from the area, and this has allowed bollards (and a great deal of other clutter) to be removed. The hard landscaping has also been transformed with new granite and Yorkstone paving, while two timber kiosks erected during the mid-1990s have been removed and replaced with a modern steel and glass structure. One London Plane tree has been removed from the south end of the hill, but this has been replaced with four new trees, set within a carefully constructed pit so that the roots cannot penetrate into the exceptionally important and sensitive archaeological horizons below. This work and the associated changes to the Tower Gardens has re-opened the magnificent view across the castle from the north and west in a startlingly successful way.

This is the case as much for longer views into the site as much as it is for the view from the hill itself.

The massive granite slabs that now run in a north-south strip down the centre of the hill are extremely heavy and difficult to move. Indeed the entire hill surface is now of very good quality, and this should be kept intact. The four newly planted trees also need time to grow and mature so that their visual impact can be addressed. The newly open views should be protected, and on these grounds there seems to be little prospect of further planting being considered in the near future.

### **Historical summary**

Like Little Tower Hill, Tower Hill West is part of the historic Tower Liberties, but unlike the former site this area has always been within the city walls. It therefore has historic interest from the Roman period onwards. In that era the eastern edge of the city seems to have been under-developed for long periods of time, though several substantial Roman buildings have been found in and around the castle. These included ones with hypocaust heating systems and tessellated pavements (see below). The city does not seem to have been reoccupied during the early Anglo-Saxon period, and when activity did recommence it was on a new site to the west of, rather than inside, the city walls (Vince 1990, 13-25). The interior was re-colonised during the later Anglo-Saxon period, however, and the Church of All Hallows by the Tower retains fabric of this era (Schofield 1994, 81-3).

The legal status and ownership of the castle's environs is unclear but its later history suggests that it was surrounded by an enclave under royal control, independent of the City, from its foundation. Evidence for what this may have meant in practice before the 14<sup>th</sup> century is patchy or non-existent. In 1343, however, the first recorded dispute occurred over the jurisdiction and ownership of the moat's edges and Tower Hill. A royal inquest into possession of land in East Smithfield, allegedly acquired in the previous century for the making of the outer curtain, provoked the citizens to claim that 'the whole of the Tower ditch and all the land of East Smithfield outside the postern in front of the Abbey of St Mary Graces have been time out of mind in and of the Liberty of the City'. The claim was successfully upheld, although the uncertainty as to whether Tower ditch lay within the City or the Tower continued until the mid-17<sup>th</sup> century.

The late 15<sup>th</sup> century saw the last extension of the Tower defences, with the enclosure of the lower half of Tower Hill to protect the western entrance. The new structure was of simple design, consisting of a western wall terminating at its north end in a half-round bastion projecting west, beyond which the wall turned east to a north-facing bastion, the gate itself piercing a southward return from this point. The earliest representation is by Wyngaerde, while Haiward and Gascoyne also show it. The structure was known from the beginning as the Bulwark. It was designed not only to resist artillery but to carry it, and is perhaps the earliest known example of this in England. It was a fittingly impressive and innovative structure to mark the last attempt to keep the defences of the Tower up to date. Within less than a century, however, the military effectiveness of the Bulwark had been lost. Every representation from Wyngaerde onwards shows it choked with houses, encroachments which were to lead to endless litigation and the eventual demolition of its remains in 1668-70 in the wake of the Great Fire of 1666. Furthermore a short row of houses bordering a lane known as Petty Wales just to the west of the Bulwark can be seen on the Haiward and Gascoyne survey. After the Great Fire Tower Hill West remained as open ground from then until the present day, though two timber kiosks were erected here in the mid-1990s, and the Western Pavilion was built in 2004 as part of the Tower Environs Scheme.

### Archaeological issues

An irregular, perhaps naturally-formed hollow found opposite Gloucester Court in a service trench excavated in 1985 contained a small amount of Roman pottery. A possible pit of Roman date was also found. No direct evidence for the putative Roman road on the Great Tower Street/Gloucester Court alignment has yet been found. The tessellated pavement in the Roman building under All Hallows Barking church lies at a level of approximately 10.8m OD. It is difficult to determine the relationship of this floor to any other parts of the building, but its position possibly reflects the level of the contemporary ground surface. Roman levels were identified in the two pits excavated in 1999 outside the east and south sides of the church at slightly greater depths than this. The levels comprised what appeared to be exterior surfaces, the remains of buildings, and soil layers. Roman remains (pits, surfaces and soil layers) were also identified in some of the test pits excavated on Tower Hill West for the Tower Environs Scheme during 1999-2000, again at similar depths. No Anglo-Saxon horizons could be identified positively within any of these excavations.

Elements of the Bulwark have been exposed in several excavations, especially the service trench dug in 1985 (Hutchinson 1996) and during the Tower Environs Scheme works in 2003-4. Its brick walls generally lie at a depth of approximately 0.8m below the current ground surface, though they survive at more shallow depths locally. The 2003-4 works showed that some of the walls continue down for at least 2.5-3m. The excavations also exposed a number of post-medieval cobbled surfaces, though these often survive only as isolated ‘islands’ in between modern service trenches. These are now all the more valuable because of past losses, and old surfaces should therefore be preserved wherever possible. Unfortunately no archaeological evidence for Petty Wales and its buildings has yet been found.

### Existing disturbance

Tower Hill West is one of the few large open spaces on the eastern margins of the City of London. Unfortunately this has made it extremely attractive for statutory undertakers such as electricity and telecommunications companies. All kinds of service trenches cross the hill, running both north-south and east-west. Some are at quite shallow depths (within 0.6-1m), but others are as much as 3m deep. There are also a few exceptionally deep water mains and drains. The problem of working around the services became all too apparent during the initial design work for the Tower Environs Scheme during 1999-2000, when an initial concept design for a subway at the north end of the hill had to be abandoned. This was not because of archaeological sensitivity, though this would have been an issue. Instead, the plethora and different depths of services made it physically impossible to build the design without going to the huge expense of diverting many of the services. Many of the service runs are not recorded, making it even more difficult to deal with them. Thus there appear to be some blank zones on service maps, but it is difficult if not impossible to be certain that no services actually run through them without excavation.

### Summary of archaeological sensitivity

Category	Comment	Score
Historical interest	All periods from Roman on. Bulwark and Petty Wales are exceptionally important.	4
Archaeological potential	Preservation is variable due to earlier truncation and modern services, but major structures such as the Bulwark lie quite close to surface and there is	4

	considerable depth of stratigraphy.	
Existing disturbance	Extensive services makes excavation difficult.	4
<b>Total</b>		<b>12</b>

## TOWER GREEN

### Descriptive notes

The trees on Tower Green are mostly mature, and predominantly London Planes. The Plane tree on the small area of flat lawn at the north-west corner of the White Tower is also mature, evidently of the same age as the others. Two lime trees set into the paving at the entrance to the Bloody Tower are perhaps younger/less mature than the rest, being of fairly narrow girth in comparison.

### Historical summary

The Queen's House, currently the Resident Governor's house and formerly the Lieutenant's lodgings, is the most important Tudor building in the Tower, dating from 1540. The south range overlies a 14<sup>th</sup> century house, perhaps the constable's lodgings built in 1361-6. The west range is not thought to overlie any earlier structures (Allen Brown and Curnow 1984, 69-70). The drive in front of the Queen's House has probably always been a roadway (cf a drawing of 1720, reproduced in Parnell 1993 fig 38, and the 1597, 1682 and 1688 surveys). Tower Green contains several documented buildings and features. Most notable is the Tudor Main Guard, shown on Haiward and Gascoyne's survey of 1597, and extant until 1685. The Upper and Lower Gardens, with associated walls, occupied the remainder of Tower Green. Parts of the gardens are shown on the 1597 survey and 1720. The southern part of the gardens may have been a small orchard – several of the surveys (and the 1720s drawing) show trees here.

### Archaeological issues

The early Norman defensive ditch excavated in 1963-4 just to the south of the Waterloo Barrack's west end is believed to extend westwards across the north half of Tower Green (Parnell 1993, 24-5 and fig 11). It is difficult to predict how far below the current surface it would be found, but if it does survive it will undoubtedly be very deep. Parts of the Tudor Main Guard, meanwhile, were exposed and recorded during watching briefs for new heating pipes in 1975 (Parnell 1979) and for re-surfacing in 2007 (observed by the author). A large underground chamber was also found just to the north, perhaps representing a settling tank, some 2.7m deep. This seems to have been encountered quite close to the surface. Two parallel east-west walls noted in the south half of the Green during the watching brief were interpreted as a passageway between the former Upper and Lower Gardens, precursors of Tower Green as we see it today. The 1975 excavations were generally only 3ft/0.9m deep, and the report suggests that structures were only found at the bottom of this. The walls of the Main Guard (and indeed the Upper Garden) that were exposed in 2007, however, were often little more than 0.3m below the existing surface.

### Existing disturbance

A number of mains services are known to run around Tower Green. In general these appear to be shallower than in some other parts of the castle, though this cannot be taken as an absolute rule. The heating pipes inserted in 1975, for instance, cut through several of the Main Guard

walls. The London Plane and other trees on the Green will also have caused some disruption of archaeological levels. This was demonstrated during the 2007 watching brief, when two probable tree pits (ie where root boles have been removed after tree loss or felling) had truncated post-medieval archaeological levels.

### Summary of archaeological sensitivity

Category	Comment	Score
Historical interest	High in specific locations (eg the Main Guard), and the Green as a whole is interesting as one of the few relatively open spaces maintained in the castle through most or all of its history.	4
Archaeological potential	The few observations that have been possible so far suggest that archaeological preservation is excellent on the Green.	4
Existing disturbance	This appears to be one of the less disturbed parts of the Tower, though some services have been cut through archaeological levels.	3
<b>Total</b>		<b>10</b>

## COLDHARBOUR

### Descriptive notes

The area to the west of the White Tower is generally known as Coldharbour after the gate tower of that name. This provided (and controlled) access into the medieval palace within the innermost ward. Coldharbour now falls into distinct upper and lower areas of lawn, separated by a grassed bank. The upper lawn contains a single mature London Plane tree, seemingly the sole survivor of a row of five shown on the 1896 Ordnance Survey map. The lower lawn is dominated by the ruined base of the Coldharbour Gate, exposed by excavations in the 1950s (see below).

### Historical summary

The ground in front (north) of the Coldharbour Gate seems to have been kept as open ground during the medieval period. It is shown that way on both the Haiward and Gascoyne survey of 1597, and the Board of Ordnance plan of 1681/2. The latter does show a new fence around the White Tower, however, including along its west face. This work seems to have been done in 1669/70 (Parnell 1993, 67) as part of a major re-ordering of the old palace area. The remaining medieval buildings along the south side of the White Tower were demolished in 1674, and the Coldharbour Gate met the same fate in the following two years (*ibid*, 67-8). Rows of small sheds were then built against the south and west sides of the White Tower in 1685-6. Hence they are not shown on the 1681/2 plan, but do appear on Holcroft Blood's bird's-eye view of 1688. The sheds on the west side were cleared to make for the construction of a new Main Guard built against the west side of the keep in 1717 (*ibid*, 82-3 and fig 63). This was the latest of several Main Guard buildings to be erected on Tower Green and to the north-west of the White Tower from Tudor times onwards (see the 1597 and 1681/2 surveys). The new Main Guard and other stores in the Coldharbour area are shown on a series of 18<sup>th</sup>-century surveys, including a well-known sequence by Clement Lemprière, a draughtsman in the Board of Ordnance from 1717 (and its Chief Draughtsman by 1841). The remarkable

accuracy of his surveying has been demonstrated recently by comparing one of his plans with current Ordnance Survey base mapping.

Yet another new Main Guard had been created by the conversion of a 17<sup>th</sup>-century storehouse to the north of the Wakefield Tower in 1846. Perhaps inevitably, its predecessor of 1717 on the west side of the White Tower was duly demolished forthwith, and the ground around it was then raised and terraced (*ibid*, 92). This largely established the present appearance of this area, though excavations in 1953 to expose the ruined base of the Coldharbour Gate completed the picture.

**Archaeological issues**

The Coldharbour Gate and parts of the west face of the White Tower were examined in 1899 (EHHPR 105 N 265), 1946 (EHHPR 105 N 97), and most extensively by Peter Curnow in 1953 (EHHPR 105 JJ 132-6, and an unreferenced drawing; also numerous black-and-white photographs). Curnow’s excavation in particular reduced the ground level immediately north of Coldharbour by about 3m compared to its level in the 1930s. This must have removed the southern half of the 1717 Main Guard and all features/layers associated with it. Any trace of the late 17<sup>th</sup>-century sheds seems likely to have been removed as well. Deposits still survive below the depth of Curnow’s excavation, however, while archaeological deposits (pre-19<sup>th</sup>-century) on the upper lawn adjacent to the north-west corner of the White Tower seem to have suffered little or no disturbance. Therefore the Main Guard (and perhaps the earlier sheds) should survive in good condition here. There is also the potential for survival of Roman structures and levels, similar to those excavated on the east side of the White Tower in the 1950s (see below).

The Oxford Archaeological Unit carried out a watching brief on the excavation of a branch of the new electricity inner ring main to feed the White Tower in 1995. This crossed both the upper and lower lawns, and the grass bank between them. The trench was deliberately kept as shallow as possible (generally *c* 0.5m). A number of brick masonry structures were found (see Hiller and Keevill 1994, 166-8 and 178, fig 1 and plates 11-12). Two post-medieval walls at the top of the grass slope, and pits associated with them, are likely to relate to the 1717 Main Guard. The walls had been damaged in the past, most probably during the 19<sup>th</sup>-century demolition of the building.

**Existing disturbance**

The upper lawn appears to have suffered relatively little modern disturbance. The 1995 inner ring main branch to the White Tower did not involve any damage to significant archaeological remains (Victorian or earlier). It encountered and crossed a number of earlier cables and ducts (mostly on the lower lawn around the Coldharbour Gate), but again these were at shallow depths. The main disturbance, however, was Curnow’s 1953 excavation to expose the bases of the Gate’s twin drums (see above). This was a major and obviously intrusive excavation, involving the removal of significant post-medieval structural remains. Nevertheless, as noted above some archaeology is believed to remain *in situ* beneath the excavated level.

**Summary of archaeological sensitivity**

Category	Comment	Score
Historical interest	Exceptional for the construction and development of the White Tower and buildings associated with it,	5

	including Coldharbour Gate and the late 17th-century Main Guard built against its west face [check date of this, map information]. This area is in the south-east corner of the Roman city walls as well, close to a known Roman building.	
Archaeological potential	Exceptional for the potential survival of Roman remains, the structure and constructional details of the White Tower, Coldharbour Gate and the late 17 <sup>th</sup> -century stores and 18 <sup>th</sup> -century Main Guard. Preservation is believed to be exceptional on the upper lawn, but past excavations have reduced the potential of the lower area around Coldharbour Gate.	4 [upper lawn 5, lower area 3]
Existing disturbance	Upper lawn appears to have suffered relatively little damage from service excavations and small features such as the recently inserted concrete foundation pads for a display board. The lower area has suffered extensive disturbance through past excavations, though this increases the importance of any surviving remains below ground.	3 [upper lawn 2, lower area 4]
<b>Total</b>		<b>12</b>

## AREA BETWEEN THE WHITE TOWER AND THE WATERLOO BLOCK

### Descriptive notes

This is one of the largest open areas within the Tower. It is dominated by a mixed gravel and tarmac surface which continues south-east between the Old Hospital Block and the Inmost Ward. In this case the surface stretches from the Royal Fusiliers' Museum westward to the cobbled path along the east side of Tower Green. The tarmac is crossed and bordered by stone pavements edged with cobbles, set at the same level and with cobbled drainage channels where necessary. The 'tarmac' is laid in strips, those immediately north of the White Tower running east-west, while those in front of the Royal Fusiliers' Museum run north-south. Manhole covers and areas of disturbance to the 'tarmac' surface show where a number of mains services run across this area. There is one tree on the corner between this area and the run down the east side of the White Tower.

### Historical summary

The historical development of the area to the north of the White Tower followed two distinct paths until the middle of the 13<sup>th</sup> century. The Roman city wall represented the limit of the castle until Henry III the defences eastward beyond it in the 1230s. The area behind (ie west of) the city wall seems to have been in active use during the Roman period (see section on East of the White Tower, below), although there may have been little or no activity during the Anglo-Saxon era. The establishment of the Norman castle saw this area become part of the early defences (Parnell 1993, 17-19). The early defensive ditch was filled in as the castle grew, however, and the space in front (north) of the White Tower became open ground. The extra-mural area seems to have been largely or wholly disused until it was taken into the castle with Henry III's changes. From then on the whole of the area currently under consideration became a single, substantial open space. Only one building is firmly documented here from the medieval period through to modern times. This was one of the many successive Main Guards, erected just to the north-west of the White Tower in the 1680s (ibid, 78; Parnell 1979). The building is shown in plan on the 1681/2 survey, and perhaps

somewhat schematically in three dimension in the bird's-eye view of 1688. Presumably it was demolished once its successor had been built against the west face of the White Tower in 1717 (see above).

The cemetery of the Chapel of St Peter ad Vincula formerly extended into the western half of this area. The Chapel was a Royal Peculiar, and thus extra-parochial, but it clearly had a substantial community to cater for at many points during its history. At the end of the 16<sup>th</sup> century, for instance, the then Constable Sir John Peyton complained that so many people lived at the Tower that 'ther is not w<sup>th</sup>in the Tower anie place sufficient for their burialls'; there were evidently some 300 communicants at the castle in 1596 (Keay 2001, 40). The burial ground seems to have been well used throughout its history, though presumably it would have closed during the mid-19<sup>th</sup> century in common with most of London's urban cemeteries.

The open nature of this space seems therefore seems to have been maintained through many centuries of the Tower's history. Gardens appear to have developed at the east end in the 17<sup>th</sup> century, probably in association with staff residences (see 1681/2 plan) but that is the limit of apparent use. The area would have been an admirable parade ground, but it seems that Tower Green served this function from the mid-late 17<sup>th</sup> century, being formally described as the Parade (see above). There are suggestions, however, of deliberate landscaping later in the post-medieval period. A 1725/6 plan by or after Clement Lemprière shows an avenue of trees running along the Grand Storehouse, a fine building erected in 1688-92 and occupying a similar footprint to the Waterloo Block. This avenue is not shown on earlier versions of the plan (eg of 1717), but the 1725/6 version seems to be accurate in most (perhaps all) other respects. Most of the trees seem to have gone by the 19<sup>th</sup> century, though at least one still stood in front of the west end of the Grand Storehouse when Lt Colonel William Booth made an accurate preparatory sketch for a painting in 1817. Presumably any surviving trees either suffered in the fire of 1841 that devastated the Grand Storehouse, or must have been uprooted when the Waterloo Block was built to replace it. The 1<sup>st</sup> edition Ordnance Survey map of 1873 does not show any trees between the White Tower, the Waterloo Block and the Royal Fusiliers' Museum. Interestingly, however, the 1896 edition shows a single tree on the north side of the stairs into the Museum. At least two late 19<sup>th</sup> and early/mid 20<sup>th</sup>-century photographs also show this tree, but it seems to have been removed at some point after World War II.

### **Archaeological issues**

The only archaeological excavations of any significance in this area were carried out by Brian Davison in 1963-5 (see Parnell 1983a, fig 17, for location plan). They uncovered a substantial depth of Roman deposits, which had been cut by a Norman ditch. This was interpreted as being part of the early castle defences (see Parnell 1993, 17 and fig 5). It had apparently been re-cut, and straightened to head toward the Beauchamp Tower (*ibid*, 24-5 and fig 11). Finally the excavations exposed a few skeletons, presumably from the Chapel cemetery, and structural elements of the short-lived late 17<sup>th</sup>-century Main Guard. The archaeological remains were only a small distance below the modern ground surface, generally 0.2-0.3m (but occasionally deeper; see section drawings reproduced in Parnell 1983a, figs 18 and 19).

The inner ring main excavations within this area were very limited during 1993-5. Consequently no significant archaeological deposits, structures or features were exposed. Part of an articulated human skeleton was found in 1993, however, during the inner ring main watching brief between the Chapel of St Peter ad Vincula and the Waterloo Block (Hiller and Keevill 1995, 20).

### Existing disturbance

As noted above there are a number of areas where service trenches can be seen crossing and cutting through the surfaces in this area, though the extent of surface disturbance appears to be much less than in other areas. The electricity inner ring main, for instance, only crossed the eastern edge of the area in 1993-4, while the White Tower spur excavated in 1995 crossed the south-west corner before running over and down the Coldharbour area (Hiller and Keevill 1994, plate 1 and fig 2). There is correspondingly less information available about services in this area. The construction of the Waterloo Barracks in 1845 will have involved the insertion of new services, and subsequent developments (especially the 1960s basement Jewel House) will undoubtedly have been disruptive. Brian Davison's 1963-5 excavations outside the south-west corner of the Barracks may also be noted in this respect. Despite these intrusions, it may be that this area is relatively undisturbed.

### Summary of archaeological sensitivity

Category	Comment	Score
Historical interest	High for the development of the castle's defences from the Norman period onwards, for the 17 <sup>th</sup> -century Main Guard, and for association with adjacent areas (Tower Green, Chapel of St Peter ad Vincula etc).	4
Archaeological potential	High for the early and later Norman defensive ditches north of the White Tower, remains of the Main Guard, and for burial archaeology in the cemetery of the Chapel of St Peter ad Vincula.	4
Existing disturbance	Construction of the underground 'bunker' for the Crown Jewels exhibition in the 1960s may have impacted on the north side of this area. Manholes, records and observations also show that it is crossed by several mains services, though given the extensive open space here the cumulative impact may be less than in more constricted areas such as Water Lane.	3
<b>Total</b>		<b>11</b>

## EAST OF THE WHITE TOWER

### Descriptive notes

This area continues with the bound gravel and tarmac surface seen to the north and north-east of the White Tower. The two trees here (Sycamore and Lime – LUC report) are of narrower girth and appear less mature than the four large Planes on the South Lawn and just north of the Lanthorn Tower (see below). These four all appear to be of the same age, and are probably contemporary Victorian plantations with those on Tower Green and the wharf. It is perhaps less likely that the two trees to the east of the White Tower are of this same plantation phase reflecting the situation on the 1873 OS map, though they may be replacements.

### Historical summary

The east side of the White Tower is now open to view, fronted by a lawn with the line of the Roman city wall picked out in concrete and gravel. After Henry III pushed the castle's eastern defences beyond the city wall, however, a greater amount of space was opened up here. This was developed when the Great Court was built just to the east of the White Tower, probably not earlier than the 14th century (Parnell 1982, 121). The Great Court is shown on Haiward and Gascoyne's 1597 survey and consisted of a long, low range up to 16 m wide. It ran along the entirety of the White Tower's east face and incorporated the Wardrobe Tower in its south end. There was a narrow, open courtyard between the Tower and the building. It was demolished in 1879 (Parnell 1982, 121). As already noted the site had previously been occupied by the Roman city wall, with a substantial masonry building on its west side that was partly destroyed by the construction of the White Tower (Parnell 1982, 101-15).

The 1597 survey also shows a long, narrow building running east from the Wardrobe Tower to the Broad Arrow Tower. This was a timber-framed Wardrobe (cf Parnell 1993, 53; Allen Brown and Curnow 1984, 71) built in 1532-3 (Parnell 1980, and 1993, 56-7). Its construction reflected the general refurbishment of the royal apartments in the Inmost Ward and the south-east corner of the Inner Ward before the coronation of Anne Boleyn as queen in May 1533. This was one of the last occasions when the Tower was used as a royal residence; thereafter it increasingly became an administrative site, especially for the Office of Ordnance (Parnell 1980). The Wardrobe was demolished in 1663 to make way for the New Armouries building (Parnell 1980, 147; 1993, 64). It is not known whether the wardrobe itself lay on a virgin site, or whether it replaced an earlier structure. Excavations inside the New Armouries in 1999 revealed a hitherto unsuspected medieval building running against and parallel to the inner curtain wall. There may have been other contemporary structures in this area.

### **Archaeological issues**

There have been numerous excavations on the line of the Roman city defences within the Tower. These have studied both the landward wall on the east side of the city, and the river defences fronting the Thames. Demolition of the Great Court against the east side of the White Tower in 1879 revealed a section of the wall, as reported by C H Compton (1881) and E F Loftus Brock (1882, including an important section). Several small-scale excavations to the east and south-east of the White Tower during the 1950s also uncovered the wall, in varying conditions (Parnell 1982, 88-94, 101-5, 116-21).

The most important evidence for a Roman building at the Tower to date came from excavations in 1956-7. A substantial building incorporating a tessellated pavement was found during excavations between the White Tower and the city wall (S A Butcher, in Parnell 1982, 101-16). The walls and associated surfaces were around 0.5m below the lawn surface, and approximately 1m of Roman deposits were present. Unfortunately the excavation report makes only passing reference to the structural remains of the Great Court, though clearly elements of this were located (ibid, 104). It is presumed that much of the archaeology here was left in situ.

Excavations for the electricity inner ring main during 1993 revealed one wall of the Wardrobe building (Hiller and Keevill 1994, 160 and figs 7-8). Unfortunately it was impossible to be certain whether this was the north or south wall of the structure. The top of the wall was only 0.25m below the modern tarmac surface, and it stood 0.87m high above its foundations (which were not excavated).

### **Existing disturbance**

The tarmac and gravelled area to the east of the White Tower contains a major concentration of mains services, including the electricity inner ring main inserted during 1993-4. The excavations carried out then exposed many earlier services, some of which are redundant but still in place. Most of the trenches are fairly shallow (less than 1m deep), but some are much deeper than this. As in most other parts of the Tower, there are numerous manholes to go with the services, made necessary every time there is a significant change of angle or a connection/branch point. The extensive disturbance is undoubtedly a negative factor as far as the archaeological resource is concerned, but it also increases the value of all surviving remains.

### Summary of archaeological sensitivity

Category	Comment	Score
Historical interest	Exceptional for the Great Court and Wardrobe. There is little historical evidence for structures other than these, but the presence of buildings cannot be ruled out.	4
Archaeological potential	Very high, with remains surviving close to the surface and to considerable depths.	4
Existing disturbance	Considerable disturbance caused by excavation of service trenches. This makes the surviving archaeological levels all the more important.	4
<b>Total</b>		<b>12</b>

## AREA WEST OF THE NEW ARMOURIES

### Descriptive notes

The ground surface changes from gravel and tarmac to cobbles in front (ie west) of the New Armouries. The western edge of the cobbled area is treated somewhat differently, with a raised, stone-flagged pavement. There is also a small, roughly ovoid raised paved area just to the west of the New Armouries' south wing. This raised area contains a small tree surrounded by a timber bench, and a large cannon mounted on concrete blocks. The tree is a fairly recent plantation (see LUC report), with a wooden bench surround. The forecourt of the New Armouries is also cobbled, but this area is terraced up against the general slope of the ground. The north end of the forecourt is thus at about the same level as the cobbles to the west, but as the ground slopes down the forecourt becomes increasingly raised above it. This necessitates the use of a brick retaining wall along the southern half of the forecourt. Finally there are two in the cobbled area to the north of the Lanthorn Tower. These appear to belong to the later 19<sup>th</sup> century plantations around the castle.

### Historical summary

This area lay outside (east of) the Roman city wall, and therefore was also outside of the Tower until Henry III's eastward extension of the Inner Ward in the 1230s. There is little direct historical evidence for the use of this area in the medieval period, though it is known that it formed part of the royal palace complex. Haiward and Gascoyne's 1597 survey shows that the whole area up to the Tudor Wardrobe was a substantial garden along the east side of, and attached to, the royal palace. The total redevelopment of the palace area in the 17<sup>th</sup> century (and subsequently) saw the construction of the New Armouries on the east side of the current area in 1663-4. The Ordnance offices in the south-east corner of the inmost ward also

encroached into the area of the former royal garden, with a walled corridor separating this from the New Armouries. This situation pertained throughout the 18<sup>th</sup> century and well into the 19<sup>th</sup>, although the Ordnance offices had substantially rebuilt in the last decades of the 18<sup>th</sup> century. The 1<sup>st</sup> edition Ordnance Survey map still shows the rebuilt accommodation, but all these buildings were demolished in the 1880s as part of the ‘remedievalization’ of the Tower (Parnell 1993, 98-108). The 1896 Ordnance Survey shows the newly opened up space between Coldharbour and the New Armouries.

There is some evidence for surface treatments and landscaping for this area in late Victorian photographs. In particular, several images of the White Tower taken from the south-east just before the demolition of the Great Court and the Ordnance offices show that the area to the east and south of the keep was cobbled over. There was a stone-slabbed pavement along the west edge (see Impey and Parnell 2000, fig 66). A layer of cobbles found 0.13m below the existing surface in parts of the inner ring main trench during 1993-4 probably relates to the surface shown in the 1870s photograph. The surface must have been extended southwards across the former Ordnance offices once they had been demolished. The present surfaces perhaps represent a partial re-laying/bedding of a post-medieval or Victorian surface at some time in the 20<sup>th</sup> century.

### **Archaeological issues**

Extremely valuable (albeit unexpected) information about the medieval usage of this area was uncovered inside the New Armouries in 1999, as part of the catering project for that building (Keevill and Kelly 2006, 32-43 and 53-5). A 14<sup>th</sup>-century lean-to structure was found running along the internal face of the inner curtain wall. The structure excavated in the New Armouries was of at least two constructional phases. In both cases foundations and walls largely used chalk blocks, with some limestone (probably Kentish Rag). Floors also utilised rammed chalk (and mortar as well), while mixed chalk and mortar were also used as the bedding for tiled hearths and a brick oven. Significantly, chalk and earth floors were also found west of (ie outside) the building, sloping down from north to south in a direct reflection of the current surface level. Unfortunately these surfaces had been truncated to the north, probably during the late 17<sup>th</sup>-century construction of the New Armouries. The late medieval buildings and associated internal features had probably gone out of use long before then, however, explaining their absence from the 1597 survey. It is difficult to be certain, but the external surfaces may have continued in use, perhaps as paths within the medieval garden.

Fragments of a further late medieval (or perhaps Tudor) building were found during the 1993 inner ring main watching brief just to the north of the Queen Elizabeth II Gate (Hiller and Keevill 1994, 160-3, 171, and fig 9). This was tentatively interpreted as a structure belonging to the medieval royal palace, though it was impossible to suggest how the building might have been used. Though fragmentary and isolated (inherent in the nature of such excavations), these remnants clearly show that archaeological remains could survive at fairly shallow depths below the surface over much of this area. The Wardrobe wall was less than 0.3m below the surface, and the building north of the Gate was at a similar depth.

### **Existing disturbance**

The concentration of services that runs down the area to the east of the White Tower continues through the cobbled and other surfaces to the west of the New Armouries. Most of them are channelled through the Queen Elizabeth II Gate and thence into Water Lane (see below). As noted above, the excavations for the electricity inner ring main during 1993-4 exposed many earlier services, some of which are redundant but still in place. Most of the earlier services lie within 1m of the current surface, but some are much deeper than this. The

extensive disturbance is undoubtedly a negative factor as far as the archaeological resource is concerned, but once again it also increases the value of all surviving remains.

**Summary of archaeological sensitivity**

<b>Category</b>	<b>Comment</b>	<b>Score</b>
Historical interest	Considerable importance for the medieval palace gardens, possibly structural evidence as well. The excavations within the New Armouries in 1999-2000 also showed that undocumented or poorly documented buildings could be present.	4
Archaeological potential	High both for structures (eg remnant of possible palace building found to the north of the Queen Elizabeth II gate in 1993) and garden features. New Armouries project demonstrated potential for unexpected discoveries in this area, though perhaps more likely adjacent to inner curtain wall.	4
Existing disturbance	Considerable disturbance caused by excavation of service trenches. This makes the surviving archaeological levels all the more important.	3
<b>Total</b>		<b>11</b>

**SOUTH LAWN**

**Descriptive notes**

There is a small group of London Plane trees on the lawn to the south of the White Tower. As with the Planes to the north of the Lanthorn Tower, these appear to belong to the later 19<sup>th</sup> century plantations around the castle. The south edge of the lawn terminates at one of the Tower’s shops, in this case sunk down into the ground during the mid-late 1970s so as to avoid visual intrusion on the keep itself. The construction work necessitated the archaeological excavation (and thus controlled removal) of a significant depth of archaeological deposits over much of this area (Parnell 1985). The Roman riverside wall was consolidated and left exposed as a part of this process.

**Historical summary**

The south face of the White Tower has had various structures built against it. There was a forebuilding here, probably from the reign of Henry II (Parnell 1993, 22-3). This is shown on Haiward and Gascoyne's 1597 survey, along with the medieval Jewel House. These and other buildings in the area were swept away in 1669-70 and replaced by various storehouses within the Inmost Ward (Parnell 1980, and 1993, 65-70). These buildings are shown on Holcroft Blood's bird's-eye view of 1688. In 1717, a Carriage Storehouse was built against the south face of the White Tower; the storehouse was in turn replaced by the Horse Armoury in 1825. The latter was demolished in 1883 as part of a general process of ‘clearance’ of what were felt to be inappropriate structures around the castle (Parnell 1993, 96-7).

The remainder of the area to the south of the White Tower was the site of the royal accommodation during the medieval period. This included the Great Hall, the King’s and Queen’s Lodgings, various service buildings, and gardens. Fortunately the palatial accommodation is shown in some detail on Haiward and Gascoyne’s 1597 survey. Like the

Wardrobe, these buildings were swept aside as the Ordnance Department took over the Inmost Ward in the late 17<sup>th</sup> century (Parnell 1980), and therefore they do not feature on the 1681/2, 1688 or subsequent plans of the castle. A new Office of Ordnance was built in 1672-3, in the south-east angle of the Inmost Ward (Parnell 1980, 154 and fig 2). Further redevelopments occurred in the late 18<sup>th</sup> century (Parnell 1985, 36-43). The original Lanthorn Tower was demolished as part of this process. Finally, in 1882-5, the Ordnance buildings themselves were demolished. The reconstruction of the Lanthorn Tower and the inner curtain wall to either side soon followed (Parnell 1985, 44). The Inmost Ward was then left virtually clear of encumbrances until the late 1970s, when the History Gallery (currently the shop referred to above) was built.

### **Archaeological issues**

Excavations within the Inmost Ward have largely been concerned with the medieval defences and the White Tower itself, although the later buildings within the ward have also been studied. In 1944 two small trenches were cut to a depth of *c* 5m against the south face of the White Tower to examine its foundations (EHHPR 105 JJ 89). Within the Inmost Ward, the excavations of 1955/6 and 1976/7 traced the subsequent use of the Roman riverside wall as the base for the medieval Inner Curtain wall, as well as locating a limited number of medieval palace features (Parnell 1985, 23-6). The post-medieval use of the ward was also examined (Parnell 1985, 26-7). The latter and modern deposits occupied the top 1m or more of virtually all exposures. The post-medieval Ordnance buildings had removed much of the underlying archaeology, while the 1955/6 and 1976/7 work seems to have removed remaining levels down to the natural geology over much of the site (Parnell 1985). A small excavation on the Raven's Cage site, however, suggests that archaeological deposits of Roman, medieval and post-medieval date survive in good condition only a short distance further to the east. The published account of this excavation is essentially an interim report. It deals with the Roman findings in the trench, to the virtual exclusion of later deposits (Parnell 1981). These excavations suggest that archaeological deposits extend down for several metres over much of the South Lawn, although it is clear that post-medieval building work truncated earlier levels in some areas.

Several post-medieval and Victorian brick walls were exposed and recorded during the Oxford Archaeological Unit's 1995 watching brief on inner ring main spur across the south lawn (see Coldharbour section, above). One wall probably belonged to either Carriage Storehouse of 1717 or the Horse Armoury of 1825 (Hiller and Keevill 1994, 166, 178 and plate 11). Other walls further to the west were clearly Victorian, and related to the Main Guard of 1846 or, more probably, its successor of 1898-1900 on the same site. This final Main Guard was gutted by incendiary bombs in 1940 and was subsequently demolished. The present landscaping in this area is largely the result of the post-war demolition.

### **Existing disturbance**

The 1950s and 1970s excavation in the History Gallery/shop area removed most or all of the archaeological remains in the southern part of this site. Construction of the post-medieval Ordnance offices was also a destructive process, especially for the original inner curtain wall and Lanthorn Tower. Finally some mains services are known to cross this area, though the Lawn has probably been less affected than most other parts of the castle in this respect.

### **Summary of archaeological sensitivity**

Category	Comment	Score
Historical interest	Exceptionally important for the medieval palace, and also for the Roman city.	5
Archaeological potential	Deposits survive close to the surface and to considerable depths over much of the South Lawn. The importance of archaeological deposits in this area cannot be overstated.	5
Existing disturbance	There has been extensive post-medieval and modern truncation by building works. Mains services appear to be less intrusive than in many other parts of the Tower.	3
<b>Total</b>		<b>13</b>

## WATER LANE

### Descriptive notes

There is a group of mature London Plane trees to either side of the Salt Tower (two on the east and three to the west). The easternmost is on the roadway just in front (north) of the East Drawbridge, while the others are on the lawns to either side of the Salt Tower. Further to the west along Water Lane three dead trees or shrubs are represented by the immature stumps left behind, with iron railings still round them. These lie against the outer (south) face of the inner curtain wall between the Bloody Tower and Bell Tower (one is against the Bell Tower face). This suggests a historic precedent for the removal of trees where they are in actual or potential conflict with built fabric and/or archaeological sensitivity.

### Historical summary

Water Lane is the southern part of the outer ward, created when Edward I extended the Tower's defences concentrically outwards from the inner ward of his father, Henry I, in 1275-81. Edward's outer curtain wall was built into the edge of the river Thames, thus reclaiming a narrow band of the foreshore. The lane formed here between the inner and outer curtain walls was never developed extensively because of the restricted space available, although important elements of the medieval palace did overlap into it. Haiward and Gascoyne show a Privy Garden in Water Lane between the Lanthorn and Salt Towers, for instance, while the royal water gate in the Cradle Tower would have necessitated passage through the outer ward to get to it.

Structures in this area include cross-walls or bridgeworks between the Bell, Wakefield, Lanthorn and Salt Towers and the outer curtain wall, and the retaining walls to the basin on the north side of St Thomas's Tower (see the 1597, 1682 and 1688 surveys). Post-medieval structures in Water Lane associated with the Ordnance Office in the Inmost Ward can be seen between the Wakefield and Lanthorn Towers in late 17<sup>th</sup> and 18<sup>th</sup>-century plans. The Board of Ordnance 1681/2 survey, for instance, shows 'Garde' buildings in the lane immediately to the west of St Thomas's Tower and to the south of the Salt Tower. The Lanthorn Tower seems to have been engulfed by Ordnance buildings by this time, with a range running fully across Water Lane, and there were further structures against the south face of the inner curtain wall east of this towards the Salt Tower.

### Archaeological issues

There have been several substantial excavations in this area (including one within the St Thomas's Tower basin), while the whole of Water Lane was resurfaced in 1992. The latter operation included cable trench excavations by building contractors under archaeological supervision. Only three archaeological features were noted, comprising parts of the rear foundations to St Thomas Tower (Gadd 1992a).

In 1958, Peter Curnow excavated a deep trench to examine the south (exterior) face of the inner curtain wall on the west side of the Bloody Tower; the work continued into the Tower passageway. This work is unpublished except in notes and summaries, but original records and photographs have been examined at the Tower of London and at the EHHPR. The excavations were taken to a depth of approximately 2.9m, and located the north-west corner of St Thomas's Tower. The work inside the Bloody Tower passageway showed that the original surface here lay some 0.75m below the existing level (Parnell 1993, 29). The records suggest that the top 0.75m-1m within the body of the trench was disturbed ground.

Excavations to a typical depth of 3m in 1957 by Peter Curnow and 1992 by Derek Gadd to the east of the Wakefield Tower exposed the medieval postern water gate and a culverted drain. These and other Henry I features were sealed by 2m-deep dumped layers representing the raising of the ground level during construction of the outer ward by Edward I. The uppermost 0.6m-0.8m of ground had been extensively disturbed by service trenching, but fragments of late post-medieval and/or Victorian foundations survived. Both excavations are unpublished. Curnow's work is noted in a number of journals (and by Parnell 1993, 28-9). Gadd's excavation was described in detail in an internal HRP report (Gadd 1992b).

An excavation was undertaken against the south face of the Victorian inner curtain wall west of the Lanthorn Tower in 1977 (Parnell 1985). This revealed part of the Roman riverside wall and subsequent medieval rebuilds. A 15<sup>th</sup>-century buttress rested diagonally against the medieval work and extended south-west beyond the edge of the excavation (Parnell 1985, 25-6, fig 11 and plate 4). This feature is clearly visible on a plan of 1774 (PRO Works 31/171), which also suggests that it would not have continued very far beyond the excavations. The published sections (Parnell 1985, figs 12 and 14) suggest that the top 2m of deposits consisted of Victorian and modern material, although the tops of earlier walls were located at depths of 0.9m-1.2m.

Excavation against the south face of the inner curtain wall just to the east of the Salt Tower also exposed post-medieval/Victorian foundations and surfaces at quite shallow depths (generally within 1m of the current ground level). More significantly, the excavation also exposed the Thames foreshore several metres below ground, and demonstrated that this area had actually been reclaimed in the Roman period (Parnell 1983, 98-9). Thick layers of soil had been dumped on the foreshore, and a number of stakes had been driven in, perhaps to assist with consolidation.

### **Existing disturbance**

Water Lane is a narrow strip of land running east-west across the south side of the castle. Inevitably it is an important entry point not only for people but also for mains services. The number of manhole covers in its cobbled surface serves to show very clearly that the lane is heavily populated with a variety of cables and pipes. Many of these are relatively shallow (within *c* 1m of the current surface), but others are believed to be more deeply buried. The excavations that have taken place in Water Lane, however, have shown that the services have not been too archaeologically disruptive.

**Summary of archaeological sensitivity**

<b>Category</b>	<b>Comment</b>	<b>Score</b>
Historical interest	Exceptionally important for understanding the development of the castle's defences, and its relationship with the river Thames. Elements of the medieval palace and post-medieval Ordnance offices also extended into this area.	5
Archaeological potential	Very high locally, with important documented medieval and post-medieval structural remains. Other areas appear to have been unoccupied for most of the Tower's history. Excavation adjacent to the Salt Tower demonstrated excellent preservation of river foreshore deposits, along with evidence for Roman reclamation. These can be expected to survive along most or all of Water Lane.	4
Existing disturbance	Excavations east of the Wakefield Tower in 1957 and 1992 have removed most or all archaeological levels here. The lane is also quite densely occupied by mains services.	3
<b>Total</b>		<b>12</b>