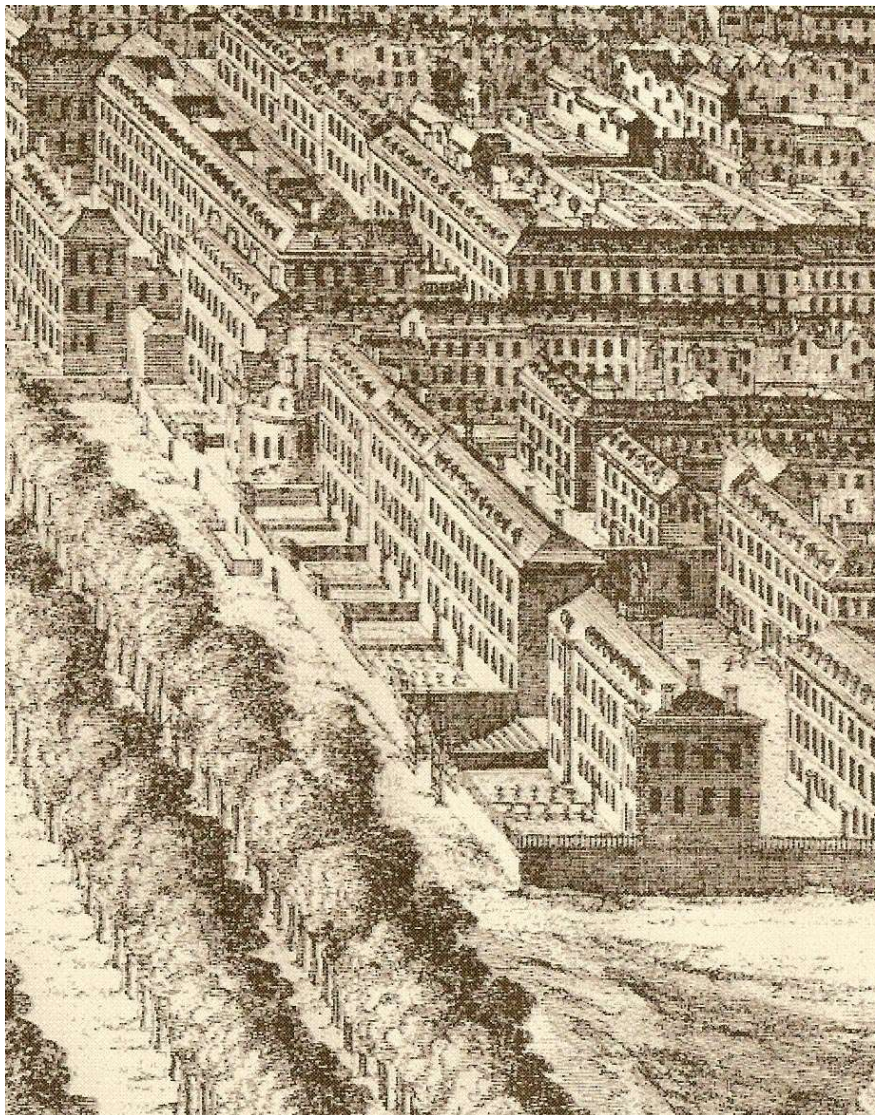


**16 QUEEN ANNE'S GATE,
LONDON SW1H 9AA,
CITY OF WESTMINSTER**

ARCHAEOLOGICAL RECORDING AND ASSESSMENT



COMPASS



ARCHAEOLOGY

March 2009

**16 QUEEN ANNE'S GATE,
LONDON SW1H 9AA,
CITY OF WESTMINSTER**

ARCHAEOLOGICAL RECORDING AND ASSESSMENT

SITE CENTRE NGR: TQ 29720 79630

PLANNING REFS: 08/08316/FULL, 09/00193/FULL & 08/03013/FULL

LISTED BUILDING REF: 08/03014/LBC

SITE CODE: QAN 09

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March 2009

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Abstract

This report records the archaeological discovery of a circular brick-lined domed cistern (an artificial reservoir for holding water), which was exposed during redevelopment groundworks in the basement of 16 Queen Anne's Gate, London SW1. The site is currently being redeveloped to alter and convert the vacant office premises into a private residential house. The planning references for this work are 08/08316/FULL, 09/00193/FULL and 08/03013/FULL and the listed building reference is 08/03014/LBC. The site is located at NGR TQ 29720 79630

The house of 16 Queen Anne's Terrace forms part of a terrace of seven town houses, originally built in the period 1774 to 1778 and constructed on the site of an earlier terrace. This house, along with nos. 14 to 22 (even) and 22A and 24 Queen Anne's Terrace, was listed Grade I in 1958 and recorded as being 'part of an exceptional group of late 18th century and Queen Anne houses'.

Assessment of the feature suggests that it is a domed cistern, as opposed to a well, soakaway or cesspit. A cistern works in a similar fashion to a conventional well, drawing water up through atmospheric pressure, but it seems unlikely that its function here was for drawing fresh drinking water, but most probably 'grey water' for laundry, cleaning and general domestic purposes. The perforated end of the lead pumping pipe also seems to suggest that the feature was not a dewatering device or cesspit. The cistern was roughly circular and was found just to the south of the main staircase into the basement. It measured an approximate internal diameter of 1.36m (just over 4ft) and was recorded to a total depth of 1.7m (5ft 7"). It was constructed of red stock moulded bricks (mainly seconds) and was dry lined, but with a mortared domed crown partially surviving. The crown showed evidence of two different types of mortar being used and was constructed externally using an internal timber former or falsework. The crown had been overlain with a rectangular stone of Oolitic limestone, but on analysis this appears to be unrelated to the well. Internally the cistern contained the original lead pipe to the northeast, which would have led to a hand pump situated nearby. The bricks from the cistern were examined by John Brown of Gifford and identified as conforming - through fabric type and analysis of the mortar - to a date within the second half of the eighteenth century to the 19th century.

In conclusion, the domed cistern is felt to date to the second and current terrace of houses that have stood on this site, i.e. to date from 1774. Historic records show that the previous terrace that stood on the site had significant problems with seasonal flooding and water ingress and this system may have been installed with the dual purpose of providing a pump for grey water for general domestic purposes and also as a overflow system for dewatering the basement at spring tides and other intervals of flooding.

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1. Introduction

1.1 Site Location

The Grade I Listed Building of 16 Queen Anne's Gate, Westminster, is currently undergoing a programme of redevelopment and refurbishment. During the course of these works a previously unrecorded circular brick-lined domed cistern (an artificial reservoir for holding water), was uncovered in the basement close to the main staircase. This document forms a response to recommendations made by English Heritage for the archaeological observation and recording of the cistern and for a brief programme of archaeological research to assess the date, construction, form and function of this feature.

The cistern was investigated and recorded on site by Compass Archaeology on 20th February 2009 and pottery, brick and mortar samples removed for specialist analysis.

2. Acknowledgements

Compass Archaeology are grateful to Stephen Gray of Weldon Walshe for commissioning the work on behalf of the client Bestseller UK Ltd. and to the following organisations and individuals:

Maja McEwan of Weldon Walshe, Diane Walls of English Heritage GLAAS; Martin Champion of Broadland Construction, John Brown of Gifford for brick and mortar analysis; Paul Blinkhorn for pottery analysis; the staff of the London Metropolitan Archive; the staff of the City of Westminster Archives Centre.

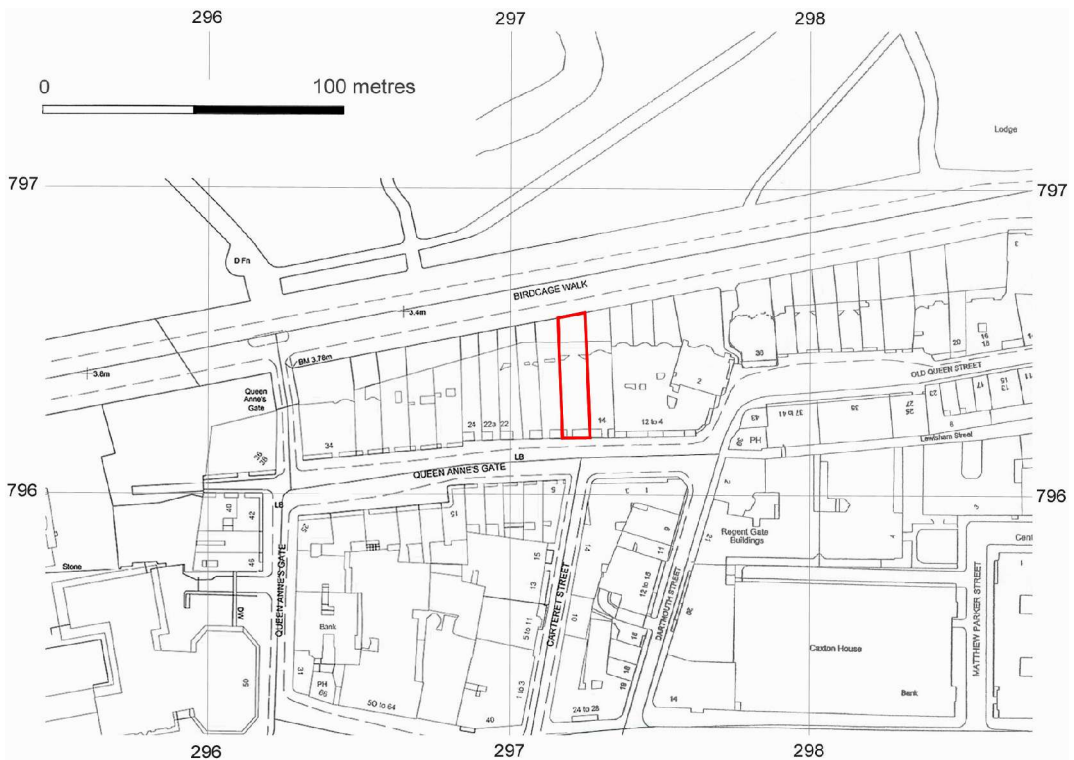


Fig 1 Site Location Map, showing the site in red.

This figure reproduced from the OS map with the permission of the Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office, © Crown Copyright (Compass Archaeology Ltd, 5-7 Southwark Street, SE1 1RQ, licence no. AL 100031317).



Fig 2 The exterior of 16 Queen Anne's Terrace, showing the two blue plaques on the site: one to the MP William Smith 1756-1835 and one to Lord Fisher 1841-1920, Admiral of the Fleet, who lived here as First Sea Lord 1904-1910. © Donald Insall Associates 2007.

3. The current site

The site is located on the northern side of Queen Anne's Gate, directly opposite Carteret Street and in a terrace of seven properties. The terrace was listed as Grade I in 1958. The site is approximately located at NGR TQ 29720 79630 (Figures 1 & 2).

The front south-facing half of the house was previously occupied by a house of similar construction, and again part of an original terrace of seven houses, dating from the early 18th century and elements of the fabric of the extant house may possibly include some of the fabric of the earlier house, especially at basement and foundation level. The present house was built in the last quarter of the 18th century *circa* 1775 and extended the property footprint to the north. The rear being built on previously undeveloped ground which was boggy and peaty in nature, this area being part of the floodplain of the Rivers Tyburn and Thames. An additional storey was added to the north side in the 19th century.

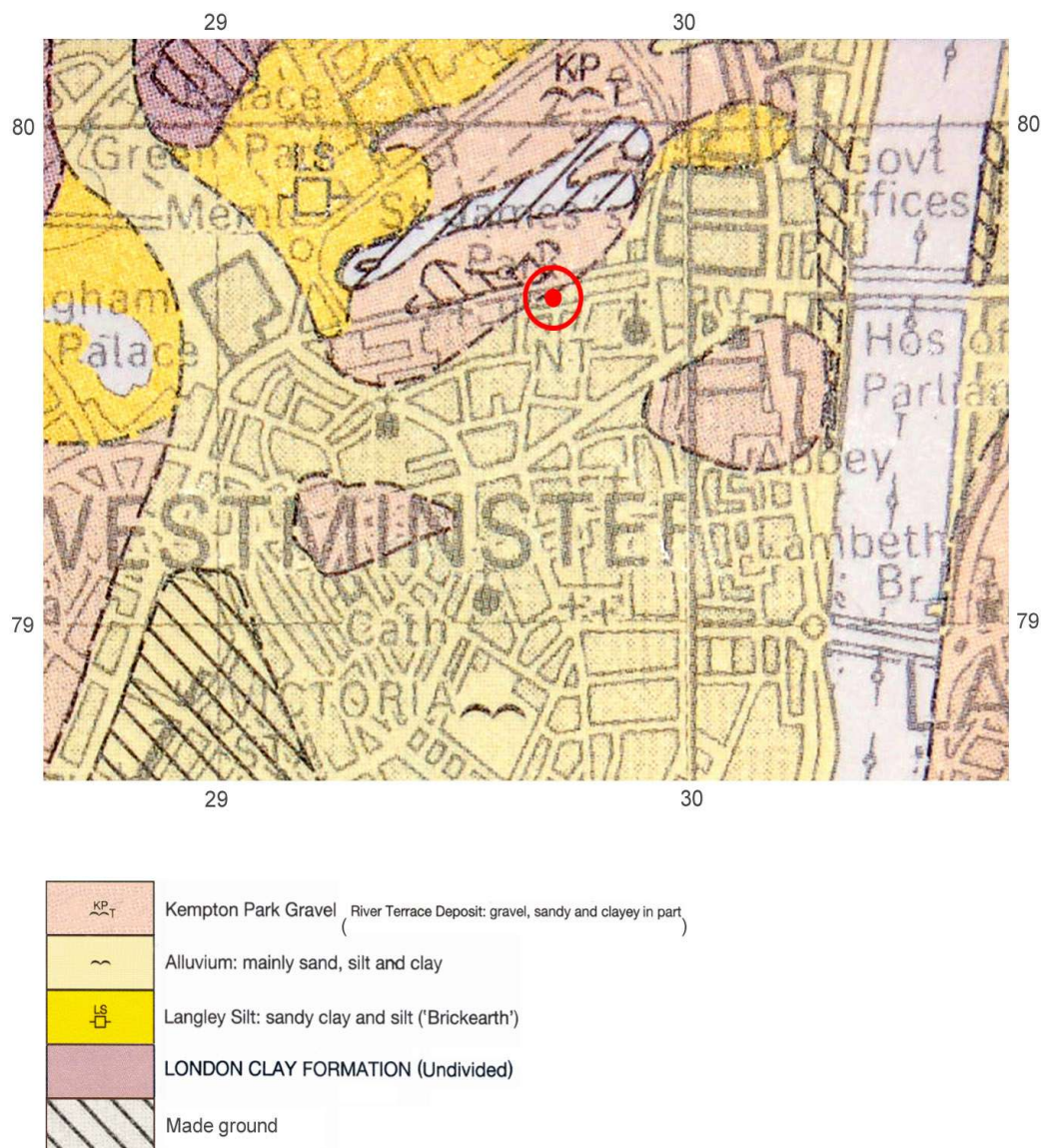


Fig 3 The site in relation to the current British Geological Survey Map.

4. The planning background

Archaeology forms part of the current City of Westminster Unitary Development Plan (UDP), adopted by full Council January 2007¹. The UDP Proposals Map shows areas of the borough that have been defined as Areas of Special Archaeological Priority. This site is within an area of special priority of Ludenwic and Thorney Island. The site is also within the Birdcage Walk Conservation Area.

Planning permission (09/00193/FULL Received 07/01/2009 and 08/08316/FULL Received 19/09/2008 Decision 24/11/2008) and Listed Building Consent (08/03014/LBC Received 04/04/2008 Decision 1/07/2008) has been applied for and permitted for:

08/08316/FULL External and internal structural repair works in association with planning permission dated 01 July 2008 (RN 08/03013) for reconstruction of single storey extension at rear lower ground floor level with rooflights over; modifications to internal lightwells including replacement rooflight and creation of new terrace at second floor level; reconstruction of front entrance steps and new front door; lowering of basement floor slab; alterations to levels of rear garden; and alterations to fenestration; all in connection with use as a single family dwelling.

09/00193/FULL Alterations during course of construction to permission dated 1 July 2007 (08/03013/FULL) for the reconstruction of single storey extension at rear lower ground floor level with rooflights over; modifications to internal lightwells including replacement rooflight and creation of new terrace at second floor level; reconstruction of front entrance steps and new front door; lowering of basement floor slab; alterations to levels of rear garden; and alterations to fenestration all in connection with use as a single family dwelling; namely to include retention of ground floor archway blind to be retained, revisions to orangery design, lowering of garden room floor level and relocation of boiler room into under pavement vault.

08/03014/LBC Reconstruction of single storey extension at rear lower ground floor level with rooflights over; modifications to internal lightwells including replacement rooflight and creation of new terrace at second floor level; reconstruction of front entrance steps, new front door and alterations to fenestration; lowering of basement floor slab; alterations to levels of rear garden; and internal alterations; all in connection with use as a single family dwelling

Donald Insall Associates compiled a draft Historic Building Report in January 2007².

¹ City of Westminster 2007 [*sic*] UDP; City of Westminster, March 1995, 'A Guide to Archaeology and Planning within Westminster'. <http://www.westminster.gov.uk/>

² Donald Insall Associates, January 2007 '16 Queen Anne's Gate, London SW1. An Historic Building Report' *in house unpublished report.*

5. Objectives of the report

This report provides a summary of the archaeological recording and assessment works that have taken place on 16 Queen Anne's Gate. A summary introduction to the objectives, methodology and current guidelines for this level of reporting is outlined below:

5.1 Documentary Research

Documentary research forms a component of every recording project and a documentary search has been undertaken and has successfully located some data on the original form and function of the cistern feature.

5.2 Field Investigation

The field investigation of a building normally follows preliminary documentary research. This was undertaken as a site visit on 20th February 2009 and involved direct observation and analysis of the cistern feature in order to ascertain what information it provides about its origins, form, function, date, development and so on. The investigation has included a visual examination of the cistern, with particular attention to stratigraphic relationships with surrounding deposits and phases of this building and other details that might help to date the well and its place in the various stages of evolution of this building. The objective is to record the surviving original architectural aspects of the water cistern.

5.3 Survey and drawings

Plans drawn by Donald Insall Associates (the architects) are used here, as they represent a framework on which the historic interpretation is based³.

The archive includes: measured scale sketches of the general cistern dimensions, and location in the building.

5.4 Photography

Photography is used to record much of the detailed evidence on which an analysis of historic development is based.

5.5 The written account

A number of libraries and archives were consulted. The various sources were noted, photocopied/scanned or photographed as appropriate.

In summary the record has involved identifying the sources available for consultation, obtaining information from them, and thereafter collecting and examining these sources. Through this process it has been possible to produce an overview of the nature of the building on the site, and its relationship with the cistern structure.

³ Measured drawings reproduced with permission of Weldon Walshe Architects.

6. Archaeological and historical background: prehistoric to medieval

This section is a search of all the recorded archaeological sites and finds from the study area. It incorporates a summary of research and analysis of library and archive sources, including: the Museum of London's Archaeological Archive and Research Centre (LAARC), the ADS OASIS (Online AccesS to the Index of archaeological investigationS) databases which includes the English Heritage National Monuments Record and the English Heritage National Monuments Excavation Index for England. Much of the data is drawn principally from a survey of the Greater London Sites and Monuments Record (SMR), supported by published sources, and should be read in conjunction with Fig 4. The Historic Building Report produced by Donald Insall Associates in 2007 also provides assessment of the later development of the area⁴.

In conjunction with the archaeological information this section also involves a search of material housed at the City of Westminster Archives Centre and Westminster Records office, including a search of Westminster History Collection, which contains numerous books and pamphlets relating to Westminster's local history. In addition to specialised books and pamphlets there is a large reference collection on London generally, which includes the Middlesex volumes of the Victoria History of the Counties of England (see Section 8), all volumes of the Survey of London, the London Survey Committee, Pevsner Architectural Guides⁵ and early surveys and histories of London and Westminster. The library also has material relating to the Middlesex Sessions and County records dating from 1638 to 1928.

The library has numerous prints, drawings and photographs illustrating Westminster dating from the 17th century.

The archives centre possesses printed maps, including a chronological sequence of miscellaneous maps (indexed). Information gained from early maps is discussed in section 7 of this report..

Numerous detailed records survive for the site of 16 Queen's Anne's Gate, but only a concise overview of the available data is presented here, in order to fulfil the objectives of this programme of archaeological recording and assessment as set out by English Heritage.

6.1 The Greater London Sites and Monuments Record (SMR)

The following is drawn principally from a survey of the Greater London Sites and Monuments Record (SMR), supported by published sources, and should be read in conjunction with Fig 4. There are numerous SMR entries for archaeology in a 250m radius around the site and only those entries that are particularly pertinent to this assessment have been included, as shown on Figure 4 there are also numerous entries referring to listed buildings.

⁴ Donald Insall Associates , January 2007 '16 Queen Anne's Gate, London SW1. An Historic Building Report' *in house unpublished report*

⁵ Bradley, S and Pevsner, N. 2003 *The Buildings of England, London 6: Westminster* p712 ff.

6.2 Prehistoric (*Key to Figure 4*)

Fig 4.	SMR or Mon ID	Description	Comment
1	MLO59581	BIRD CAGE WALK Mesolithic (10000 BC to 4001 BC) Periods recorded under same site code: Mesolithic and Bronze Age (1) Roman (6); medieval (12); post-med (12).	Evaluation by I. Barnes and M. Heaton for WA, 1994; site code SGT 94. A small quantity of struck flint, including blades, cores and a burnt microlith, plus fire cracked flint, was recovered from the alluvial deposits. A Mesolithic date is indicated for the assemblage (but not the layer, which also contained a Roman tile and medieval pottery).
	MLO59582	BIRD CAGE WALK Bronze Age (2200 BC to 701 BC)	During the evaluation a single potsherd in a coarse, flint-tempered fabric was found in a re-worked alluvial deposit. The excavators dated this sherd to the middle or late Bronze Age.
2	MLO11016	ST JAMES' PARK Iron Age (700 BC to 42 AD)	Hoard of potin coins found 1827 during drain/canal digging for 'new palace' 'below the bed of the canal in St James Park'.
3	MLO64428	STOREYS GATE TQ 2990 7970 Periods recorded under same site code: post-medieval (083255), medieval (083256-8).	Evaluation undertaken by M Heaton for WA. Reworked alluvial loams were revealed, containing Mesolithic worked flint, a single sherd of Bronze Age pot and medieval pottery. Below an alluvial sequence of peats, silts and clays was recorded. Medieval pottery was found in isolation within these deposits.

Summary

The sites and monuments record has only three prehistoric entries for a 250m radius of the site. Of these one refers to an antiquarian chance or single find from the general 'St James' Park area', but this is poorly recorded and the provenance cannot be assured. The other entries for prehistoric material all refer to later deposits that contain residual prehistoric material.

The site is situated close to the Thames and would have traditionally been marshy land, particularly as it lies on the floodplain and close to the river Tyburn, an ancient tributary of the Thames. The floodplains of such tributaries tend to form their own local geological conditions, involving reworking of the terrace gravels and the deposition of alluvial silts both in the beds of the streams but also as over-bank deposits. These processes can also generate significant deposits of colluvial silts or hillwash all of which can be artefact bearing. Nevertheless, the general area has some potential for early (prehistoric and Roman) finds, not least given its apparent position on the River Terrace and at the edge of the alluvial floodplain.

The probable marshy nature of the study area would suggest that this area would have been unsuitable for settlement in prehistory. In later prehistory the better drained south-facing gravel terraces and fertile Thames valley would have been quite densely occupied with settlement evidence most probable from the Bronze Age (2,000 to 600 BC), particularly the later Bronze Age. Climatic factors and

soil exhaustion led to the abandonment of certain marginal zones from about the turn of the millennium (c.1000 BC) perhaps causing Bronze Age communities to intensify their exploitation of the more productive lands, such as forest clearance on the Terrace geology and the laying out of new field systems⁶.

The English Heritage Archaeology Review of 1996 noted that the prehistory of Westminster continues to be obscure, and although the information gleaned from selective fieldwork is slowly contributing to the creation of a model of the evolving prehistoric landscape little can definitely be said of prehistoric activity in this area of the City⁷.

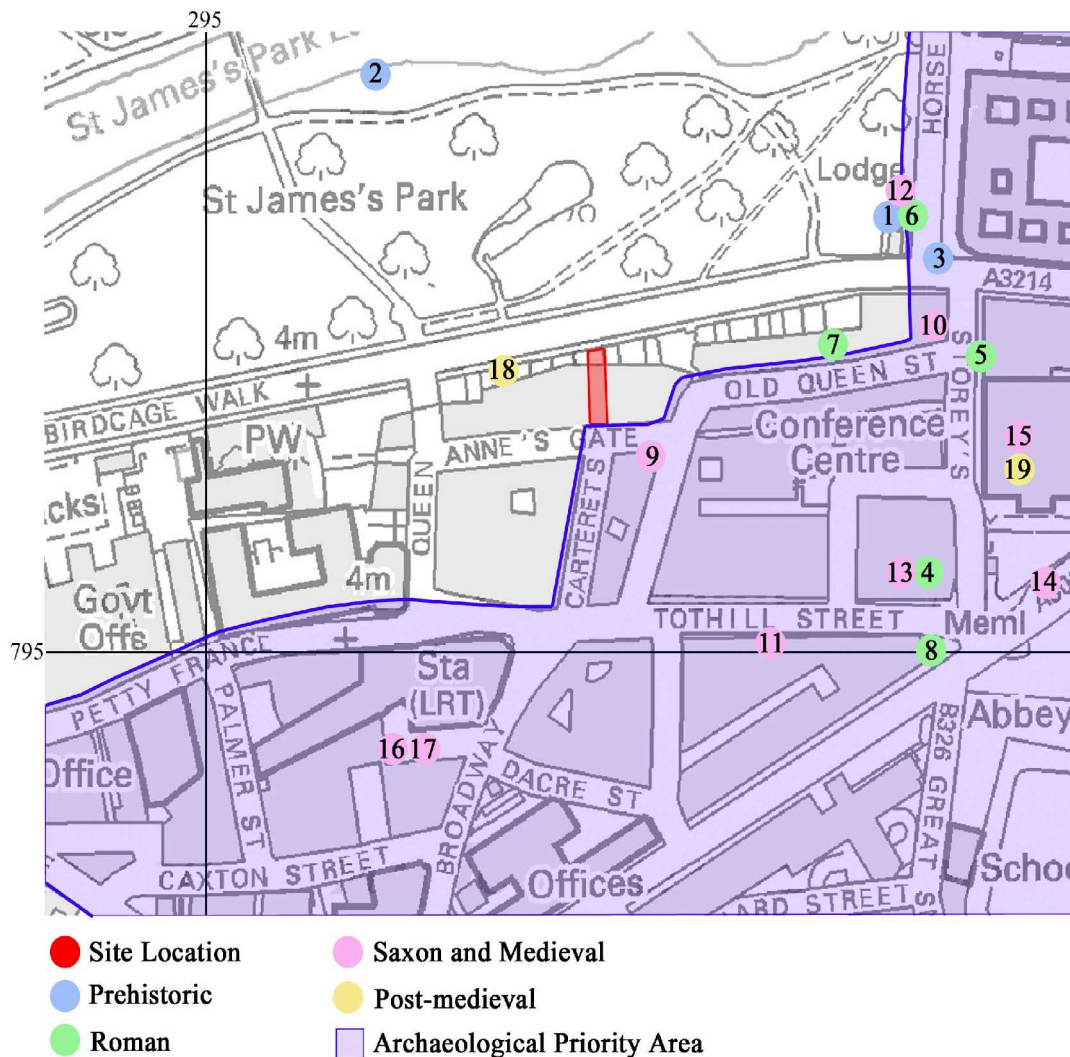


Fig 4 Archaeological evidence from the Greater London Sites and Monuments Record (within a 250m radius of the site), provided by English Heritage.

⁶ Needham, S *The Bronze Age* p135 in Bird J & Bird DG (eds)

⁷ English Heritage Archaeological Review 1996

6.3 Roman (43 AD to 409 AD)

Fig 4	SMR or Mon ID	Description	Comment
4	MLO11020	TOTHILL ST, METHODIST CENTRAL HALL TQ 2990 7955	Find of a Roman ring: Fragment of iron ring with oval bezel set with intaglio representing thunderbolt described as from site of aquarium.
5	MLO2881	STOREY'S GATE TQ 2993 7965	Remains of a possible Roman Boat: oaken ribs of boat found in 1913. This is almost certainly the boat referred to in correspondence between H Chatfield Clark and A Briggs in 1913 where the discovery of an 'old barge or boat lying the mud' was reported, apparently 20 feet below peat deposits. The parts of the boat exposed were of clinker construction.
6	MLO59583	BIRD CAGE WALK	Evaluation by I. Barnes and M. Heaton for WA, Feb-Mar 1994; site code SGT 94. A single fragment of probable Roman tile was recovered from alluvial deposits 082515. Periods recorded under same site code: Mesolithic and Bronze Age (1); Roman (this entry 6); medieval and post-med (12).
7	MLO 2864	OLD QUEEN ST TQ 2985 7965	Roman bone stylus, received in 1917.
8	MLO68996	TOTHILL ST TQ 2990 7950	It has been suggested that the line of Tothill Street projected beneath Westminster Abbey is a possible alignment of a Roman road, as there may have been a ford at Westminster. Sloane B <i>et al.</i> The Roman Road & the River Regime: Archaeological, <i>LA</i> Vol 7 No 14, Pp 369-70

Summary

The SMR has only five entries for the Roman period and of these two refer to isolated chance finds, one is a redeposited fragment of tile, one is the Roman boat and one is the conjectured route of the road. These entries do not indicate Roman settlement in the immediate site area.

The main Roman settlement of Londinium, concentrated within the square mile now known as the City of London, was established soon after the Roman occupation in AD 43 and was a thriving city by AD 60. Londinium was linked to the Roman road network and ribbon development (and cemeteries) developed along the roads out of the city. Two Roman roads headed westwards from London; the first Watling Street, ran along the route of the Edgware Road, through Paddington and the other, ran along the line of the Bayswater Road; additionally a minor road, referred to as Akeman Street, probably lies under Kensington High Street eventually joining up with Watling Street⁸.

⁸ This paragraph extracted from Whipp, D (undated)

The Romans also had a settlement at central Westminster, which probably had its origins at Thorney Island – ‘the island of thorns’ a marshy piece of land traditionally lying between two branches of the River Tyburn, that possibly flowed from Hampstead Heath down to the Thames. The land was boggy, creating problems for building which persist today, but it did have an ideal position. A ford across the River Thames joined the Roman road from Kent near where Westminster Bridge now stands, creating good transportation links. For that reason, the Romans chose Thorney Island as a good place to settle, and the area began to develop. Significant Roman and Saxon evidence has been discovered in the central Westminster area. Although it was well sited for travel, the island’s marshy surroundings made it an unhealthy place to live. The Anglo-Saxon settlers who followed the Romans here found that they were liable to fall sick with diseases such as malaria. In AD 785, a document of King Offa refers to ‘*the terrible place which is called Thorney island*’⁹.

It is understood that the projected line of a Roman road crosses Queen Anne’s Gate.

⁹ Westminster Abbey Guidebook 2003 © Dean & Chapter of Westminster Abbey 2003

6.4 Saxon and Medieval (410 AD to 1485 AD)

Fig 4	SMR or Mon ID	Description	Comment
9	MLO9062	DARTMOUTH ST TQ 2975 7960	Forked object decorated with circle and dot on upper part found 1916. Early Medieval/Dark Age (410 AD to 1065 AD)
10	MLO2896	OLD QUEEN ST TQ 2991 7966	Circular bone gaming piece with central perforation, found in long ditch 1917. Described as Saxon, but possibly medieval.
11	MLO2894	TOTHILL ST TQ 2980 7950	Barrow of unknown date, a Charter of Aethelred mentions a mound that defines a Westminster boundary.
12	MLO59584 MLO59586 MLO59587 MLO59588	BIRD CAGE WALK TQ 2988 7973	Evaluation by I. Barnes and M. Heaton for WA, 1994; SGT 94 Water channels, flood deposit, peat and a single dressed timber stake. Traces of a late medieval building were also found. Walls constructed of greensand, with associated floors. This building may have been rebuilt in the post-medieval. Periods recorded under same site code: Mesolithic and Bronze Age (1); Roman (6); medieval (12); also post-med cut features (12).
13	MLO9078	TOTHILL ST METHODIST CENTRAL HALL TQ 2990 7955	Gaming Piece. Early Medieval/Dark Age
14	MLO53142	ABINGDON ST TQ 3007 7942	Wall possibly relating to the Abbey. This reference may be slightly inaccurate as it appears to be outside the study area
15	MLO16657	BROAD SANCTUARY	Excavations by the ILAU in 1979 at Broad Sanctuary revealed the bed of a stream running east to west along the length of the trial trench. It was filled with deposits of the sort laid by slow-moving water (site code WBS79).
16	MLO23193	BROADWAY TQ 2960 7945	Ruined chapel mentioned near almshouse of Cornelius van Dun possibly part of a C13th hospital. Stow J. Survey of London, Vol 2, P 122 ILAU Index
17	MLO9234	PETTY FRANCE TQ 2960 7945	Medieval Chapel (1066 AD to 1539 AD). (Possibly the same reference as above, but apparently a different find spot)

Summary

Apart from some evidence for small-scale early settlement around Petty France, the Sites and Monuments record does not have many Saxon entries within a radius of 250m around the site. There are entries for three chance finds and several entries for the later and medieval settlement of the general area. During the Saxon period the area was mainly part of a rural landscape, which included the old Roman roads and a network of trackways and scattered settlements.

The site lies very close to the Middle Saxon settlement of Lundenwic, the 7th to 9th century town of London. This town was known from Saxon chronicles to have been a major trading centre, and, for a long time was believed to have existed on the site of Roman Londinium, which is mirrored by the modern day City of London. The lack of archaeological evidence for Middle Saxon occupation from within the City of London, and the growing number of finds from the City of Westminster, led archaeologists to the conclusion that Lundenwic existed 1km west of the site of Londinium, and we now know it extended from Trafalgar Square to Aldwych, with the waterfront on the Strand¹⁰.

The evidence suggests that the settlement pattern of the general area was influenced by the proximity of London and Westminster; however, despite the favourable location this area of Westminster appears to have been lightly populated throughout the medieval period. Towards the end of the 16th century saw the development of country estates of wealthy Londoners, but it was only in the 19th century that a still rural character gave way to rapid and total urbanisation.

The nature and extent of the Saxon settlement of Lundenwic continues to be refined through archaeological interventions. Following on from the informative excavations at the Royal Opera House, Covent Garden. It extended from the west side of the Roman city round the riverbank south and west to Westminster, and north to present-day Oxford Street. The location of the western boundary of the settlement has also been clarified following excavations at the National Portrait Gallery, where a significant density of both artefactual and environmental Saxon material was found within possible quarry pits¹¹.

There is clear evidence for medieval settlement in the area, and indeed the precinct of Westminster Abbey is only about 350m to the southeast. Tothill Street (to the south of the present site) led to the western gate of the Abbey, whilst the adjoining line of Petty France was also established by the 16th century. Along this route more substantial buildings appeared to the east: this layout is illustrated by Faithorne and Newcourt's map of 1658 (Figure 6), with the open area of St James' Park just to the north. This map also indicates that the site lay within an area of formal garden, which stylistically appears to be of Tudor date.

¹⁰ see 'Tatberht's Lundenwic' PCA Monograph 2. © Copyright Pre-Construct Archaeology Ltd 2004-2006; Museum of London exhibition notes by Schofield J 2000 'Alfred the Great, London's forgotten king'

¹¹ English Heritage 1996

6.5 Post-medieval

Fig 4.	SMR or Mon ID	Description	Comment
18	MLO95641	QUEEN ANNE'S GATE, SW1 TQ 2979	Group of Grade I terraced town houses Nos 14 to 22 (even), 22A and 24. Listed 1958
19	MLO36498 MLO9228	BROAD SANCTUARY TQ 2995 7962	Seven barrel-lined wells of 'post medieval date and broken cross/conduit on site of later pump. <i>Capon W. Views of Westminster, Lts, View 5</i>

Summary

The principal SMR entry for the post medieval period is of course the entry for the Grade I terrace and this dates the buildings to the period 1775-78, with some early 19th century alteration and a number with alteration or refurbishment as offices in the late 1970s and early to mid 1980s, which applies to no. 16 Queen Anne's Gate. There are numerous entries for the post medieval period in this historic part of Westminster and only those entries and listed buildings pertaining to the study site are included here¹².

The terrace is described in the Listed Building Schedule of 1958 as being '*of brown brick, the ground floors stuccoed apart from nos. 18 and 24, with slate roofs. All with a similar plan type with a stairwell separating, large fall width front and rear rooms and with bowed rears to St James's Park. The terrace is of four storeys, with basements and dormered mansards. They have three-window wide fronts except the two- window wide fronts of nos. 22, 22A and 24. The entrances are to the left in nos. 16 to 20 even and to the right in nos. 14 and 22, 22A and 24. Each house has semicircular arched doorways with panelled doors and radial patterned fanlights. No 16 has a larger arched opening recessed for one order, as is the ground floor window, the arches linked by impost string. No 18 has the door with sidelights and the glazing continued around a fanlight archivolt. Recessed glazing bar sashes under flat gauged arches. The first floor has a sill band; parapet with coping. No 18 has a tent-roofed cast iron veranda-balcony to the first floor. Wrought iron area railings, nos. 18, 20 and 24 with lamp standards and simple scroll work, spike and urn finials. Bowed rear elevations have delicate cast iron balconies. The interiors have particularly well designed stone geometrical staircase rising on semicircular niche plan with delicate wrought iron pattern balustrades, top lit from oval lantern; some good original ceilings in delicate Adam style and statuary marble chimney pieces, panelled shutters, etc. No 20 has an early LCC plaque to Lord Palmerston (1784-1865) who was born here in 1784. No. 14 has a blue plaque to Charles Townley (1737-1805) the antiquary and collector. (The blue plaques on No. 16 are shown on Fig 2). This part of the street was originally a close called Park Street, separated by a wall from the western part called Queen Square. Part of an exceptional group of late 18th century and Queen Anne houses*¹³.

¹² A full GLSMR radius search centred on 16 Queen Anne's Terrace has been purchased and is available for consultation upon request.

¹³ From the Listed Building Scheduled 1958 and repeated in the GLSMR entry MLO95641.

The more recent history of the site can best be summarised with reference to cartographic and documentary evidence (*cf.* Section 7 below). Historic map evidence shows the development of the general area, centred upon the historic road system.

7. Cartographic and documentary evidence for the post-medieval development of the site (1489-1900)

There are maps covering this general area that predate or are contemporary to the figures shown here, however many of them either do not extend far enough or they do not materially inform on the archaeological potential of the site. The road layout is of some antiquity and is shown on many of the earliest maps for this area. Westminster is included in many early views of London, and the archives centre has copies of most of these, from Van den Wyngaerde's *'View of London'* (c 1550) onwards. Early detailed maps include the so-called Agas *'Map of London'*, about 1563, and covering a similar area to Faithorne and Newcourt's *'Map of London and Westminster'*, 1658 (London Topographical Society reproductions). Also, *'A new plan of the City of London, Westminster and Southwark'* the frontispiece to Strype's *Stow*, 1720 edition.

A detailed *'Survey of Westminster, Chelsea and Kensington'* was also undertaken in 1717, but unfortunately this does not add any new information for this site and is not included here.

As has been noted there are many historic maps of the general area and all these early maps show great swathes of undeveloped countryside and fields beyond Westminster, but only those maps which specifically relate to the archaeological potential of the site are illustrated and discussed below.

Faithorne and Newcourt's map of 1658 (*cf.* Fig 6) shows the site to be within an area of formal garden, which stylistically appears to be Tudor in date. The slightly later map by William Morgan 1682 (*cf.* Fig 7) also shows the site in an open garden area, although suggesting that the previous formal layout may have been swept away.

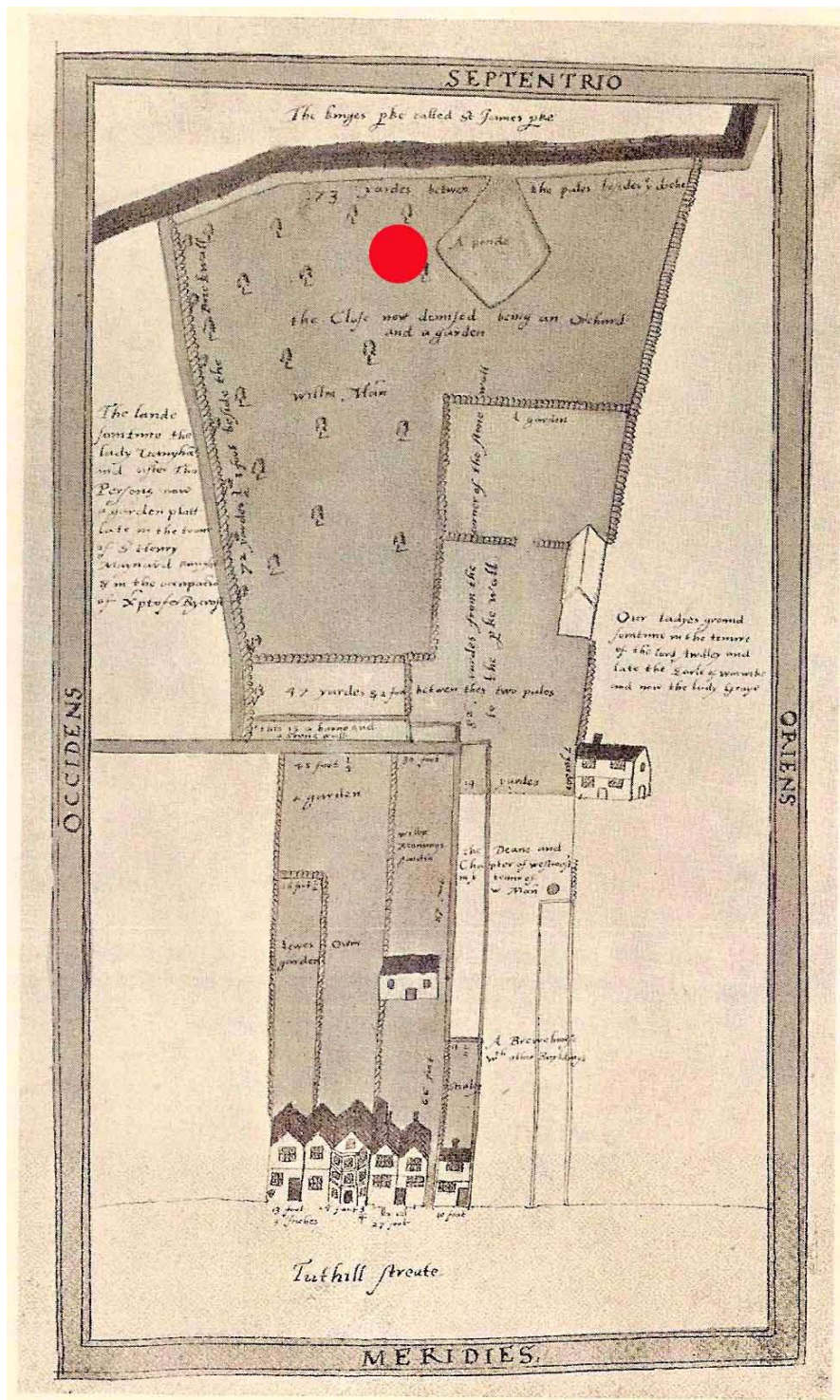


Fig 5 Plan of the Christ's Hospital Estate in Tothill Street circa 1586, the approximate location of the site is shown. It is also interesting that a large pond is shown just to the east, a clear indication of the very marshy boggy nature of the land in the early post medieval period¹⁴.

¹⁴ Extracted from Montague Cox (Ed) 1926 Survey of London 10 p78 plate 78. For illustration purposes only not for publication copyright clearance not available.

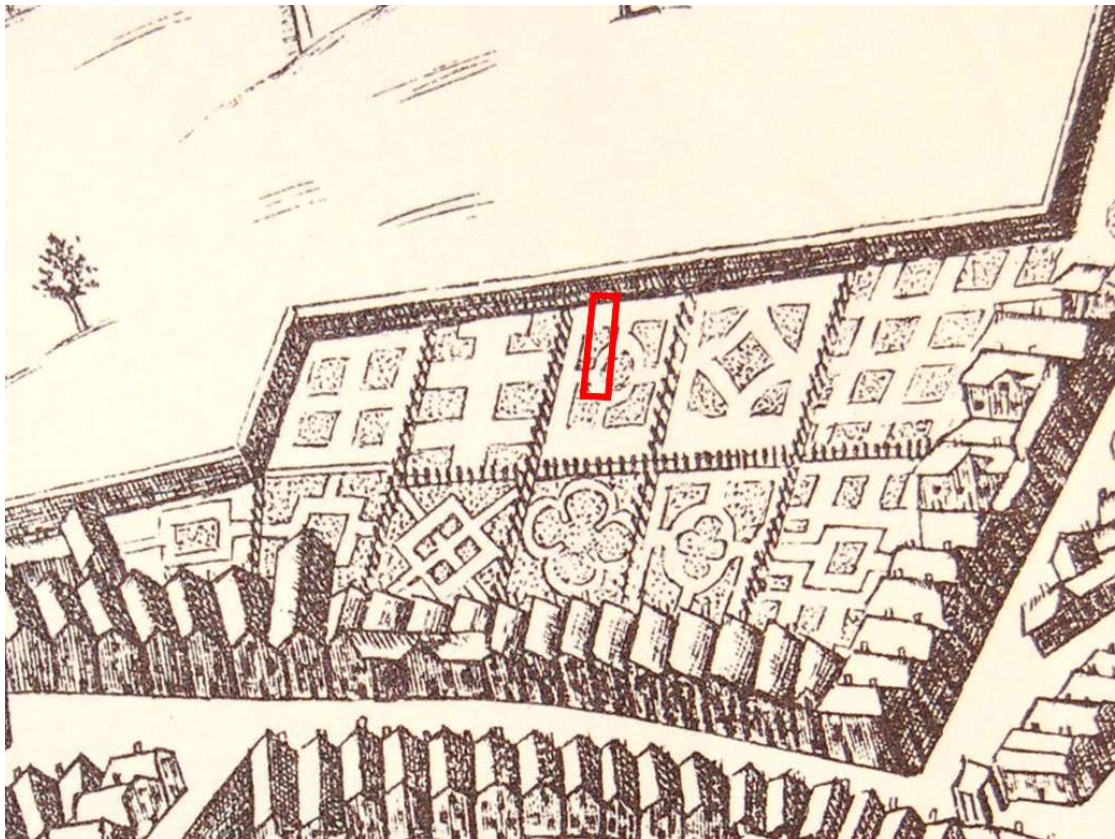


Fig 6 Faithorne and Newcourt's map of 1658 showing the approximate site location

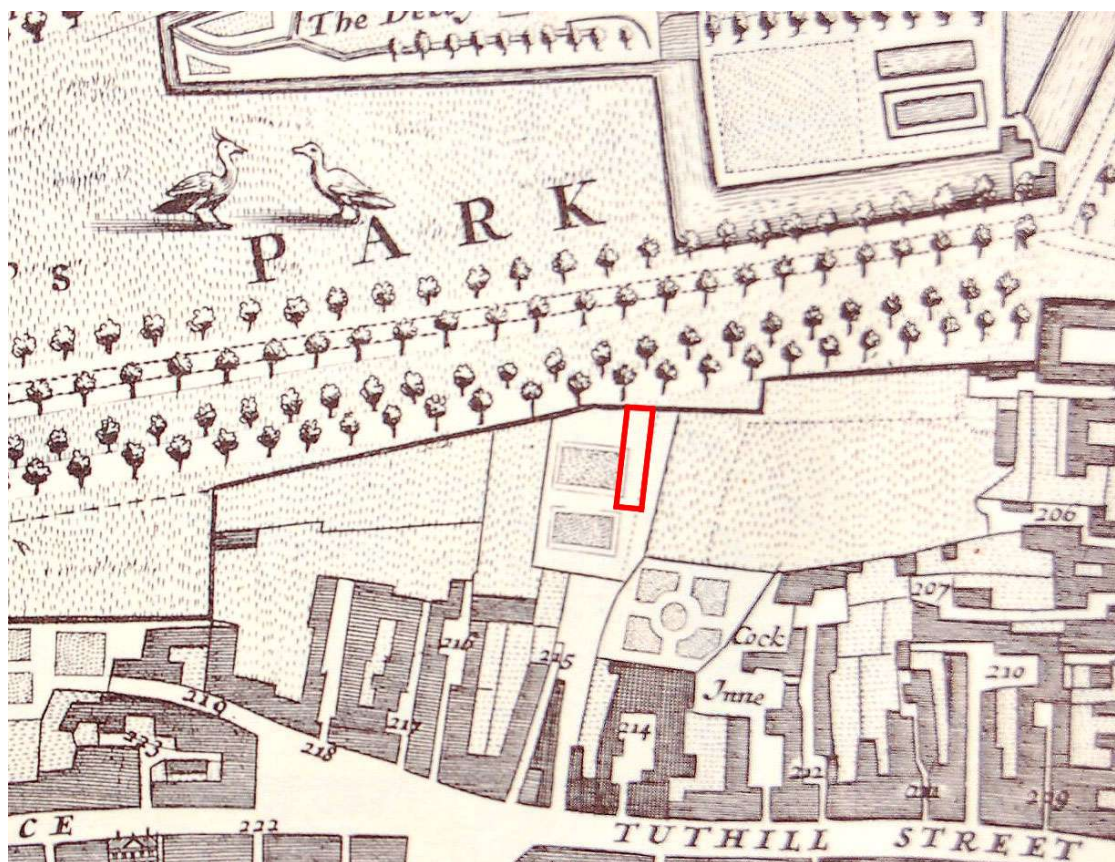


Fig 7 William Morgan's Survey of 1682 showing the approximate site location
NB. Both these maps cover approximately the same area as Figure 1

The road known today as Queen Anne's Gate appears to date to c 1704. The construction of Queen Anne's Gate was once formed of two independent closes - Queens Square & Park Street – separated by a wall (cf. Figs 8 & 9)¹⁵. The eastern was named Park Street (the study site was then known as 6 Park Street), and the western Queen Square. The barrier, which consisted of a low dwarf wall surmounted by an iron railing, was removed in 1873¹⁶, and in the following year the names Park Street and Queen Square were abolished and the whole renamed Queen Anne's Gate. The whole of what was formerly Park Street still belonged to Christ's Hospital, bequeathed by the trustees of the Castell estate.

A lease on one of the properties in the immediate area dated 28th January 1585-86 gives a description of the area. It runs: "*All that their close of ground scituate in or neare Totthill Streate ... which nowe or late is converted into an orcharde and gardeine, and all that Barne scituate and beinge in and uppon the southe side of the same close of ground, which close abutteth uppon the Queenes parke walle againste the northe, and against the lande sometime the Ladie Vaughans lande on the weste parte, which lande is nowe a garden plott in the tenure of one Thomas Pierson ... and the said close or orchard and gardeine abutteth uppon Our Ladie grounde sometime beinge in the tenure of the Lord Awdeley on the east parte, and now beinge the inheritance of the Earle of Warwick and in the tenure of the Lorde Graye.*"

In February 1671 Roger Price, who was lessee of a portion of the estate consisting of a garden with an old barn and stable upon it, informed the Governors that, having a desire to improve the property by building, he had purchased a coachway into the said grounds¹⁷. Then, on 19th March, 1673–74, Price, in consideration of the surrender of this or another lease, obtained a fresh lease (from Lady Day, 1670) of a portion of the estate having a frontage to the Park of 70 feet. Further, in 1671 a lease was granted to Sir Edward de Carteret of another portion having a frontage of 162 feet to the Park, and Price's lease seems also to have come into Carteret's hands. The result of these leases may be seen in Carteret Street and Park Street. The latter is not shown in Morden and Lea's Map of 1682, but is referred to in a lease of 18th February, 1686–87, to Sir Robert Atkins as "*a certain street there intended to be called Park Street.*" In Hatton's New View of London (1708) it is described as: "*Park Street, "near Carteret Str. by Tuthil Str., Westminster, newly built.*"¹⁸ Kip's Prospect of the City of London of 1710 shows this first terrace on the site, with the high wall dividing the two streets and the statue to Queen Anne visible on the wall.

¹⁵ Most of the information on this page and in this section is directly extracted from Montague H. Cox (Editor) 1926 *Survey of London: volume 10: St. Margaret, Westminster, part I: Queen Anne's Gate area 'Queen Anne's Gate (east)'*, pp. 78-8 and information from Weinreb B, & Hibbert C, 1983 *The London Encyclopaedia* has been included.

URL: <http://www.british-history.ac.uk/report.aspx?compid=67606> Date accessed: 23 February 2009

¹⁶ *ibid* p. 79-80. The works then carried out included the formation of a carriage entrance from Queen Square into Birdcage Walk. The cost amounted to £440 9s. (Minutes of the Committee of Almoners of Christ's Hospital, 15th July, 1873.

¹⁷ *ibid* p. 79-80 Minutes of the Court, 23rd February, 1670–71.

¹⁸ *Ibid.* p.80

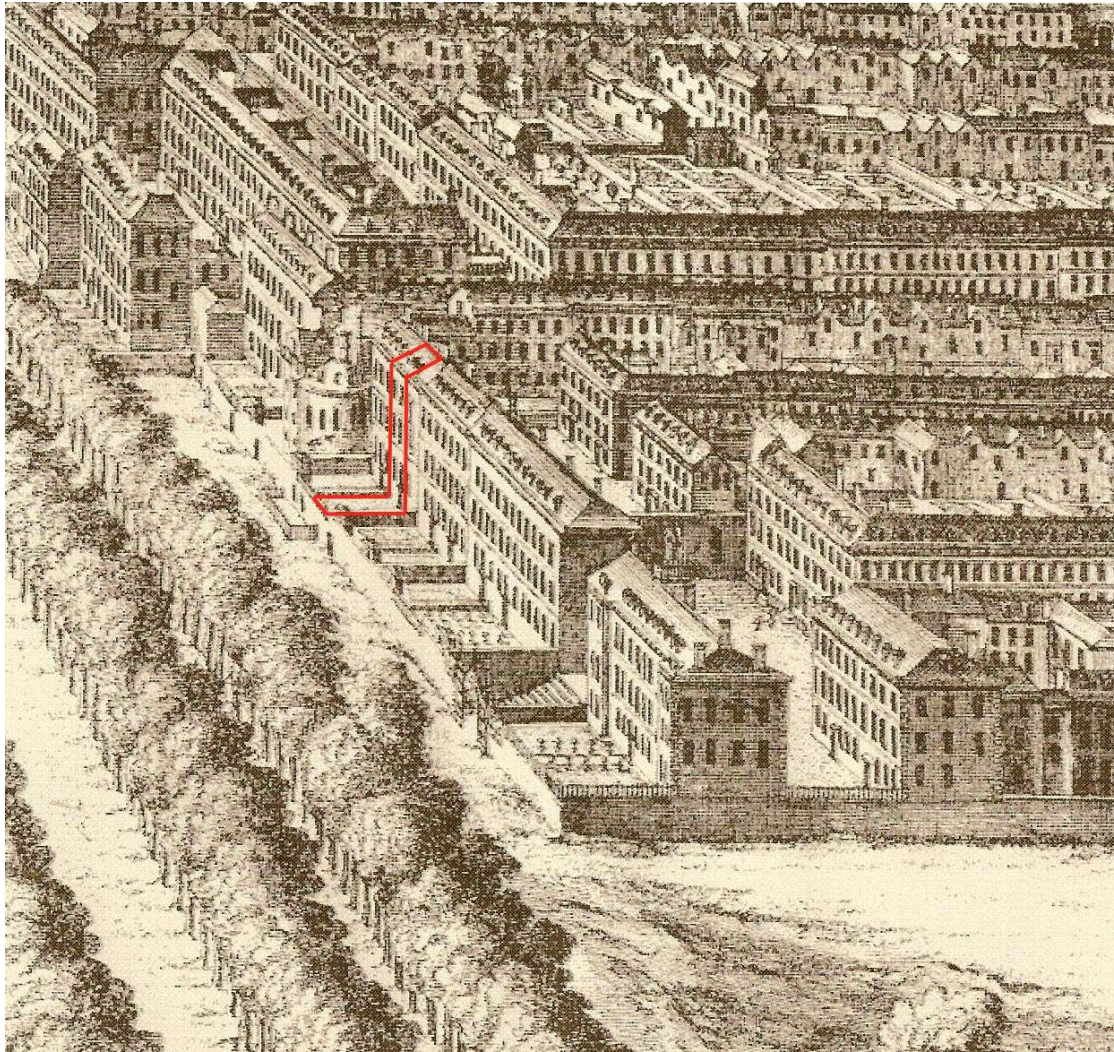


Fig 8 The neighbourhood of Queen Anne's Gate, from Kip's *Prospect of the City of London, Westminster, and St. James's Park*, 1710. The approximate location of the site is shown in red and the wall across the road can be clearly seen. © British History online.

John Rocque's '*Plan of the City of London...and the country near ten miles round*', published c. 1746 (cf. Fig 9) shows the site area in detail and the original terrace as shown in Kip's view can now be seen in plan. Documentary evidence suggests that works began on constructing the first terrace in 1704. The wall across the road is also visible in Rocque's survey.

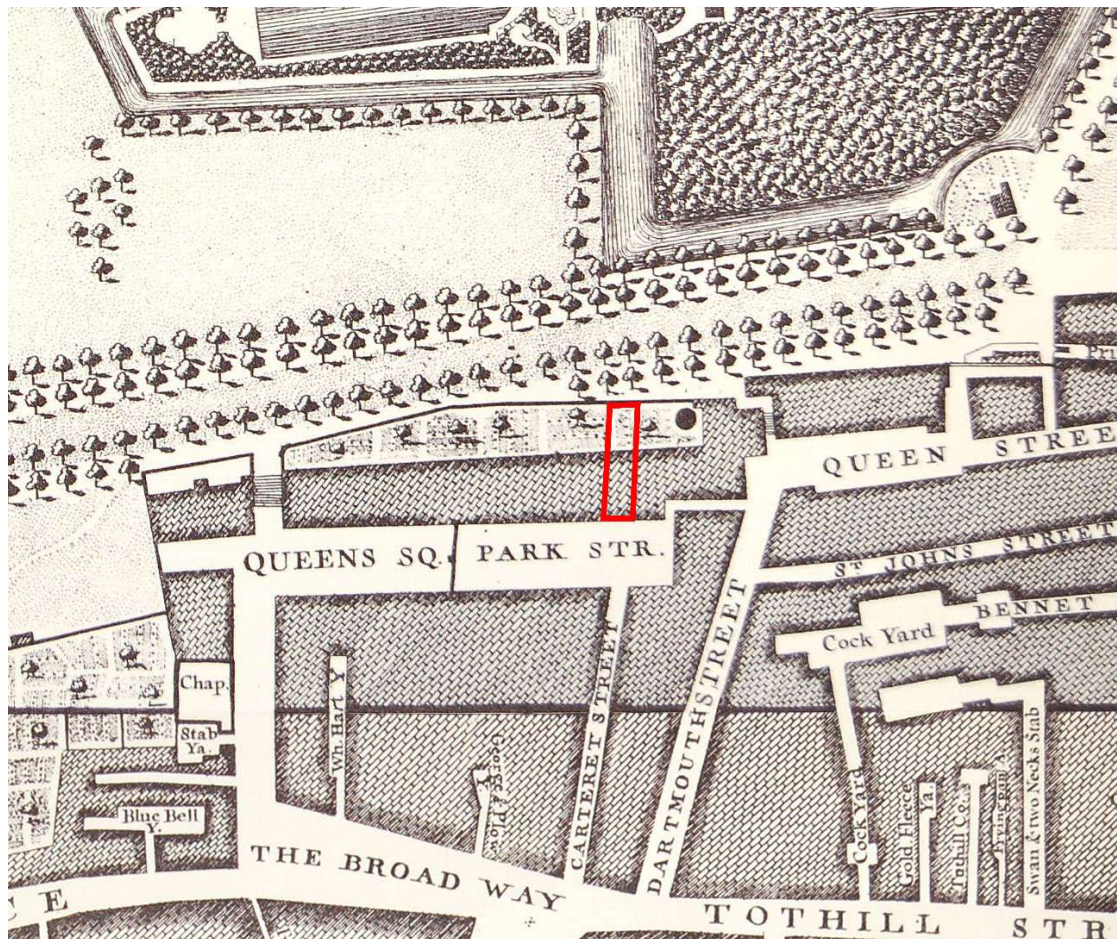


Fig 9 Extract from John Rocque's 'Plan of the City of London...and the country near ten miles round', published c. 1746.

Originally Park Street had its only exit by way of Carteret Street on the south, but in 1758 the Governors, in order to provide a way out to Dartmouth Street, purchased the lower portion of a house in that street for the purpose of forming an archway between the two streets. In 1829 further property in Dartmouth Street was purchased, and in the following year the archway was taken down¹⁹.

The original terrace that was built on the site appears to have deteriorated quite rapidly after 1710, which may in part have been owing to an insufficient foundation design in the marshy ground. The houses were also reported to have been prone to flooding. By the early 1730s the buildings were failing and the new holder of the lease, Thomas Davies of the Inner Temple, described them as follows:

*...the drains all lye above the foundations so that the tenants are forced to pump their foul waters into cesspools which is very nauseous and the houses lye so low that on spring tides the water comes into the tenant's kitchens and overflows them and which is an inconvenience to them and a damage to the foundations and this has occasioned the best tenants to leave them.*²⁰

¹⁹ Extracted from the Survey of London 10 p80.

²⁰ Extracted from Donald Insall Associates 2007 from the archives of Christ's Hospital CHA 13082/4

This problem with the drainage and periodic flooding continued into the 1760s and by this time the buildings were in a very unstable condition. The cistern feature found in the recent groundworks could possibly relate to this period and it may be part of the early pump system referred to or an 18th century attempt to dewater the area. However, it does appear from several other features of the cistern that its function was to draw water up, rather than to dewater the site (*cf.* Discussion Section 10)

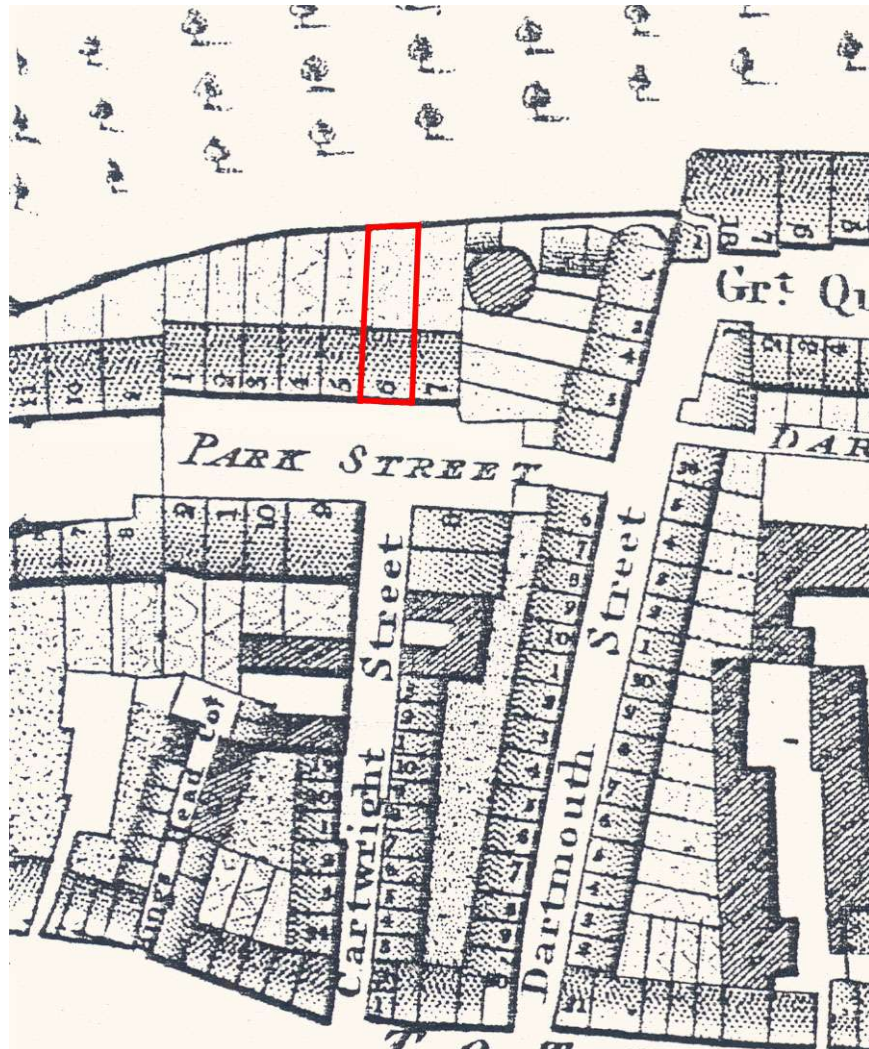


Fig 10 Extract from the first 'Horwood' map of the area 1791, showing the site just before the old terrace was demolished and the current terrace built (1794).

At the beginning of the last quarter of the 18th century Park Street was rebuilt. An agreement was entered into between the Governors and Michael Barrett whereby the latter was to receive a lease of seven houses on the north side of Park Street (occupying the sites of Nos. 14 to 24 Queen Anne's Gate), two houses on the south side (lying to the east of Carteret Street), and five and a half houses in Carteret Street. The lease was to run for 61 years from Lady Day, 1774, and Barrett undertook within 8½ years from the commencement of the lease "to erect and build on the north side "of Park Street aforesaid two or more, but not exceeding ten, substantial brick messuages or tenements ... and ... on the south side of Park Street aforesaid and in Carteret Street aforesaid

*such other substantial brick messuages or tenements, buildings or stables as ... he shall think proper.*²¹ As regards the old houses on the south side of Park Street west of Carteret Street (on the site of Nos. 5 to 13 Queen Anne's Gate), the Governors caused these to be pulled down and new premises to be erected without the intervention of a building lessee²².

The work began in September 1773 and the architect for these works is generally held to be Samuel Wyatt and the builder was Michael Barrett (there does not seem to be much evidence for a link to Adam's as has been suggested). There was a delay in the completion of the project and part of this may have been in relation to forming a foundation design that would overcome the problem of spring tide flooding of the basements that the earlier buildings had suffered from. Again, the cistern may possibly have formed part of a dewatering system designed by Barrett in the hopes of preventing a reoccurrence of this problem (*cf.* Section 10).

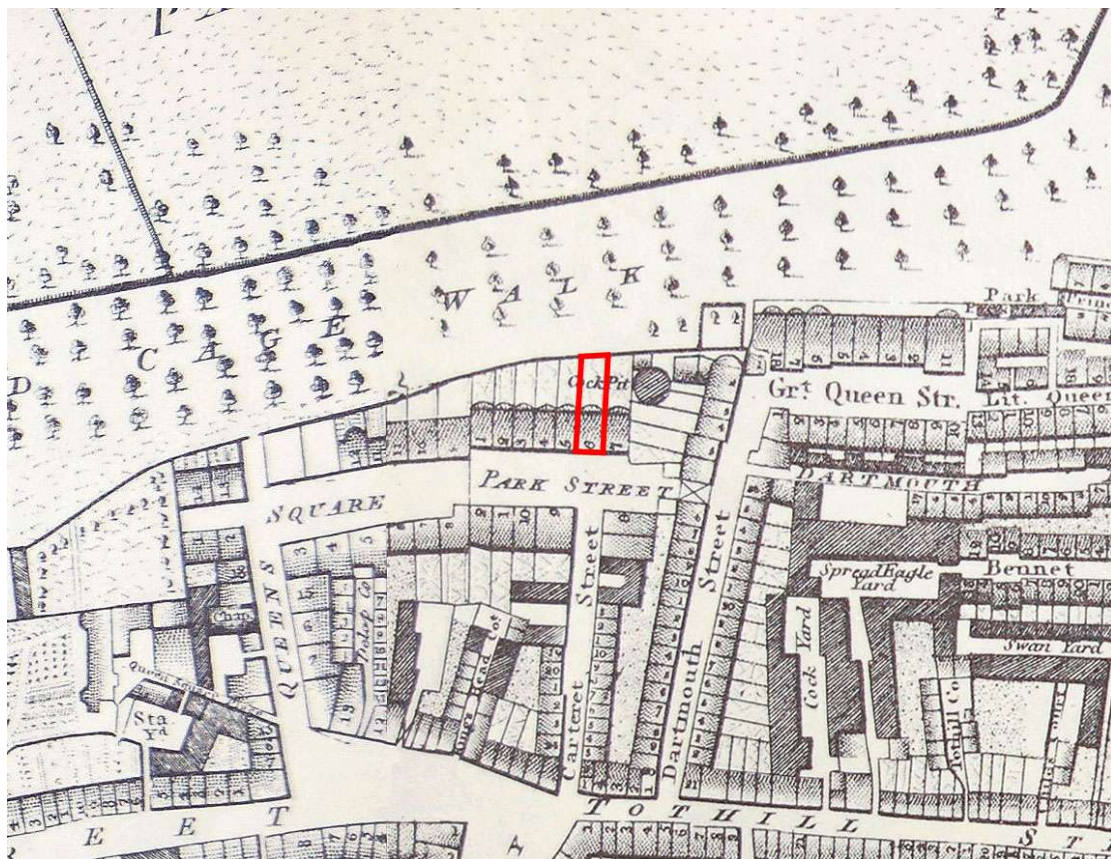


Fig 11 Faden's 1813 revision of the Horwood map showing the site with the current terrace now built. The bowed rear elevations can be seen.

No account of Park Street would be complete without some mention of the Royal Cockpit on the easternmost portion of Christ's Hospital estate, north of the street. According to Boulton²³, this was built about 1671 by Charles II. The date is probably correct, for the ground on which the Cockpit was erected

²¹ Survey of London 10. p80 Minutes of Committee of Rentors, 8th October, 1773. 'On the north side of Park Street Barrett built seven houses, the same in number as those which were there before'

²² Survey of London 10. p80.

²³Boulton, W.B. 1901 The Amusements of Old London, I., pp. 177, 179 from the Survey of London 10. p80

formed a portion of that comprised in the two leases held by Sir Edward de Carteret dating from 1670 and 1671. The suggestion that it was built by Charles II, however, has its difficulties, and no records have been found to confirm it. The earliest reference to the building is contained in a news sheet, dated 11th February, 1700 [1701], quoted by Boulton, and a representation of it is given in Kip's View (*cf.* Fig 8).

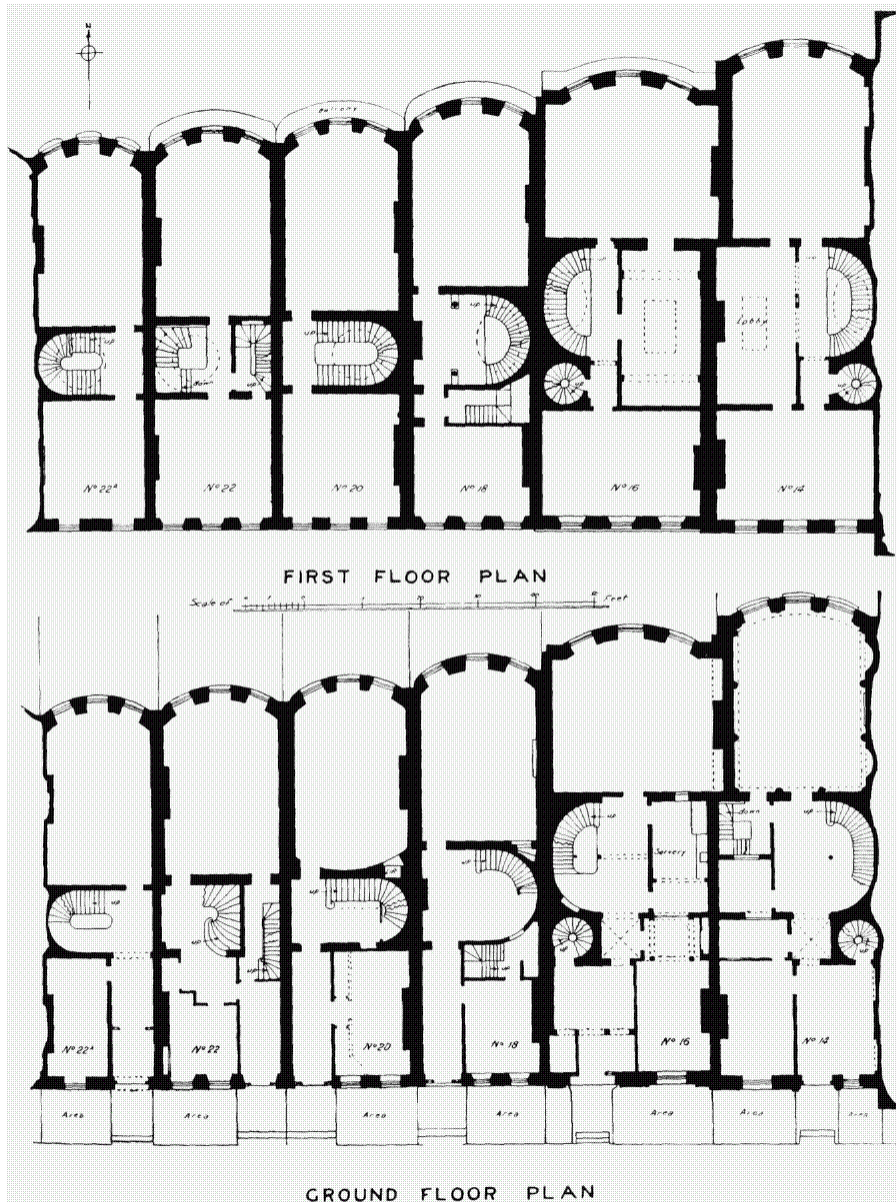
There are additional maps that cover the period from the last map illustrated here to the beginning of the Ordnance Survey map series and where available these were visually inspected, but as none could materially inform further on this assessment they were not included.

7.1 The Ordnance Survey Series 1816 to 2006

The Ordnance Survey is not illustrated as the terrace in the location of the domed cistern remains broadly unchanged, the building does go through several phases of adaptation especially to the rear, but these are not particularly relevant to the analysis of the cistern and its place in the evolution of the building.

8. General description of 16 Queen Anne's Gate (Formerly No. 6 Park Street)²⁴

The exterior consists of a plain brick front of four storeys over a basement. The lower portion is stuccoed, a treatment probably carried out at a later date than the erection of the house. The rear of the premises is similar to No. 14. The plan generally corresponds with that of No. 14, though the variation in the proportion of the back rooms causes a right-angled break in the line of the party wall (*cf.* Fig 12).



<http://www.british-history.ac.uk/>

Fig 12 Nos 14 to 22A (even) Queen Anne's Gate ground and first floor plans. Published 1926²⁵.

The Survey of London also records details of the internal and external configuration of the property including photographs of the interior. There is,

²⁵ *Ibid.* Plate 79

however, no information referring to a cistern being present in any of the properties. Early plans of the building have also been sourced by Donald Insall Associates of their 2007 report, but none of the plans found for their report showed a cistern or dewatering system in the basement.

The Survey records the occupiers of this house up to 1840, according to the rate books, with detailed discussion concerning each of the occupiers. The list reads as follows:

1778–82 Lord Kinnaird.
1783–84 Sir James. Harris.
1785 Pole Carew.
1786–88 Hon. F. Robinson.
1789 Lord Malmesbury.
1790–93 Lord Apsley. In 1793 "Repairing."
1794–1823 William Smith.
1824– Joshua Watson.

George, 7th Baron Kinnaird was the first occupant of this house. His immediate successor was James Harris, 1st Earl of Malmesbury (1746-1820), whose purchase of No. 6 Park Street was made in 1781. The next occupant of the house appears to be Henry, afterwards 3rd Earl Bathurst, who was born in 1762. He was a friend of Pitt the Younger, and successively filled a number of offices, including those of Master of the Mint (1804 onwards), President of the Board of Trade (1807–12), Foreign Secretary (1809), Secretary for War and the Colonies, and Lord President of the Council. On his father's succeeding to the earldom in 1775 he became Baron Apsley, and on his father's death in 1794 himself succeeded to the earldom. He was made K.G. in 1817, and died in 1834.

William Smith (1756-1835), son of Samuel Smith, a City merchant was the next occupant. From 1784 to 1830, with a few intermissions, he was a member of parliament, where he distinguished himself as a consistent supporter of all measures for the removal of religious disabilities and the abolition of slavery. His town house in Park Street was a meeting-place of notabilities, and his dinners were famous²⁶.

Joshua Watson (1771-1855), virtual leader of the High Church Party, purchased the house in 1822 and lived there until his death in 1855.

In Wheatley and Cunningham's *London Past and Present* it is noted that on an autograph visiting card of about 1835 appear the words: "William Wordsworth, No. 6 Park Street, "Westminster." Although no other evidence for the fact has been found, there is no improbability that the poet should for a time have been the guest of Watson, who was on intimate terms with his brother, Christopher. Numerous photographs also survive in the Westminster collections.

²⁶ *Recollections*, by Samuel Rogers, pp. 7–11.

9. The Discovery of the Cistern

This report records the archaeological discovery of a circular brick-lined domed cistern (an artificial reservoir for holding water), which was exposed in February 2009 during redevelopment groundworks in the basement of the house.



Fig 13 The original discovery of the cistern in early February 2009, showing the lead pipe and the original depth of the feature *c* 1.7m. The feature was partially backfilled for health and safety reasons. © Stephen Gray, Weldon Walshe Architects.

The feature was inspected and archaeologically recorded by Compass Archaeology on 20th February 2009 and brick, mortar and pottery samples taken away for specialist analysis. The house of 16 Queen Anne's Terrace forms part of a terrace of seven town houses, originally built in the period 1774 to 1778 and on the site of an earlier terrace. The cistern was located at NGR TQ 29740 79656.



Fig 14 An archaeologist records the roughly circular domed cistern. Note the location, just below the existing basement floor and just to the south and east of the main staircase access to the basement. The figure is standing inside the feature where a main timber upright support to the overlying floor previously stood. The timber upright was slightly off centre with the crown of the cistern. The cistern measured an approximate internal diameter of 1.36m (just over 4ft) and was initially recorded to a total depth of 1.7m (5ft 7" *cf.* Fig 13). In profile the sides of the cistern were not completely vertical, but at the neck - between the shaft of the well and the overlying crown - the walls tapered slightly so that the profile increased by about 150mm towards the crown, in this location the internal diameter of the well was 1.40m, beyond this depth the walls were broadly vertical. This slight expansion in diameter may have perhaps helped to hold the former or falsework for the domed crown above or was simply to make the top of the well slightly wider. A similar circular cistern of 19th century date and 4ft diameter has been recorded as having the capacity to store between 78 and 98 gallons of water²⁷. The cistern was constructed of red stock moulded bricks (mainly seconds) and was dry lined, but with a mortared domed crown partially surviving.

²⁷ E.S Keene 1918 *The Mechanics of the Household*



Fig 15 The domed cistern, looking east and internally into the well, which has been backfilled with pebbles for health and safety purposes. The lead pipe can just be seen to the inside the feature on the left-hand side.



Fig 16 The interior of the cistern. The crown showed evidence of two different types of mortar being used. The lower courses having a darker grey mortar and the upper courses a creamier coloured mortar (scale 20cm). The visible deepest three courses of the cistern, next to the scale, do not have any mortar and the well continues to the base unmortared.



Fig 17 The dome or crown of the cistern was obviously completed externally using an internal timber former or falsework. This is evident in the way the mortar has slipped through the brickwork and hangs in small droplets inside. During construction, it would not have been possible to reach inside to finish the internal pointing (even through the hole for the crown plate) and this would not have been attempted - while the mortar was still wet - for fear of collapsing the structure and of course, it was impossible to fully reach or remove the mortar droplets once they had set. There was no surviving evidence of the timber former used for the construction of the crown.



Fig 18 The rectangular Oolitic limestone block discovered on top of the domed cistern. The visible face is the upper face and the base of the block is roughly hewn.

A faced rectangular block of Oolitic limestone was discovered above the crown of the cistern. It measured on the upper face 0.35m x 0.39m and was 0.15m thick with slightly tapered sides. The dimensions on the rough, uneven base were 0.35m x 0.41m (Fig 17). A central timber mortise or rebate on the upper face of the block measured 5.5cm x 5.5cm and was 2cm deep. The exact function of this block is unknown because the underside of the timber upright that stood on the block did not have an associated timber tenon. It is, therefore, possible that the mortise hole was for a central iron fitting, perhaps a ring, to allow the cistern to be inspected. The siting of the timber upright near the top of the crown of the cistern does however seem to merely be a coincidence and must relate to a later function in this area once the cistern had fallen out of use. Also, the location of the Oolitic limestone slab and timber upright were not exactly central in the crown of the well. The relationship of the crown, Oolitic limestone block and timber stairwell upright cannot be convincingly determined at this stage. It does seem that the block base and timber upright are completely unrelated to the cistern feature.

Internally the cistern contained the original lead pipe to the northeast, which would most probably have led to a cast iron or wooden hand-pump situated nearby.



Fig 19 The lead pipe still surviving inside the cistern/well feature. The lead pipe was made in a cast and a mould mark is evident on the pipe (to the left on Fig 18). Lead pipes were first cast *c* 1539 using a technique devised by Robert Brocke. The lead pipe measured 2½ inches or possibly 3 inches in diameter (7cm). It is reported that the deep end of the lead pipe had been perforated (*pers comm.* Stephen Gray, Weldon Walshe). This also seems to suggest that the feature was not a dewatering device or cesspit, but that water was drawn up through the cistern and the perforations acted to filter the incoming water



Fig 20 Detail of the brick and mortar construction of the crown of the cistern.

The bricks from the cistern were examined by John Brown of Gifford and identified as conforming - through fabric type and analysis of the mortar - to a date from the second half of the eighteenth century. The bricks were all unfrosted stock moulded brick, as seen by the sand adhering to the face of the bricks which had transferred from the sand on the stockboard prior to firing. The bricks had sharp arrises and dimensions of 220mm x 85-96mm x 58 to 65mm depth (average 220 x 95 x 62mm). The fabric conforms to fabric type 3034, which has a date range from 1630 to 1800²⁸. Nine courses of brick measured a height of 57cm in height. The length and width ratio of the bricks suggests a date in the later 18th century. All the bricks were seconds and were either over or under fired, were warped or irregularly shaped. It was common practice to use wasters and second-rate bricks for second-rate purposes such as garden features, wells, cesspools etc. The bricks contained large flint inclusions and evidence of large fragments of organic materials 'Spanish' which had been lost in firing. Analysis of the grey mortar revealed inclusions of calcium carbonate and most importantly small fragments of coal and coke fragments. Coke and coal were not included in brick mortars until the latter part of the 18th century and prior to this only charcoal was encountered as a dark residue in mortars. The analysis of the mortar therefore confidently places the cistern feature contemporary with the construction of the second terrace in 1774.

²⁸ Vince, A. 1984 (2nd edit.) Pottery Archive: users handbook, London: Museum of London, DUA Pubs. 1.

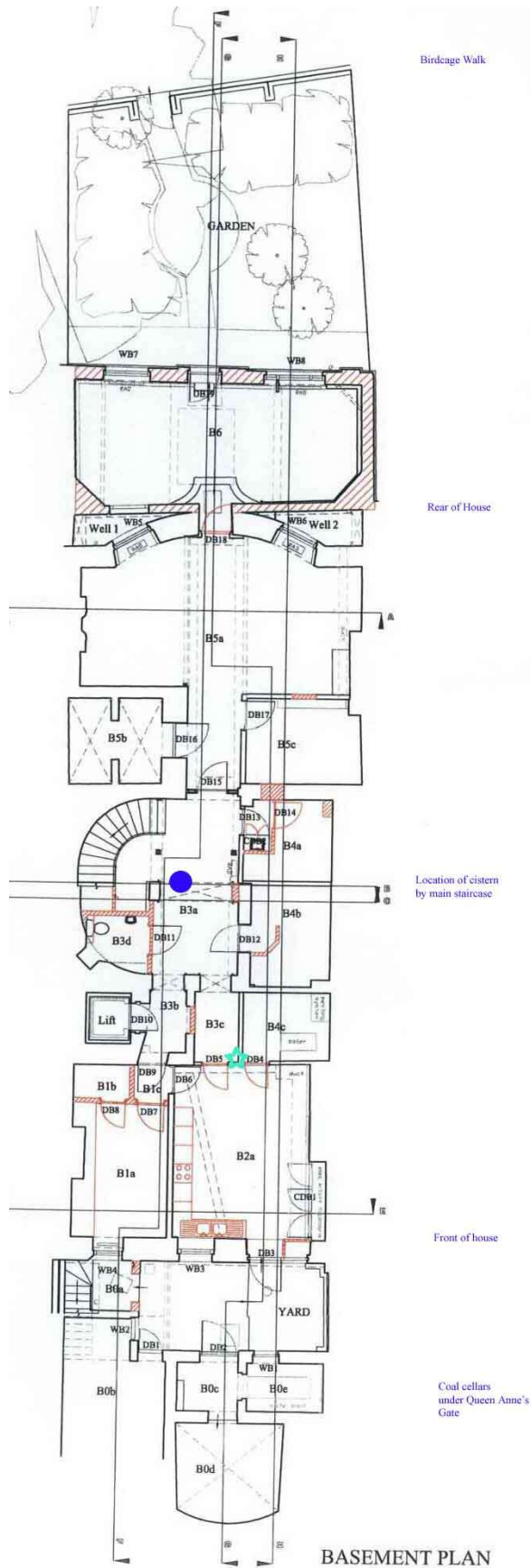


Fig 21 The basement plan, showing the location of the cistern in royal blue. © Donald Insall Associates.



Fig 22 A small fragment of pottery recovered from the soil deposit immediately adjacent to the domed cistern.

A single sherd of pottery (weight = 22g) was uncovered adjacent to the cistern. It is a sherd of Post-medieval redware, with a date-range of AD1580 – 1900, classified as fabric PMR in the Museum of London fabric series (eg. Vince 1985). The sherd is from the rim of a vessel with an open form, possibly from a medium sized bowl, diameter *c* 150mm. It is a fabric and form that is a typical find at post-medieval sites in London²⁹.

10 Conclusions

Assessment of the feature suggests that it is most probably a domed cistern, for collecting grey water for general domestic purposes, as opposed to a well, soakaway or cesspit. A cistern works in a similar fashion to a conventional well, which draws water up from the water table through atmospheric pressure, but it seems unlikely that its function here was for drawing fresh drinking water. It seems more probable that this well-type feature was for drawing up ‘grey water’ (surface run-off etc.) for bathing, laundry, cleaning and general domestic purposes. The perforated end of the lead pumping pipe also seems to suggest that the feature was not a dewatering device or cesspit, but that water was drawn up through the cistern and the perforations acted to filter the incoming water. It is unlikely that the feature is a cesspit as the majority of these were rectangular at this time.

²⁹ Pottery analysis by Paul Blinkhorn, Vince, AG, 1985 The Saxon and Medieval Pottery of London: A review. *Medieval Archaeology* 29, 25-93

In conclusion, the domed cistern is felt to date to the second and current terrace of houses that have stood on this site, i.e. from 1774. Historic records show that the previous terrace that stood on the site had significant problems with seasonal flooding and water ingress and this system may have been installed with the dual purpose of providing a pump for grey water for general domestic purposes and also as a overflow system for dewatering the basement at spring tides and other intervals of flooding.

10.1 Extract from historic journals on the construction of similar structures

The following section is a selection of extracts from *the Mechanics of the Household* by E.S Keene 1918 which discuss similar cisterns, wells, cesspools and dewatering systems. It is noticeable that there are similarities with each of these structures, but the body of evidence suggests a domed cistern for collecting grey water:

Rainwater Cisterns

‘Cisterns for the storage of rainwater have been used from the time immemorial and are constructed in a great variety of forms. For household use they are often made in the form of wooden or metal tanks, either elevated or placed in the basement; the greater number, however, are of the underground variety made of brick or concrete’

‘Unfiltered cistern water is not, fit for drinking purposes because of pollution from dust and impurities washed from the roof, but for bathing and laundry work filtered rain water is greatly to be desired.’

Filters for cisterns are quite generally made of soft brick laid in cement mortar, the face of the brick being left uncovered. Fig. 137 illustrates a simple and efficient form of filter made of a single course of brick. A space one-fourth to one-third of the volume of the cistern is left for the filtered water. The opening at the top of the wall must be large enough to admit a man, for some sediment will collect even in the filtered water and the filter must be occasionally cleaned’.

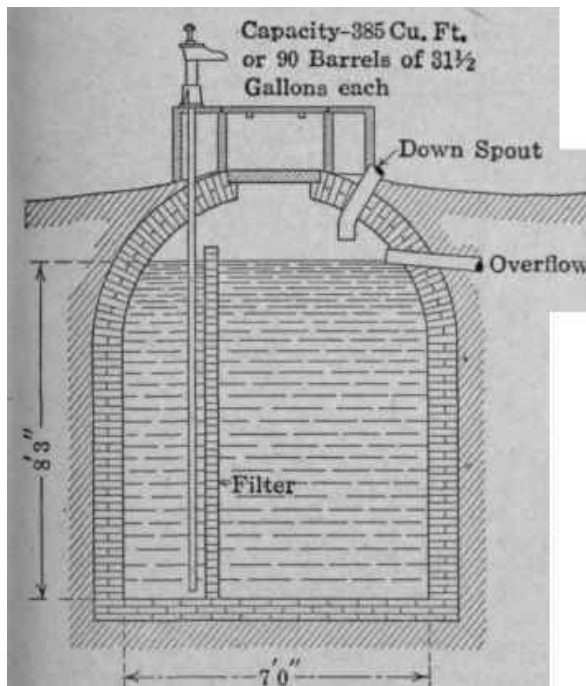


Fig. 137. - Cross-section of a brick curbed cistern with a brick filter wall.

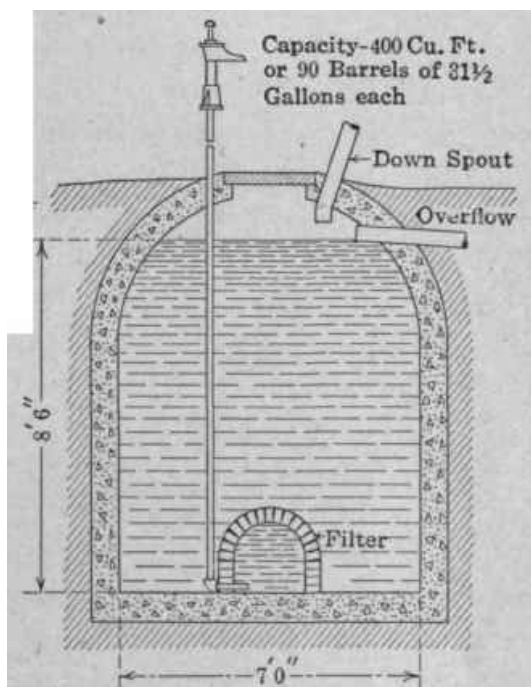


Fig. 138. - Cross-section of a concrete cistern with a brick dome filter.

The filter shown in Fig. 138 is dome-shaped and built of brick. The water is pumped from inside the filter and the suction of pumping filters the water as it is used. In this case the filtering action is accelerated by reason of the reduced pressure inside the filter as the water is pumped. The chief disadvantage in this form of filter is the small area exposed for the filtering action and the relatively greater amount of work required for pumping the water, due to the partial vacuum formed as the water is pumped.

The cistern in Fig. 139 is provided with a catch basin that acts as a strainer for removing leaves, etc., that would stain the water. It is made in the form of a concrete basin and partly filled with gravel. The filter in this case is formed by a depression in the cistern floor. A section of tile is placed on the floor, and around it is filled the filtering material of gravel and sand. Filters of this kind are often filled with charcoal or other materials that are expected to purify the water. They are usually inefficient because their value as absorbers of polluting agents is short-lived and unless the materials are frequently renewed they are valueless and sometimes a detriment to rapid filtration.

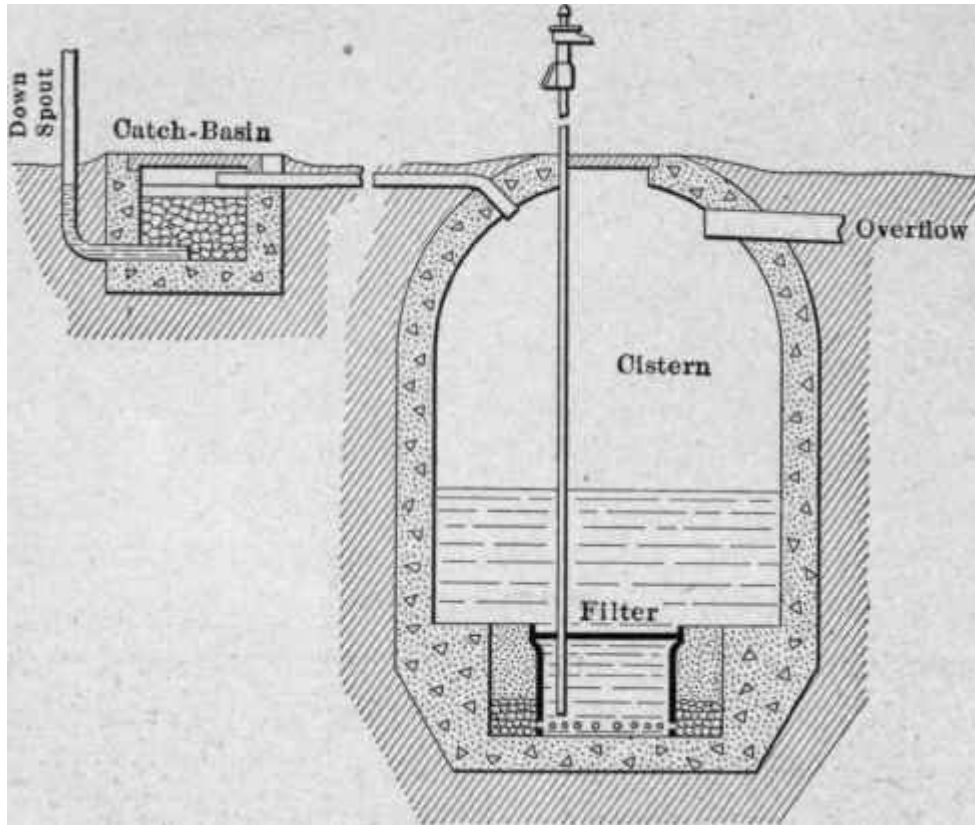


Fig. 139. - Cross-section of a concrete cistern, containing a sand filter.

Deep-Well Pumps

The principle of operation as described in the lift pump takes advantage of the atmospheric pressure to lift the water above the first valve. The limiting distance to which water can be lifted by the atmospheric pressure will depend on the altitude and the atmospheric pressure. With the normal atmospheric pressure at sea level, water can be lifted, theoretically, 34 feet, but in practice the limiting value is never even approximated. The pump is usually placed within 10 or 12 feet of the water and 20 feet is about the limit of distance. The reason for this is because of the impossibility of keeping the joints tight in the valve and tubing.

Dug Wells

In shallow wells the water seeps through the soil from local precipitation. Deep wells are those from which the water is brought to the surface through an impervious geologic formation, as a bed of clay or rock, and from a depth greater than that from which water may be lifted by atmospheric pressure. The fact that a deep well originates from a source that entirely differs from that of the shallow well accounts for the difference in chemical composition which frequently exists in the water from the two types of wells in the same neighbourhood.

The form of the dug well is generally that of a cylindrical shaft 4 feet or more in diameter and of depth depending on the location of the water-bearing stratum. Where the character of the soil is such that the seepage is slow and the water does not flow into the well as fast as the pump will remove it, the well must contain a considerable volume to supply the period of greatest demand. Wells of this kind are commonly walled with brick or stone to keep the sides in place and to prevent the entrance of surface waters. The top of this curb should be brought above the surface of the ground and should be made water-tight to prevent the entrance of surface waters. The space around the curb, at the surface, should be graded to drain the water away from the well. There should be no chance for the water to collect in pools about the well; it should be conducted away in a gutter to the place of final disposal. The well should be covered with a platform of concrete or planking which will allow no water to enter from the surface.

Wells of this order are sometimes dug to great depth before the water-bearing stratum is encountered; this may sometimes be reached only after a great amount of expense and labour.

Pumps

Pumps for lifting and elevating water are made of both wood and iron in almost endless variety; but for domestic purposes they are of two general types - the lift pump and the force pump - which include features that are common to all. The lift pump is intended for use in lifting water from low-head cisterns and wells, the depth of which is not beyond the head furnished by atmospheric pressure. The force pump performs the work of a lift pump and in addition forces the water from the outlet at a pressure to suit any domestic application.

Septic tanks and cess pits

The septic tank in Fig. 154 is quite similar in construction to the others described except that a section of sewer tile takes the place of the brick wall between the two parts of the tank. The opening O, through which the effluent is discharged, is located a little above the centre of the tank [Note: the section of the tank marked A does bear similarities to the feature encountered on this site].

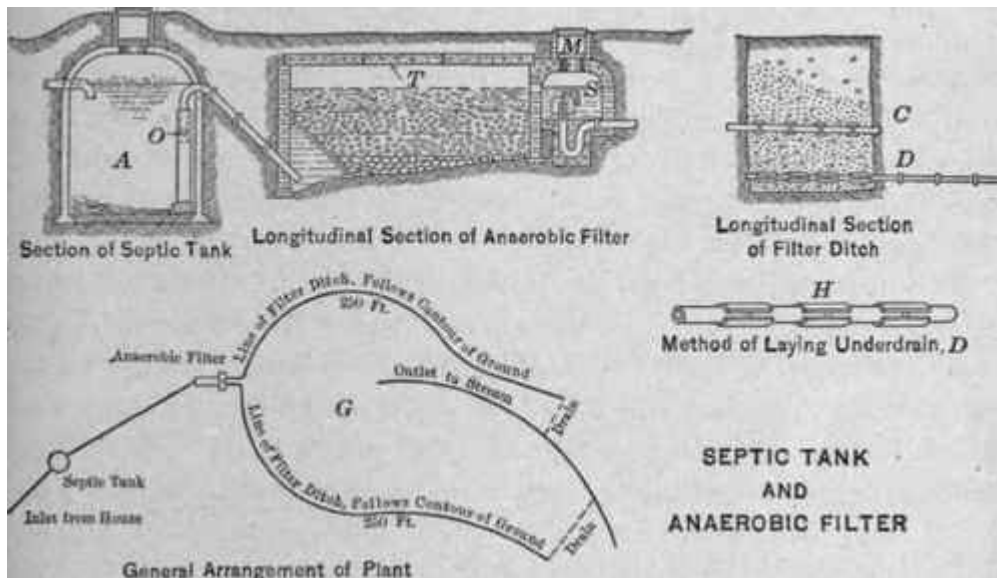


Fig. 154. - Sectional view of a septic tank combined with an anaerobic filter; together with the details of construction and plan of arrangement.

This section below is from the book ‘Plumbing Problems’ by ‘the Sanitary Engineer’ and published in 1889. In relation to the problems of constructing a cistern under a house, the Sanitary Engineer has the following advice:

The Construction Of A Cistern Under A House

Question. Will you have the kindness to give me your opinion as to the best manner of remedying the following? A party has a cistern under his house. A brick floor and the foundation-walls cemented forms this cistern; the joist and floor of same forms the cover or top. The cistern not being arched with bricks, at times there is an offensive odour of decayed mud coming up through the manhole. Now, the owner wishes to abolish this cistern. It was suggested to fill it up with earth. Would it be prudent to do so, or would it be better to thoroughly dry this cistern and whitewash the walls, etc.? If you can suggest any better way you will greatly oblige.

Answer. It will be best to fill the cistern with clean, dry earth, since if it is left empty there will always be a certain element of danger connected with it, unless it is used for some purpose, and its presence thus kept constantly in mind. If it is left empty, means should be provided for its ventilation in the form of two tubes, one opening into it near the top, the other near the bottom, and both communicating with the external air.

Care must be taken that the earth used for filling does not contain organic matter; a mixture of equal parts of clean sand or gravel and clean clay is better than either alone would be. If the level of the subsoil water in the vicinity is below that of the bottom of the cistern, the cement bottom should be broken up before the cistern is filled, in order that the earth within and without may communicate freely.

Question. I am building a cistern under my house to contain rain-water which will be used for drinking, etc. I wish to put in a terra-cotta pipe through the top

to the bottom of the cistern in order to deposit the fresh water at the bottom. Would the terra-cotta pipe be in any way injurious to the water?

Answer. Terra-cotta pipe will not injure the water for drinking purposes but it is highly inadvisable to place a cistern under a dwelling-house since by doing so one runs a triple risk - viz., of injuring the house by dampness; of injuring the health of the inmates of the house, especially if any of them have a tendency, however slight, to lung disease; and lastly, of injuring the water by placing it where it can absorb the organic and ammoniacal exhalations connected with the presence of animal life.

11 Select Bibliography

General sources

City of Westminster Archives Centre

Greater London Sites and Monuments Record

Guildhall Library

London Metropolitan Archive

Bibliography

Barker, F. and Jackson, P. 1990 *The History of London in Maps*.

Barton, N. J 1982 *The Lost Rivers of London*

Boulton, W.B. 1901 *The Amusements of Old London*, I., pp. 177, 179

Bradley, S and Pevsner, N. 2003 *The Buildings of England, London 6: Westminster* p712 ff.

Brooke, C 'London 800-1216: The Shaping of a City' p369

Brunswick, R.W. 1990 '*Brick Building in Britain*'

City of Westminster 2007 Unitary Development Plan

City of Westminster, March 1995, 'A Guide to Archaeology and Planning within Westminster'

DoE 1999 *Planning Policy Guidance Note 16: Archaeology and Planning* and DOE 1994 *Planning Policy Guidance Note 15 (Planning and the Historic Environment)*,

Donald Insall Associates , January 2007 '16 Queen Anne's Gate, London SW1. An Historic Building Report' *in house unpublished report*

English Heritage 2006 '*Understanding Historic Buildings. A guide to good recording practice*'

IFA 1996 *Standard and Guidance for Archaeological Desk-based Assessments*

Gray, R 'A History of London' p101

Margary I D, 1965 *Roman ways in the Weald*

Margary I D, 1973 *Roman Roads in Britain*

Merrifield, R 1983 *London: City of the Romans*

- Needham, S *The Bronze Age* p135 in Bird J & Bird DG (eds)
- Richardson, R. 2000, *The Annals of London* p31
- Roberts, H. London County Council Survey of London 1951 Vol XXIII Part 1
- Sainders, A (ed) 2005 The LCC Bomb Damage Maps 1939-1945 *The London Topographical Society*
- Sawyer, PH 'Anglo-Saxon Charters,p374 no. 1293
- Sloane B *et al.* The Roman Road & the River Regime: Archaeological, *LA* Vol 7 No 14, Pp 369-70
- Stow J. Survey of London, Vol 2, P 122 ILAU Index
- Tatberht's Lundenwic' PCA Monograph 2. © Copyright Pre-Construct Archaeology Ltd 2004-2006;
- Thompson, A., Westman, A. and Dyson, T. (eds) Archaeology in Greater London 1965-1990. *The Archaeological Gazetteer Series*, Volume 2 1998
- Thorne, J 1876 *Environs of London*
- VCH 1912 *Victoria History of the Counties of England*. (Repr. from the original 1967) Malden, H E (ed)
- Vince, A. 1984 (2nd edit.) Pottery Archive: users handbook, London: Museum of London, DUA Pubs. **1**
- Vince, AG, 1985 The Saxon and Medieval Pottery of London: A review. *Medieval Archaeology* **29**, 25-93
- Waller, W.F and Besant, W. 1895 'Westminster'; Notes and Queries.
- Weinreb B, & Hibbert C, 1993 *The London Encyclopaedia*
- Wymer JJ *The Palaeolithic Period in Britain* p20 in Bird J & Bird DG (eds).

Appendix I: OASIS Data Collection Form

OASIS ID: compassa1-56929

Project details

Project name	16 Queen Anne's Gate, London, SW1 9AA, City of Westminster: Archaeological Recording and Assessment
Short description of the project	The archaeological discovery and assessment of a circular brick-lined domed cistern (an artificial reservoir for holding water), which was exposed during redevelopment groundworks in the basement of 16 Queen Anne's Gate, London SW1. The house of 16 Queen Anne's Terrace forms part of a terrace of seven town houses, originally built in the period 1774 to 1778 and constructed on the site of an earlier terrace. This house, along with nos. 14 to 22 (even) and 22A and 24 Queen Anne's Terrace, was listed Grade I in 1958 and recorded as being 'part of an exceptional group of late 18th century and Queen Anne houses'.
Project dates	Start: 20 -02-2009 End: 20-02-2009
Previous/future work	No / No
Type of project	Recording project
Site status	Listed Building
Site status	Conservation Area
Current Land use	Residential 1 - General Residential
Monument type	CISTERN Post Medieval
Significant Finds	N/A None
Investigation type	'Recorded Observation'
Prompt	Listed Building Consent

Project location

Country	England
Site location	GREATER LONDON CITY OF WESTMINSTER CITY OF WESTMINSTER 16 Queen Anne's Gate, London, City of Westminster
Postcode	SW1H 9AA
Study area	25.00 Square metres
Site coordinates	TQ 29720 79630 51.5002043777 -0.130915627995 51 30 00 N 000 07 51 W Point

Project creators

Name of Organisation	Compass Archaeology
Project brief originator	English Heritage/Department of Environment
Project design originator	Compass Archaeology
Project director/manager	Geoff Potter

Project supervisor	Gill King
Type of sponsor/funding body	Developer
Name of sponsor/funding body	Bestseller UK Ltd

Project archives

Physical Archive recipient	Museum of London archaeological archive
Physical Contents	'Ceramics'
Digital Archive recipient	Museum of London archive
Digital Contents	'none'
Digital Media available	'Images raster / digital photography'
Paper Archive recipient	Museum of London Archive
Paper Contents	'none'
Paper Media available	'Report'

Project bibliography 1

Publication type	Grey literature (unpublished document/manuscript)
Title	16 Queen Anne's Gate, London SW1H 9AA: Archaeological Recording and Assessment
Author(s)/Editor(s)	King, G
Date	2009
Issuer or publisher	Compass Archaeology
Place of issue or publication	5-7 Southwark St, London SE1 1RQ
Description	Bound report detailing the results to the archaeological assessment and recording

Entered by	Gill King (mail@compassarchaeology.co.uk)
Entered on	16 March 2009

Appendix II: London Archaeologist Summary

Site Address: 16 Queen Anne's Gate, London SW1H 9AA
Project type: Archaeological Recording and Assessment
Dates of Fieldwork: 20th February 2009
Site Code: QAN09
Supervisor: Gill King
NGR: TQ 29720 79630
Funding Body: Bestseller UK Ltd

The house of 16 Queen Anne's Terrace forms part of a terrace of seven town houses, originally built in the period 1774 to 1778 and constructed on the site of an earlier terrace. A circular brick-built domed cistern was discovered during development works; assessment of the feature suggests that it is a cistern, as opposed to a well, soakaway or cesspit. The cistern was roughly circular and was found just to the south of the main staircase into the basement. It measured an approximate internal diameter of 1.36m (just over 4ft) and was recorded to a total depth of 1.7m (5ft 7"). It was constructed of red stock moulded bricks (mainly seconds) and was dry lined, but with a mortared domed crown partially surviving. Internally the cistern contained the original lead pipe to the northeast, which would have led to a hand pump situated nearby. In conclusion, the domed cistern is felt to date to the second and current terrace of houses that have stood on this site, i.e. to date from 1774.