Old Chiswick Conservation Area

Historic Walls Survey, Analysis and Conservation Advice

Version A for wide circulation

For The Old Chiswick Protection Society

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PEREGRINE BRYANT
ARCHITECTURE & BUILDING CONSERVATION
The Courtyard, Fulham Palace, Bishop's Avenue, London SW6 6EA
T: 020 7384 2111. F: 020 7384 2112. E: peregrine@Bryant.net

1.1 Introduction

Peregrine Bryant Architects were approached by the Old Chiswick Protection Society to provide advice to help protect the remnants of pre-1700 walls, the survival of which makes an important contribution to the character of the Old Chiswick conservation area and provides evidence of the earlier phases of development of the riverside and environs.

The brief, initially to identify unlisted stretches of 17th century wall along Netheravon Road South, was subsequently expanded to include a survey for walls potentially pre-dating 1700 across as much of the Conservation Area as could be accessed in the time available, to provide brief analysis of condition and possible remedial action, and to give general guidance on the care and conservation of historic brick walls.

Only photographic record of walls facing public spaces are shown in this version of our Report (A), but for owners of the walls identified who request it, photographic record of the non-public faces of their walls can be abstracted from version (B) for the OCPS Archive. It should be noted that more vestiges of walls potentially pre-dating 1700 may survive in areas/gardens which were not accessed; the methodology to identify such walls described below could be used with caution by those interested.

We are very grateful to the many householders who provided access to private gardens for this survey, and to Keith Tidy and others at Fuller, Smith & Turner for providing generous access throughout the Griffin Brewery sites.

1.2 Summary

An initial walking survey of the area, cross-referencing with the earliest reliable historical mapping, allowed the identification of walls of potential interest, as well as known early walls, some of which are already listed by Historic England or have been recorded on the Borough of Hounslow local list. These could then provide useful comparators for other potential candidates.

Closer inspection and photographic survey allowed further desk-based analysis to compare colour and patina, mortar, bond patterns, brick sizes, context and overall condition.

The key areas of wall presently unlisted that have been identified as potentially of late 17th century fabrication (or earlier) are:

- St John's House and Morton House, Netheravon Road (1.5.2 and 1.5.3)
- Wall to the East of Orchard House, Netheravon Road (1.5.7)
- Griffin Brewery South boundary walls adjacent to the Old Stables, and a possible vestige of the same wall to the East of Thames View House (1.6.2 and 1.6.3)
- Flank wall to the South of Chiswick Square (1.7.1)
- Walls incorporated into the rear of the houses on Page's Yard (1.7.2)
- Sections of wall at the East end of Powell's Walk, and the South boundary of the garden of Holly House (1.7.4)

In addition detailed analysis of walls known or suspected to date from the 17th century has identified features that give further evidence of sequences of development, for example to the north boundary wall of the Griffin Brewery site, to the rear of the 18th century cottages of Page's Yard and to the passage to the rear of the gardens at Latimer House and Holly House.

1.3 Survey Methodology

The period around 1700 is often suggested as the point of transition in brick walling construction techniques from English bond to Flemish bond. The use of English bond may have continued well beyond this period in the construction of garden and boundary walls, however, despite the more general adoption for the walls of buildings, and indeed there are many examples of Flemish bond in use in England in the preceding century[1], so can by no means be used as a conclusive proof of date around that transitional period.

English bond continued to be regarded as the stronger method of building, although it required a greater number of bricks for the same volume of masonry. Where strength was valued over appearance English bond may have been preferred well beyond 1700, and in buildings of this period it is not uncommon to see English bond used up to plinth level, and Flemish above. In boundary walling one advantage of English bond was that cut or undersized bricks could be used judiciously in the alternating stretcher courses with less effect on the orientation of perpend joints or the overall regularity or vertical alignments, allowing for economy in the reduced selection and wastage of bricks on site.

Brick dimensions can sometime provide a useful clue to dating, but this is generally unreliable, with standardisation first introduced by Act of Parliament in 1776 at 8.5 x 4 x 2.5 inches (216 x 102 x 63mm), too late to be useful for the purpose of this survey, except where very shallow bricks might identify the earliest of walls. Where brick dimensions have been taken the mean values are stated in the description.

Another complication to the process of dating brick walls by visual analysis and comparison is that bricks were frequently reused, which was facilitated by the use of soft lime mortars, or reversed during repairs. Recent research has provided the prospect of alternative scientific methods of accurately dating brick material, principally through rehydroxylation dating (RHX), and optically-stimulated luminescence (OSL) techniques, but the expense and difficulties in obtaining such analyses means that visual and contextual methods currently remain the most common approach.

Where historic mapping exists, it can be very helpful in establishing the likely locations of walls, boundaries and buildings, as well as natural features observable at the point of map survey, acknowledging that features shown may have been standing for a long time prior, or may have been completely rebuilt since survey.

In this instance the earliest reliable mapping at a usable scale was carried out by John Rocque, whose surveys in the 1740s were initially published in 1746 as the map ‘London: 10 Miles Around’, and subsequently revised and republished in 1761 as a series of sheet maps titled ‘An exact survey of the cities of London and Westminster’. It is upon this mapping that the current survey has relied, a section of which is reproduced and annotated on page 5 below to indicate key surviving buildings (and the sites of significant buildings that have been lost), and the areas of walling surveyed and discussed in the following pages. In each case the section of wall is circled on a clip of the map in the top right corner of the page. It should be noted that in the text, the positions of walls are described by the name of an adjacent house/area: this should be in no way be taken as confirmation of current ownership.

[1] “The dating game”, *Architects Journal*, 2006. Accessed online [21st May 2021] https://www.architectsjournal.co.uk/ar-chive/the-dating-game

1.4 *Old Chiswick*: Summary of Development

The settlement of *Old Chiswick* developed immediately to the east of St. Nicholas' Church (mentioned in 1181) and away from the river (for earliest plans, see Rocque's 1746 map – page 5). There, Church Street ran northward from the ferry, with a continuation across the open field which lay between the village and the high road to London and Brentford. A little to the east of Church Street, overlooking the river, stood a stone building of c.1100; the oldest known part of the prebendal manor house (later *College House*). Presumably that building and its neighbours were reached by a way leading eastward from the ferry and along the river bank: the forerunner of Chiswick Mall, though it is not clear how far this medieval road extended.

During the late-sixteenth and early-seventeenth centuries, the grandest residents lived on the outskirts of the village: the Russells at *Corney House* to the west and the Wardours (and their successors) within a forerunner to *Chiswick House* to the north. What was to become Chiswick Mall contained the vicarage at the bottom of Church Street (constructed 1589-90), the old prebendal manor house (enlarged c. 1570 for Westminster school) and a substantial Tudor forerunner of Walpole House. These probably stood amongst other imposing houses, afterwards rebuilt. Bowack (1705) noted some *'very ancient'* dwellings by the river and also provided further description of the place:

> *'The pleasant village of Chiswick, tho' but small, is so very pleasantly situated out of the road and free from noise, dust and hurry... The Thames, taking an oblique course from Fulham and Hammersmith, but gently salutes this place, and the several little islands, or eights, so pleasantly scattered in it, considerably weaken its force. The greatest number of houses are stretched along the Waterside from the Lyme Kiln, near Hammersmith, to the Church, in which dwell several small traders, but for the most part fishermen and watermen, who make up a considerable part of the inhabitants of this town.' (ibid)*

Despite much rebuilding, the village spread very little between the mid-eighteenth and late-nineteenth centuries. The Mall boasted a number of tall trees to the open, grassy verge between road and river in the early nineteenth century. Its houses retained large back gardens into the 1860s, by which time they had also staked-out their private plots along the riverside verge.

Changes in the village itself arose mainly from industry, predominantly brewing and printing, timber at Durham Wharf to the east, and later the ramshackle cottages of Sluts Hole below the church made way for the shipbuilding workshops of Thornycroft & Co. The late-nineteenth century saw a proliferation of suburbia along the high road and to the western districts of Hammersmith.

Declining importance of the place as a centre for parish life was accelerated by its remoteness from the railways and by the rise of these new suburbs with their own services. Old Chiswick thus became a residential backwater, varied by some thriving industry (including Thornycroft's Steam Carriage and Wagon Co, on Hogarth Lane). The village lost its most ancient buildings with the demolition of College House in 1710 (and its replacement also demolished 1875 for development of new housing) and with reconstruction of the church, as expensive new houses were still being put up in Chiswick Mall.

The area at the southern end of Chiswick Lane retained its importance as a transport nexus, however:

"*Produce for and from Chiswick industries was unloaded and loaded from barges at the draw dock on Chiswick Mall, opposite Chiswick Lane South. A draw dock is a gently sloping bank in a tidal river where boats can be run up. The draw dock was very busy in the nineteenth century bringing in hops and malt for the breweries, old ships' ropes for the Chiswick Press and coal and timber. The osiers cultivated on Chiswick Eyot were loaded to be transported to basket-making firms and market garden produce sent to the metropolis.*"[2]

Cultivation and harvesting of the osiers on Chiswick Eyot continued well into the twentieth century.

The departure of Thornycroft's boat works (completed by 1909) perhaps cemented the village's future as a residential area. An alleged source of pollution had gone, though smaller firms moved in, extending their wharves and depots to the south-west. Church Street retained several shops by c.1910, in contrast with the more-stately Chiswick Mall where the Red Lion lost its licence c.1913. The closure of the Lamb Brewery left only Fuller, Smith & Turner at the Griffin Brewery as a major employer near the river. North of the village however, the Chiswick Polish Co. and its successors gradually expanded in the angle between Burlington Lane and Hogarth Lane.[3]

The north corner of Church Street was demolished in the 1930s, when part of Burlington Lane became Great Chertsey Road, and further demolitions accompanied work on Hogarth Lane and Mawson Lane in the 1950s. Heavy traffic along the widened roads helped to cut off the old village from the suburbs inland.

[Written after: Diane K Bolton, Patricia E C Croot and M A Hicks, *A History of the County of Middlesex: Volume 7, Acton, Chiswick, Ealing and Brentford, West Twyford, Willesden*, ed. T F T Baker and C R Elrington (London, 1982), *British History Online* http://www.british-history.ac.uk/vch/middx/vol7 [accessed 12 July 2021).]

[2] (London Borough of Hounslow, *Old Chiswick – Conservation Area Appraisal,* 2019)

Detail from John Rocque’s map of 1761

1.5 EAST SECTION – between Miller's Court and Chiswick Lane South

1.5.1 Miller's Court/Swan House

Broadly consistent Flemish bond, although some areas of header courses at the base of the wall. 22-24 courses plus on-edge coping. Averaged brick dimensions 221 x 102 x 65mm. Colour: dark red/purple fire skin with mid-red body. Overall darkened by considerable dirt and soot accretions to bricks and surface of the pointing mortar. A piece of clay pipe was found embedded in one of the joints. Wall is consistently damp, and displays clear salt efflorescence to 30-90cm height on both sides. The position appears to tally with the N-S wall shown in Roque's mapping, and the brick colour, composition, form and mortar would support an early 18th century date.

From Millers Court

Clay pipe embedded in construction mortar (circled in red)

1.5.2 St John's House/Chiswick Lodge

Only the northern end of the wall bordering the Chiswick Lodge development was inspected. 35 courses plus on-edge coping. Lower 20 courses roughly English bond, and colours pale orange to dark red with sooty mortar. Upper courses in Flemish bond in brown brick, courses 21-28 with pale lime-rich mortar, modern straw repointing mortar to top, probably contemporary with structural restraint plates and ties. Brick dimensions not taken. The position of this wall appears to tally with that shown in Rocque's map, perpendicular to the long boundary wall along the south of Netheravon Road, this section now lost, and both brick composition and pointing appear similar to that at the rear of Morton House (see 1.5.3 below)

1.5.3 Morton House

Northern boundary wall to Netheravon Road South:

Broadly Flemish bond, 28 courses to raked bricks on end, then six courses plus on-edge coping above. Colours range from blackened red to bright orange where the fire skin has been spalled or eroded. Sooty pointing mortar.The appearance of this wall is remarkably similar to that east of Orchard House (1.5.7). Bricks in the upper half with heavy pale salt efflorescence, mosses and vegetation. The doorway with early brick on edge lintel supported by the frame – this has dropped. Brick jambs have been reconstructed, and the right side has been rebuilt along with an adjacent pier in C20. The later upper sections of wall are in poor condition and require repointing to minimize water penetration and further invasive flora.

Eastern boundary wall:

26 courses up to a brick-on-edge coping, laid in Flemish bond, erratic in places. The bricks are soft red, laid in a lime-rich mortar which is pale buff in colour with varied aggregate size.

There are numerous areas of historic and more recent repair and replacement of sections of the wall. The main part is consistent in fabric and workmanship with the back, north wall, and corresponds with the position shown on Rocque's map suggesting this wall is of early 18th century construction or earlier. There are various areas of hard cementitious render, mostly in thin layers which is flaking off. The soft brickwork behind would benefit from removal by hand of any loose, friable or flaking render or repointing, and open joints repointed in lime mortar.

1.5.4 Walpole House

The north boundary wall (on Netheravon Road South) is listed in its own right (HE list entry number 1080317), and mostly contemporaneous with the principal phase of Walpole House, though recorded as a continuation of the boundary of the Prebendal Manor (c.1562) – see sections 1.5.7 to 1.5.8. The wall is formed of soft red bricks, laid predominantly Flemish bond, with large areas showing a dark sooty lime mortar. Towards the east end a section extended above the tapered capping is in the form of a narrow 4-centre arched gable end, adjacent to a pair of piers or buttresses with an infilled panel between. There is a pronounced inward lean through this east section of wall which may in time require structural intervention, and some invasive flora should be removed from the upper sections, and open joints repointed to prevent further deterioration.

On the west side boundary of Walpole House is a wall shared with Eyot Green, of 30 courses of English bond up to a brick-on-edgecoping. The northern end of the wall has been subsumed into the complex of garages and garden store with greenhouse above, but from the Eyot Green side (image below) is readily visible, with a heavily carved Portland stone doorcase, reclaimed and incorporated into the wall, recently repaired with a new brick infill panel and rebuilt coping.

The brick colour varies hugely, from purple through to yellow, with the yellows appearing sharper and more regular in form, suggesting either extensive piece repair or wholesale 19th century rebuilding mixing old and new brick. The mortar is generally very consistent, buff/grey with coarse aggregate. Despite the bond pattern, the condition and regularity of the wall makes for a confusing picture in providing a reliable date, but perhaps given the status of Walpole House, it is essentially the late 17th century wall shown in Rocque's map, but maintained well, with extensive repair. It is in sound condition, requiring only ongoing preventive maintenance.

1.5.5 Eyot Green/Greenash and Mulberry Cottage

Walls bordering Greenash/Mulberry Cottage to the west were inspected from one of the Eyot Green properties. The boundary wall has a full height of 34 courses, consisting: of the earliest brickwork of first 16 courses, plus 2 projecting courses up to a clay tile coping, all in soft red bricks (with heavy dirt accretion and salt efflorescence), erratic bonding, but lowest courses more recognizably English bond with alternating stretcher and header courses. The upper section is modern construction of C20 multi-colour stock bricks with a cementitious mortar.

The position of the wall appears to tally with that shown in Roque's map, beyond the west of the Walpole Houseside boundary prior to the construction of the Tides, and the brick colour, form and composition appears earlierthan the wall on the eastern boundary of the Eyot Green development, quite possibly early 18th century or before. The oldest sections of wall are heavily shaded and appear consistently damp, with some efflorescence visible, but are well protected by the angled coping bricks above. Any cracks, open joints or fissures should be pointed up in a soft lime mortar.

1.5.6 Chiswick Lodge parking/Osiers

This section of flank wall survives to the south of the recent development on the corner of Netheravon Road. It is currently the eastern boundary wall of the garden to Osiers, and may be the N-S wall shown to the east of the block comprising Walpole House and Strawberry House in the Rocque map.

The wall displays a similar brick colour and composition to the east wall of Swan House, and may also share an early 18th century date attribution. Various areas of cement pointing are visible in the wall but do not appear to be causing significant issues.

1.5.7 Netheravon Road, to east of The Orchard House

The brick form and colour in the central section of this wall is very similar to that in front of The Hollies, below (though not having acquired the dark purple of that wall, possibly being drier, or less subject to the capillary movement of soot from the blackened mortar). It therefore seems likely that this too is a section of the boundary of the Prebendal Manor. It does not presently appear to be listed.

As with its near neighbour, the lower portion of facings have been replaced due to losses from salt-accelerated decay, and the upper third up to coping, with battered section and buttress piers may be a later extension.

The wall is generally in better condition that its neighbour, but invasive flora should be removed and any open joints pointed up to prevent further deterioration.

1.5.8 Netheravon Road South/201 and The Hollies

This section of wall, listed grade II (HE list entry number 1293992), is the remaining section of the northern boundary of the Prebendal Manor (of c.1562), later known as College House, the building having been replaced in 1710. Rocque's map suggests an enclosed building on this position by the mid-18th century, which may have incorporated this section of wall. The western end of the wall collapsed in 2018 during works to extend The Hollies. A modern brick pier and buttress laid in cement supports either end of the remaining wall.

The surviving early brickwork is formed in Flemish bond, an apparently very early use of the technique if the wall is considered to be closely contemporary with the construction of the Manor itself. The bricks are extremely dark purple/brown, almost black, but the dark colour of this section may have been exacerbated by the use of soot in the blackened mortar leaching from the faces of the brick. The facings of the lower third of the present wall height have been replaced (in a mix of yellow stocks and soft red bricks), likely due to accelerated decay caused by salt efflorescence wicked from ground moisture. The upper six courses to the brick-on-edge coping also appear to be later additions or repairs, now heavily covered in mosses and invasive flora suggesting the wall fabric is presently very damp. Any growth on these upper sections should be carefully removed and cracks or open joints pointed up in fresh lime mortar.

1.6 CENTRAL SECTION – between Chiswick Lane South and Church Street

1.6.1 Mawson Lane/Griffin Brewery

This very long north boundary wall facing the A4 Great West Road runs from the early 20th century doorway, west to the junctionwith wall rebuilt in the 1930s following demolition of the western end of the site for road widening. This section of wall is listed grade II (HE list entry number 1294370). The full original length of the wall is clearly shown in Rocque's map (top right).

The wall generally consists of 28 to 30 courses up to the coping tiles, with the bottom 5-6 courses covered by a cement rendered plinth. The bonding and materials change going up the wall indicating a sequence of phases of construction and repair. Typically the lowest 15-18 courses are laid in English bond, with some mixing between header and stretch courses, either from repair or expediency during construction. The upper six courses are laid with a batter back in a gentle curve to the coping. Cast iron rainwater pipes have been cut into the wall and the brickwork either side reformed.

The bricks are mainly orange to dark red, with extensive pieced-in repairs in yellow stocks, some reversed stretchers or stained white from lime-bloom, though all are dirty. Sizes in the earlier phase vary from length 225-255mm, width 100-112mm and height 55-68mm. There is also a wide range of mortars, from soot-darkened lime to hard grey cement.

The south side of this wall is now mostly enclosed, but the exposed brickwork is visible from within the brewery canteen (image below), and comprises of a series of blind arches (the infill panels now lined with tiles) formed ofthree layers of headers, supporting a wall laid in English bond. This area is understood to have provided the extensive stabling required for drayhorses in the late 18th and 19th centuries.

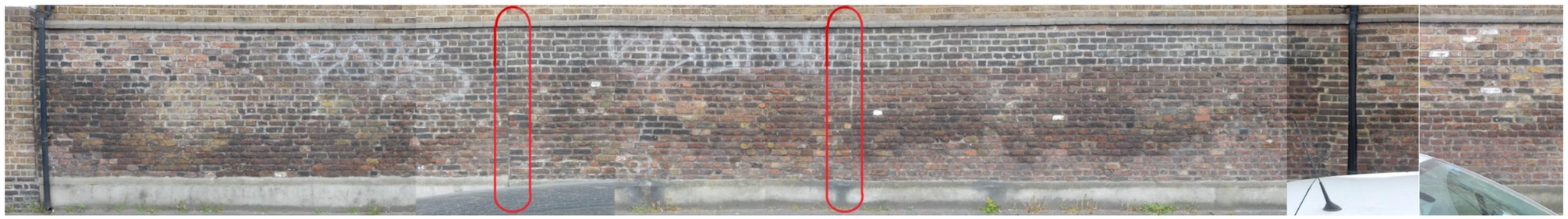
Externally, a clear pattern of water saturation and damp is visible, with subsequent salt efflorescences at the evaporation limit, and mosses on the wettest sections where failed joints in the gutters above have dripped rainwater onto the wall. The gutter junctions should be repaired to prevent ongoing saturation and deteriorationof the wall below.

The west central section is the most interesting: in the photo survey the areas circled in red are straight vertical joints, made up to existing corners, and properly constructed with closers, thus indicating an earlier building upto which the walls were constructed. Although this is not shown in the Rocque map, this would suggest this section of wall was constructed pre-1746, and very possibly late 17th century.

East section

East-central section

West central section



West section

1.6.2 Griffin Brewery South boundary wall

A short, approximately five metre section of wall to the west of the stables offices is all that seems to remain of the boundary wall shown in Roque's map to the south of the road dividing the north and south brewery sites. Piers contiguous with this earliest section of wall form a doorway to what is now the cycle store. A substantial opening to the east of this has been infilled in late C20 brickwork with a cement mortar. Within the cycle store, the southernmost section of the east flank wall, though now painted, is of identical bond and construction, suggesting a pre-1700 date and matching the position of the N-S wall shown in Rocque's map (circled in map excerpt top right.

1.6.3 Wall East of Thames View House/Griffin Brewery

Only very short sections of this wall east of Thames View were accessible from the rear of the Griffin brewery Hock Cellars. The fairly random and mixed coursing and the composition of the bricks appears early, and the alignment would suggest that it is the southern end of the wall identified in the side of the Griffin brewery cycle store in 1.6.2 above.

Note the right side of the second image shows the jamb of a doorway. The inaccessible section is in poor condition and would benefit from consolidation with repointing in a soft lime mortar.

1.6.4 Said House/Eynham House

The southernmost portion of this wall is visible from Chiswick Mall. Here it can be seen that despite various phases of crude repointing with over-filled joints on both sides of this wall, and rebuilding of theupper sections, the soft red bricks, and mix of header and stretcher courses evident in the lower sections of this wall suggest this may be the south end of the long N-S boundary wall depicted by Rocque (see top right)

1.6.5 Woodroffe House/The Vicarage

The lower courses of the wall to the west of Woodroffe House (the west side shown below) show characteristics (soft dark red colour, and roughly English bonding) of the early 18th century or older, and may be remnants either of a boundary wall or of the building predating both Woodroffe and Bedford Houses that is shown in Rocque's map. The wall is listed with the house (HE list entry number 1294342)

1.7 WEST SECTION – between Church Street and Corney Road

1.7.1 Chiswick Square

The wall running from the west side of Chiswick Square southwards to Boston House, consisting of soft dark red and purple bricks with 26 courses laid in English bond with a pale lime-rich mortar. The southern arch opening is a later 19th or 20th century addition. The wall certainly predates the construction of Boston house, and its material and form also suggests a date earlier than the houses to the front of Chiswick Square, constructed in the 1690s. The wall does not presently appear to be listed in its own right.

Apart from some areas of damp to the south and minor invasive flora the wall appears to be in good condition.

1.7.2 Walls incorporated into the rear of the houses of Page's Yard

The back, west-facing wall of one of the houses on Pages Yard, visible from the beer garden of the George and Devonshire, shows a clear series of header courses in soft red brick (below the dark brown of the upper walls, and above a lower section of stretcher courses of 19th or 20th century construction) suggesting that this row of cottages may have been constructed over an existing boundary wall or earlier building in the 18th century. The upper half of the corner of the building to the N (LHS of image) also appears much earlier than sur- rounding brickwork, and does not course though with it, suggesting a possible pre-1700 date for this building.

1.7.3 Latimer House

Of all the walls inspected, that to the north of the garden of Latimer House was immediately identifiable as pre-1700, with a clearly read English bond though the full length of the wall. The wall is listed (HE list entry number 10803555), but is illustrated and discussed here for reference and comparison with the other unlisted or unrecorded walls. It is worth noting that this wall is not illustrated in Rocque's map. Latimer House and Holly House were divided into separate dwellings in the early 19th century.

The walled passage from the gate onto Powell's Walk, identified in 1.7.4 below, is now part of the garden to Latimer House, providing a rear garden access since the division of the two properties, but the passage may have pre-dated this – as shown on the Rocque map, and may have originally connected to Chiswick Square or buildings on what is now Boston Gardens.

The walls facing into the passage have been extensively repaired and repointed, much using cementitious mortar, hampering dating analysis of the brick, but the elevation east into the garden of Holly House comprises soft darkened reds laid in an erratic Flemish bond, possibly of the early 18th century.

1.7.4 Powell's Walk/Holly House

Roque's map very clearly shows the parallel lines of boundaries to both sides of Powell's Walk,enclosing gardens or orchards from the west end of the churchyard out towards the road to Chiswick House. These walls have been added to the Local Listing, but inspection of both sides did not find any evidence of surviving walling that might originate from the late 17th to early 18th century period, the colours, composition and sharpness of the bricks ranging from late 18th to the late 20th century, and a plaque on the southern wall records the gift of the land thesouth by the Duke of Devonshire in the later eighteenth century for the enlargement of the cemetery. What is also delineated in the Rocque map is another passage heading north from the west corner of the churchyard (discussed above), and the north boundary of the churchyard, abutting the combined group of what is now Holly House, Latimer House and The Guardship.

From the easternmost end of Powell's Walk, eastward: A projecting low-arched doorway, early, with approximately 2½ feet of contemporary wall W of this, both 31 courses up to a brick on edge coping, with two additional courses slightly later, extended with a further four courses of modern yellow brick, all in Flemish bond, although the pattern and alignment is erratic, and the lowest 6 courses obscured by a cement-rendered plinth. The main walling brick varying in dimensions from 220-225mm length, 98-100mm width and 60-63mm height. The arch is formed of 17 headers on edge, with approximately 3" of arch camber, supported by a heavy timber lintel and stiles. Numerous repairs, brick replacement, and repointing in both cement and lime have been carried out, and the lower twelve courses of the left pier refaced in C20 yellow/orange bricks 225x65x103mm, and tile inserts over the arch. The original bricks are dark red to purple in colour, though orange where faces have spalled, and their form is heavily creased, and the material soft. The earliest mortar is sooty with a coarse aggregate. Heading eastwards,

a later doorway has been inserted, and the change in colour of this section of wall, more erratic brick bond, and a straight joint further east suggest this section may have been rebuilt ata later date, though still perhaps eighteenth century, with properly constructed corners with closers up to the straight joint. This section of wall is in poor condition, with extensive vegetative growth, smeared cement repairs over spalled faces, and a pronounced deformation.

Further east, the abutting wall does not course through, and at least in the bottom half, appears earlier, both from the softer and darker brick, and the use of English bond in the lower 12 courses. The upper section appears to have been rebuilt or extended, with 8 battered courses supporting a further 14 plumb courses to the coping. The upper sections are reinforced with a series of buttresses (the first concealed by a mature yew tree), after which less of the earlier wall appears to survive, and a more regular Flemish pattern is observed lower in the wall, extending to the full height of it towards the formation of the nineteenth century opening into the side of Holly House. Despite very crude cement repointing across the western end of this wall, the erratic coursing suggests that the inner face of the lower portions of this wall may predate the outer. The buttresses and piers further east also support the notion that this central section may have been rebuilt. Beyond this to the east the dark soft red bricks and English bonding of the lower half suggest an early of late 17th to early 18th century date having been extended. Most of the lower sections of thiswall appear very damp, the lower third white with salts.

2.0 Care of Old Walls

Preventive maintenance is the priority to prevent further deterioration of existing historic walls, especially where bricks may be degraded, pointing missing, and cracks or fissures may admit the damagingeffects of water (particularly where it may freeze) and invasive plants may become established.

For technical advice, The Society for the Protection of Ancient Buildings runs an excellent technical advice service, including a telephone advice line: https://www.spab.org.uk/advice/technical-advice-line and a series of technical notes.
Historic England have also published an excellent series of books on practical conservation advice for historic buildings, the relevant volume for repair and conservation of brick walls here:
https://historicengland.org.uk/images-books/publications/earth-brick-terracotta-conservation/

2.1 COMMON ISSUES

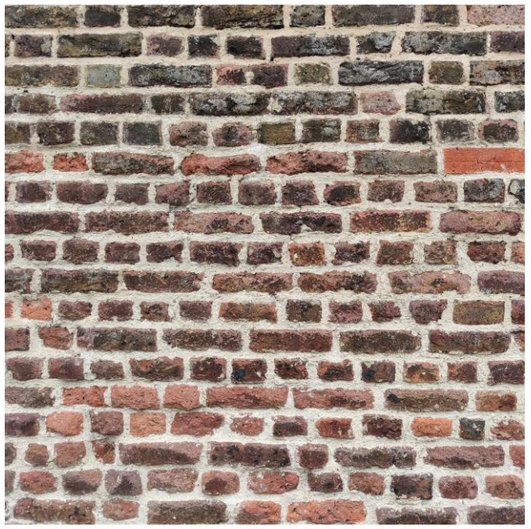
Considerable damage can be caused to the soft bricks of older walls by the use of inappropriate materials. Many already demonstrate evidence of damage caused by the use of cement mortars for repointing. Cement is impervious to the transmission of water vapour, and consequently any moisture within the wall can only migrate through cracks or the bricks themselves. This will lead to deterioration of the edges of the brick and spalling of faces. wicking effect also draws moisture and dissolved salts up and through the wall, leading to white discoloration of the lower courses due to salt efflorescence as these salts are deposited in the upper surface of the brick by evaporating moisture. Such capillary action may be seen several feet above ground level, and where this process has occurred in the past or over long periods of time, the facings of lower sections of old walls may previously have had to be replaced.

Attempting to remove well-adhered cement pointing can cause considerable damage to the bricks so is best left in place unless and until it is causing damage. In permanently damp walls the parts of the brick directly contacting the cement may start to disintegrate, and with time this can cause the cement pointing to drop out of the wall unaided. Bricks thus affected will have lots the sharpness of their edges and corners, and repointing needs to be recessed sufficiently not to extend beyond the brick face (see image right).

Where bricks have lost the face material, a harder exterior known as the ‘fire skin’, exposing the softer materialinside, deterioration is accelerated, and once the effects of the frost/thaw cycle and salt efflorescence have caused the brick to crumble or crack, brick replacement may be required.

2.2 WORKMANSHIP

Selecting a builder with experience in dealing with the soft bricks and crumbling mortar of historic old walls is essential – the contractor should have experience of working with lime mortars and know how to adapt these to suit the condition of the bricks – see notes below on specification. The use of lime mortars is becoming more widespread, though the use of hot lime mixes remains a specialist field, in part owing to the safety and handling requirements for the use of quicklime, although the raw materials are inexpensive and readily available.



An example at the boundary walls of Ham House of correctly flushed back lime pointing, avoiding overfilling to the spalled faces of old bricks

2.3 SOURCING REPLACEMENT BRICKS AND OTHER MATERIALS

The patterns of wear and the acquired patina of dirt, salts and microflora on walls 250 years older or more make obtaining a visual match exceedingly difficult. For good reason, very few walls of this age should ever be demolished, and it is therefore extremely unlikely that a brick match may be obtained from brick reclamation businesses. Such trade should be discouraged, and one approach to conservation philosophy prefers that repairs be recognizable for what they are. It is therefore usually most appropriate to use new bricks whose material composition and method of fabrication are as close to the existing bricks as may reasonably be obtained. Once in the wall the new bricks may be very noticeable, bright new red against the aged purples and browns of the existing work, but may then be toned back with the use of a soot wash or other earth pigments if required.

There are a number of UK manufacturers producing the appropriate handmade bricks:

The Bulmer Brick & Tile Company
The Brickfields
Bulmer
Sudbury,
Suffolk
CO10 7EF
http://bulmerbrickandtile.co.uk/

Lambs Bricks & Stone
WT Lamb & Sons Ltd
Nyewood Court
Brookers Road
Billingshurst
West Sussex
RH14 9RZ
Tel: 01403 785141
Fax: 01403 784663
Email: sales@lambsbricks.com

H G Matthews
The Brickworks
Bellingdon
Chesham
Buckinghamshire
HP5 2UR
Tel: 01494 758212
Email: info@hgmatthews.com

Imperial Bricks Ltd
Crowgreaves Farm
Stableford
Bridgnorth
Shropshire
WV15 5LT
Telephone: 01746 330994Email: sales@imperialbricks.co.uk

Building sands for mortar can be obtained from general builders' merchants, normally regular sharp sand, though additional fine screened aggregates or pulverized stone/brick powders may need to be added to obtain aperfect match, e.g. From Rose of Jericho: https://roseofjericho.co.uk/products/sand-aggregates/

2.4 MORTAR SPECIFICATION

Repair mortars should aim to replicate the existing lime pointing or original construction mortar. Mortars should be sufficiently soft, and have an open pore structure, to transfer moisture out of the bricks and to provide a (gradually) sacrificial evaporating layer. Recent research by Historic England has shown that many of the naturally hydraulic lime mortars sold as bagged dry powder conservation mortars (NHL, graded 2, 3.5 and 5 in ascending levels of ultimate hardness) are excessively hard, and preference should be for the use of more forgiving hot-lime mixes using granulated quicklime or putty mortars (air-limes) for repointing of soft and already damaged brickwork.

Key to the mortar's colour and appearance is correct specification of the sand/aggregate – as well as visual inspection, solid mortar pieces extracted from a wall may be sent for disaggregation analysis to the following organisations, which can identify best matches among available modern sands to provide the right mix of grain sizes and sharpness:

Sandberg LLP
Head Office and Central Laboratories
5 Carpenters Place
Clapham High Street
London SW4 7TD
Telephone: 44 (0) 20 7565 7000
Fax: 44 (0) 20 7565 7101
mail@sandberg.co.uk

The Lime Centre

Hazeley Road,
Morestead,
Winchester,
Hampshire,
SO21 1LZ
Tel. 01962 713636
Tel. 01962 713636
info@thelimecentre.co.uk