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Prehistoric ploughing and post-medieval occupation at 7–9 Holland Street, Bankside, Southwark

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with contributions by
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In the Late Neolithic and Bronze Age the Holland Street site occupied a Thames flood plain eyot surrounded by tidal channels. It was fertile, well-drained, farmed land and fieldwork recovered ard marks, cut features, pottery and evidence of on-site flint working. In the later prehistoric period, the eyot became inundated owing to rising river levels and was gradually buried beneath alluvial clay. Medieval ditches indicate repeated efforts to drain and stabilise land that was at least periodically flooded. These ditches provide botanical and invertebrate indicators of local environmental history and development. As occupation spread southwards from Bankside, the site was fully reclaimed and buildings were constructed in the late 17th century. A boundary ditch or sewer, eventually lined with reused boat timbers, was backfilled around the turn of the 17th/18th century and produced a rich assemblage of household artefacts. Later periods were represented by a series of wells and cesspits that provide a wealth of information on domestic occupation, the local tavern trade and industrial processes carried out in the area in the 18th and 19th centuries, including pottery manufacture and glass working.

Introduction

The site, 7–9 Holland Street and 118–122 Southwark Street, London SE1, lies on the west side of Holland Street (formerly Gravel Lane), in the London Borough of Southwark, some 130m south of the present Thames riverfront. It is bounded on the north-east by Castle Yard, to the north-west by Holland Street, to the south-east by Sumner Street, to the south-west by Southwark Street, and to the west by buildings including the Hopton Garden Almshouses. The centre of the site lies at OS grid reference TQ 31877 80360 (fig 1). Modern ground level in the vicinity of the site ranges from *c* 3.30m in the south to *c* 3.80m OD in the north.

A planning application was approved in June 2007 for the demolition of existing industrial estate buildings and the redevelopment of the site for mixed commercial and residential use. Archaeological investigations were required as a condition of planning consent as Holland Street lies in an Archaeological Priority Zone (the Borough/Bermondsey/Riverside Zone) as defined by the borough and had the potential to contain significant remains, particularly relating to the prehistoric and post-medieval periods (Miles 2004; Miles & Clark 2006). All archaeological work was carried out by MOLA (Museum of London Archaeology) or its predecessors on behalf of the developer, GC Bankside LLP. An archaeological evaluation took place in January–February 2008 and comprised seven trenches (trenches 1–4, 6–7 and 9; trenches 5 and 8 were not excavated). The evaluation identified that the north-western part of the site had the greatest archaeological potential (Saxby 2008); this area was excavated in April–May 2008, following the demolition of the standing buildings (Francis & Saxby 2008). All the results discussed in this article relate to the main excavation trench or to evaluation trenches 1 and 3 only (fig 2). Geoarchaeological investigations (consisting of the recording of 'geo-sections' and sampling) took place in tandem with the archaeological excavation and work on these sequences provides the environmental background to set the archaeology in context.

This article presents the results of the investigations as a chronological narrative, supplemented by a discussion of the more significant aspects, particularly those related to local trade and industry as revealed by the large assemblage of post-medieval finds. Key

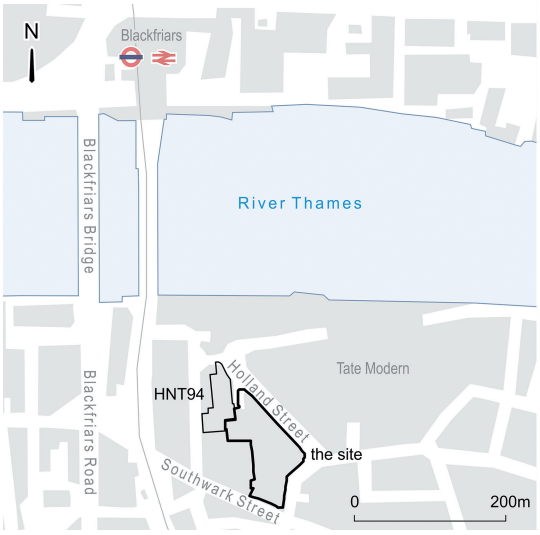

Fig 1 7–9 Holland Street. Site location, also showing the adjacent Hopton Street site (HNT94; Ridgeway 1999) (scale 1:10,000).

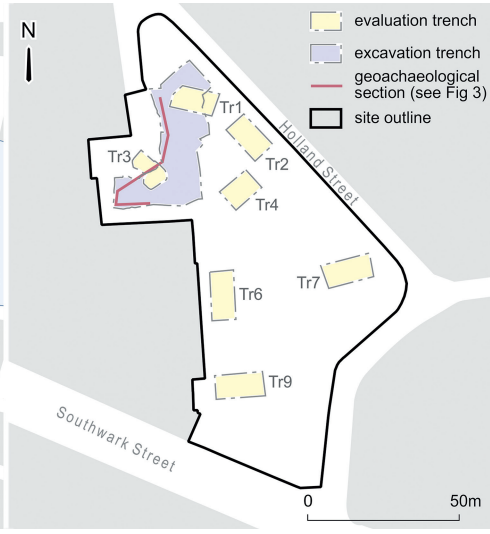

Fig 2 7–9 Holland Street. Trench location, also showing the location of the transect of geoarchaeological observations illustrated in figure 3 (scale 1:2500).

findings of specialist analyses have been integrated into the text, with detailed discussion and catalogues of the illustrated material available as a digital supplement (see *Endnote*). The full analytical reports are available in the project archive (Betts 2010; Blackmore 2011; 2014; Bowsher 2013; Cotton 2014; Goodburn 2009a; Grey 2009a; 2009b; Jeffries 2010; Nicholls 2013; Pipe 2010a; 2010b; Scaife 2009; Stewart 2014). The site records, finds and other details relating to the excavation and analysis have been archived by the Museum of London (MOL) under the site code HLS08. The archive may be consulted by prior arrangement at the Museum of London Archaeological Archive, 46 Eagle Wharf Road, London N1 7ED.

Context numbers were assigned to each archaeological feature or deposit and are shown within square brackets, eg [123]. Accession numbers are given in angled brackets, eg <12> and sample numbers appear in curly brackets eg {23}. The archaeological sequence is expressed in terms of land-use entities, described as Buildings (B), Open Areas (OA), Roads (R) and Structures (S), and based on stratigraphic relationships combined with artefactual dating. Several categories of artefact have been numbered for illustration and/or cataloguing in this report. These are referenced as a catalogue number with a letter prefix denoting the category within angled brackets: <T1>–<T10> for ceramic building material (tile etc); <CP1>–<CP4> for clay tobacco pipe; <P1>–<P35> for pottery; <G1>–<G28> for glass; <S1>–<S27> for accessioned (small) finds. This article employs standard codes for ceramics; these codes were originally developed by MOL for recording purposes. Expansions of the fabric codes are given at the first mention in a text section. Detailed descriptions of the building material fabrics and complete lists of the pottery codes, their expansions and date ranges are available online at http://www.mola.org.uk/resource-library (accessed 20 April 2016). Radiocarbon dates given in the text derive from accelerator mass spectrometry (AMS) and are calibrated using OxCal 4.2 (Bronk Ramsey 1995; 2009) and the IntCal13 calibration curve (Reimer *et al* 2013), with the endpoints of calibrated date ranges rounded outwards, following accepted conventions (Mook 1986).

The archaeological sequence

THE PREHISTORIC LANDSCAPE (PERIOD 1)

Geoarchaeological background

Beneath Southwark's urban sprawl lies a network of channels and islands that have been known and mapped since the 1950s (Sidell *et al* 2002; Cowan *et al* 2009). Initially investigations concentrated on the islands associated with Roman settlement (Sheldon 1978) but an interest in the topography and prehistoric finds soon grew (Graham 1978; Nunn 1983; Tyers 1988; Yule 1988), and with the introduction of developer funding in the 1990s, the area of archaeological potential widened across the borough (Heard *et al* 1990; Rogers 1990; Thomas & Rackham 1996; Ridgeway 1999; Ridgeway & Meddens 2001).

Geoarchaeological work at Holland Street used sediment descriptions and sub-fossil analyses to throw light on the environmental conditions from the prehistoric to the medieval period. By combining the findings with surrounding excavation and borehole information it has been possible to reconstruct the depositional history of the site, palaeoenvironment and landscape. Holland Street lies on a raised gravel island (eyot) within the flood plain surrounded by deep channels. Southwark's eyots, particularly the eyot at Holland Street and the Horselydown eyot, were cleared of woodland and farmed in prehistory but as river levels rose the islands gradually became inundated. The prehistoric soils and archaeology were buried beneath alluvium and activity shifted to the higher and drier ground. The Holland street stratigraphy, illustrated by a schematic cross-section through the main deposits seen across the excavation area, reflects this story (figs 2 and 3).

The formation of the Bankside eyot

The Holland Street site lies on a flood plain island referred to as the Hopton Street or Bankside eyot. The eyot formed at the end of the last glaciation *c* 15,000–10,000 years ago, when the Thames was a high-energy gravel-bed river. The flood plain accommodated a network of waterways with gravel and sand bars upstanding as islands surrounded by deeper channels: the Thames to the north and the 'Bankside channel' to the south.

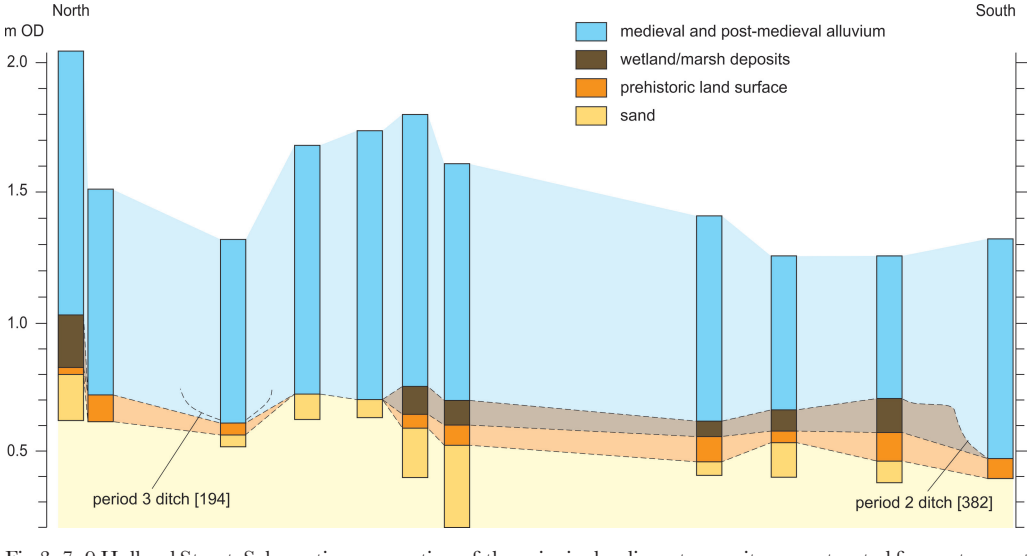

Fig 3 7–9 Holland Street. Schematic cross-section of the principal sedimentary units reconstructed from a transect of observations across the main excavation area.

As the climate warmed the environment changed, but the gravel topography remained the template for later sedimentation and human activity. On site, the eyot descends southwards from its crest at 0.80m OD, and as mean sea level in the inner Thames estuary (*c* 15km east of the site) is currently estimated to have been around -15m OD in the Mesolithic and below -3.0m OD in the Iron Age (Devoy 1979; Long & Tooley 1995; Long *et al* 2000; Wilkinson *et al* 2000), from the Mesolithic to Bronze Age the Bankside eyot would have persisted as a comparatively dry island in the flood plain. Streams, marsh and peat bog would typically have bordered the islands during prehistory, with perhaps navigable tidal waterways providing routes through the wetlands.

The local Mesolithic topography is recreated here using archaeological and geotechnical records, and is illustrated by a contoured plan and the observations from the site are placed within this deposit model to replicate the local terrain (fig 4).[1] Mapping shows a plateau at the crest of the eyot, and describes a range of lows and highs in the surroundings. However, caveats with this type of modelling are well known and include the variable quality of sediment descriptions and uneven spatial distribution of the dataset (as demonstrated along the route of the Thames where, owing to the limited number of boreholes, the bathymetry of the channel is not captured).

Evidence for Late Neolithic–Bronze Age agriculture (OA1)

The prehistoric potential of the Bankside eyot was demonstrated in the 1990s following excavations at the immediately adjacent site at Hopton Street where ard marks were found cutting into the sand (fig 1, HNT94; Ridgeway 1999). Worked lithics and pottery suggested a predominantly Late Neolithic to Early Bronze Age assemblage, with a small Mesolithic to Early Neolithic component (Ridgeway 1999, 72). At Holland Street, sands at the base of the archaeological profile generally lay between 0.5 and 0.7m OD (fig 3) and were probably deposited from the Mesolithic to the Neolithic, banking up against the gravels. A small quantity of Mesolithic worked flint indicates some level of human activity in the vicinity, but all was found redeposited in later contexts (Grey 2009b).

There is a strong indication from several lines of evidence that a land surface formed within the top of the sands, between *c* 0.5 and 0.8m OD (fig 3). This clayey sandy alluvial soil, *c* 100mm thick, probably formed between flood episodes from the Neolithic to the Bronze Age. These stable periods allowed soil formation, on which grasses (Poaceae) grew, along with dandelion types (Lactucoideae), ribwort plantain (*Plantago lanceolata*) and bracken (*Pteridium aquilinum*) (local pollen assemblage zone 1; Scaife 2009). It is likely that beech trees (*Fagus*

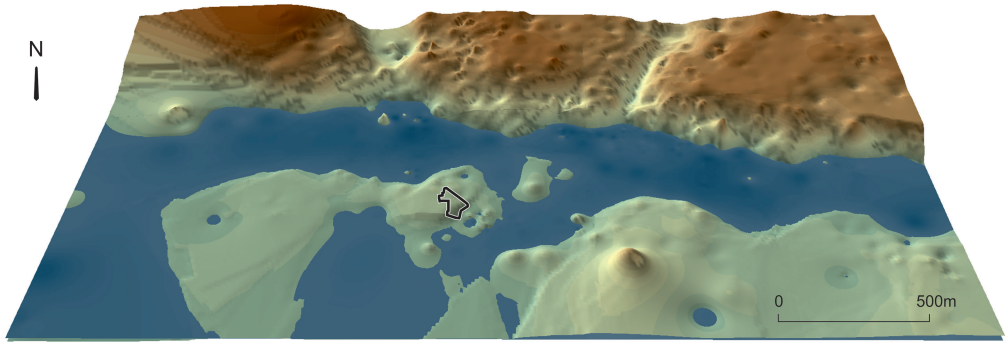

Fig 4 7–9 Holland Street. Plot of Early Holocene surface topography, showing the site in relation to the Bankside or Hopton eyot and other areas of high ground, looking north. Water level is placed at the Neolithic level of –2.0m OD for illustration (scale *c* 1:25,000).

sylvatica) grew among the grassland on the well-drained, sandy soils, and human activity is suggested by the presence of cultivated and disturbed ground species.

A series of ard marks cutting into the clayey sand give clear evidence for cultivation on the eyot in the southern part of the excavated area (figs 5 and 6). These ran predominantly north-east to south-west and were up to 3m long x 40mm wide and between 10 and 70mm deep. The marks were infilled with charcoal-flecked grey silty clayey sand, and one produced eleven pieces of burnt flint (59g). The ard marks were sealed by thin layers of clayey sand that contained most of the flint recovered from the site. The clayey sand produced 22 flakes, ten blades/bladelets (including a residual, diagnostically Mesolithic, small square blade

Fig 5 7–9 Holland Street. Plan of the prehistoric features (period 1) (scale 1:300).

Fig 6 7–9 Holland Street. View of the prehistoric ard marks (period 1) and medieval ditches (period 2) under excavation, looking south-east.

segment), two worked-out flake cores, a burnt bladelet core (again residual Mesolithic) and 149 pieces of burnt flint (1327g) (Grey 2009b). A tree-throw hollow contained two pieces of burnt flint (17g) and the fill of a shallow pit yielded a fragment of a worked-out flake core. Another tree-throw hollow contained nine pieces of burnt flint (36g) and a sherd of prehistoric pottery, which was undiagnostic and difficult to date with confidence (Cotton 2014). Additionally, a flake and a blade were recovered from an alluvial sand deposit.

To the north, part of a curved gully survived [412] (0.30m wide x 0.15m deep) forming an arc of *c* 1m radius, with a posthole on the inside edge (fig 5). There were no other traces of the gully along the line of this projected circle, suggesting either that it never formed part of a larger feature or that it has since been truncated or eroded away. The fill yielded possible Neolithic pottery in a dense laminated soapy fabric (FLIN1), with sparse and poorly sorted flint tempering fabric, an abraded flint flake and burnt flint. The feature is tentatively interpreted as an animal pen. Just outside the projected line of the gully, pit [461] (fig 5) also produced an assemblage of burnt flint, a worked-out flake/blade core and the largest group of possible Neolithic pottery from the site (FLIN1, nine sherds), and was probably associated with the gully. Four thin and decayed stakes ran along the east edge of one of the fills, and an associated layer also produced a sherd of pottery in the same fabric as that from the pit and gully. These associated features were sealed by a possible soil horizon [384] that produced a single body sherd probably belonging to a fingernail-impressed Early Bronze Age beaker in a quartz/sparsely flint-tempered fabric (QUFL1) with oxidised exterior.

All other stratigraphically contemporary features were shallow and probably of natural origin. Their fills produced small quantities of undiagnostic burnt and worked flint and prehistoric pottery.

The location and orientation of the ard marks in the south-west of the site strongly suggest that both these marks, and those recorded in the south-east corner of the adjacent Hopton

Street site (Ridgeway 1999, 74–6, fig 3), relate to the same period of Late Neolithic to Early Bronze Age farming. Evidence for cross-ploughing (ploughing at right-angles to the original direction, in order to help break up the soil) has also been noted at other sites in Southwark, including Phoenix Wharf, Lafone Street and Wolseley Street to the east of Tower Bridge (Sidell *et al* 2002, 35–7). The ard marks at the Hopton Street site were predominantly oriented roughly north–south and east–west, but some marks lay on a comparable orientation to those found at Holland Street, suggesting that all these marks were the result of same phase of ploughing. Hopton Street also produced possible traces of contemporary occupation, which may have been periodic or seasonal (Ridgeway 1999, 76). At Hopton Street, ploughing was preceded by the deposition in a pit of an unusually complete beaker bowl of Late Neolithic date, together with a flint core and blade, possibly a ritual deposition associated with the ploughing (*ibid*, 73–4, fig 2). The curvilinear gully [412] and pit [461] at Holland Street are associated with the laminar flint-tempered fabric (FLIN1) that is suggestive of a broadly Neolithic date. This relates to certain elements of the small lithic assemblage, which includes a worked-out flake/blade core of dark flint from pit [461] and the only retouched flint implement recovered from the site – a side-/end-scraper on a primary flake of probable Late Neolithic/Early Bronze Age date, found in an alluvial deposit (Grey 2009b). Some of the flintwork is likely to date to the Bronze Age and may be characterised as produced in an *ad hoc* fashion in poor-quality material from pebbles and nodules.

These results add to a growing body of evidence for Mesolithic activity and Neolithic–Bronze Age settlement and agriculture on the Bankside eyot (Ridgeway 1999), the surrounding islands (eg Bowsher 1991; Ridgeway & Meddens 2001) and similar locations further to the west (Powell & Leivers 2012; Sidell *et al* 2000).

Changing conditions in the Late Bronze Age and subsequent inundation

The onset of wetter conditions is marked by a firm mid-brownish green humic silty clay soil between 0.6 and 1.0m OD and up to 200mm thick (fig 3) directly over the sand across most of the trench. The sediment type and frequency-dependent magnetic susceptibility (χfd) indicate that the eyot surface would have been a sometimes marshy vegetated soil. Wetland species such as sedge (Cyperaceae), rushes (*Juncus* sp.), water-plantain (*Alisma* sp.) and willow (*Salix* sp.) in plant macrofossil and pollen samples also reflect wetter ground. A Late Bronze Age/Early Iron Age date for this soil is suggested by both the pollen data (local pollen assemblage zone 2; Scaife 2009) and a radiocarbon date of 830–760 cal BC (Beta-261190, 2600±40 BP).[2] The eyot surface flooded more frequently as river levels rose, but it is probable that inundation remained sporadic and river levels mainly remained below the eyot surface.

In general the increasingly wet conditions would have significantly affected the Southwark eyots in the late prehistoric and early historic periods, eventually leading to the abandonment of previously cultivated areas (Sidell *et al* 2002) such as in Bermondsey where timber structures at Bramcote Green (Thomas & Rackham 1996) and the Bricklayers Arms (Jones 1988), demonstrate Bronze Age attempts to stabilise wet ground. The river level rise is characterised by the deposition of gleyed alluvial clays initially seasonally and later, probably by the Iron Age, daily as tidal influences produced extensive areas of wetland (Rackham 1994). Increased flooding took place from the Iron Age onwards, but the effect was attenuated by land management. Drainage ditches allowed the land to remain in use and it must have seen substantial dry periods. However, due to recutting and sediment reworking, it is difficult to assign accurate dates to such features. A small, possibly Iron Age, sherd in a dense sandy fabric with quartz inclusions (QU2) was found in a layer of alluvium assigned to OA2 (in period 2, below), but this may be residual.

The Bankside eyot is thought to have been subject to erosion during the Iron Age and at Holland Street there seems to be a depositional hiatus represented by the change from the humic clay (fig 3, wetland/marsh deposits) to the gleyed silt clay (fig 3, alluvium). Sidell

et al (2000) make a similar suggestion of a temporal gap at Westminster sites at the end of the Bronze Age (around 650 cal BC) owing to a reduced channel energy regime with tidal incursion. Alternatively, evidence of the Iron Age may have been obliterated by subsequent erosion and/or medieval land management as elsewhere, for example on the Bermondsey eyot, the Roman Southwark islands and Thorney Island, evidence for Iron Age activity does survive on the higher ground.

THE MEDIEVAL LANDSCAPE TO *c* 1400 (PERIOD 2)

Historical background

The inundation of the Southwark islands may have started in the Iron Age, although that is far from clear (above). Throughout the medieval period, despite riverfront embankment along Upper Ground and Bankside, and the reclamation of marshland to the south for agriculture (cf Bowsher & Miller 2009, 12–14), the area remained prone to flooding. The site lay at the eastern edge of the manor of Wideflete, which took its name from a creek, ditch or channel that drained the marsh and partially enclosed the manor. From the early 12th century Wideflete manor was held by the Knights Templar and in 1308 was said to consist mostly of meadow with a few acres of arable land, ditched and walled, together with a dilapidated house, three cottages and a number of watermills. One of these mills (later known as Pudding Mill) stood near the river bank to the north-west of the site. The manor passed to the Knights Hospitaller in 1324 (Survey of London 1950, 94–5).

Archaeological evidence

At Holland Street the full sequence of later prehistoric to medieval overbank deposition is characterised by gleyed alluvial clays occurring from 0.60m OD to a maximum recorded height of *c* 2.0m OD (OA2; fig 3). The eyot experienced more frequent inundation as river levels continued to rise in the medieval period.[3] The fine silts and clays on the site are characteristic of flood-lain sediment, soil formation occurring during periods of stabilisation, a process that would have been hastened as the land was artificially drained and river embankments created. A few fragments of medieval peg roofing tile (fabric 2586, post-dating *c* 1180) were found towards the top of these deposits.

Three parallel shallow ditches, aligned north–south, represent evidence for early medieval land drainage (OA2, fig 6, fig 7a). Along the east side of one ditch was a selection of small roundwood stake tips (10–35mm in diameter and <300mm long; not illustrated), which probably represent the remains of a light fence of wattle hurdles (sails) supported by slightly larger roundwood stakes.

The botanical remains from a sample from ditch [382] were predominantly waterlogged seeds of wild species (Stewart 2014; {17}). The remains of cultivated plants were rare. There were very high concentrations of a number of species, including wild cabbage/mustard types (*Brassica/Sinapis* sp.), pale persicaria (*Persicaria lapathifolia*) and stinging nettle (*Urtica dioica*). Given that the sample is dominated by wild taxa, it is likely that the cabbage/mustard-type seeds represent wild, rather than cultivated forms of mustard or the brassica vegetables. Also noted in high concentrations were buttercups, red/glaucous goosefoot (*Chenopodium rubrum/glaucum*), fine-leaved waterdropwort (*Oenanthe aquatica*), dock (*Rumex* sp.), thistles (*Carduus/Cirsium*) and bristly ox-tongue (*Picris echioides*). Noted in lower concentrations were campion/catchfly (*Silene* sp.), fat hen (*Chenopodium album*), blackberry/raspberry (*Rubus fruticosis/idaeus*), walnut shell (*Juglans regia*), burdock (*Arctium* sp.), nipplewort (*Lapsana communis*), ox-tongue (*Picris* sp.), water-plantain (*Alisma* sp.) and sedge (*Carex* sp.). Rare occurrences included elder (*Sambucus nigra*) and sloe/blackthorn (*Prunus spinosa*). The assemblage is a combination of waterside and waste/urban plant types, supporting the interpretation of the feature as a drainage ditch in low-lying pasture, perhaps not far from a built-up area.

Fig 7 7–9 Holland Street. Plan of land drainage and reclamation in: a) the medieval period (period 2) and b) the 15th/16th century (period 3) (scale 1:500).

Fig 8 7–9 Holland Street. Wooden ball <S24>, probably for use in skittles, found in ditch [382].

Invertebrate remains from the sampled ditch fill do not include any marine/estuarine mollusc species suggesting that these features received little post-consumption waste. The diverse freshwater and sparser terrestrial faunas respectively indicate still or slow-flowing conditions with emergent vegetation and a soft substrate with marginal vegetation, grass and ground litter. Water quality was probably good, with some degree of seasonal drying and marginal flooding (Pipe 2010a; 2010b).

The absence of building material (there are two sherds of peg tile, probably intrusive) or pottery and the near-absence of other finds provide further support for the view that there was no immediately adjacent settlement and also suggests that the land was not used for arable farming. However, the basal fill of ditch [382] produced a spherical wooden object, incised

with a crude cross, probably a ball for use in games of skittles <S24> (fig 8), that has been radiocarbon dated to cal AD 1020–1210 (Beta-248242, 920±40 BP).[4] Perhaps appropriately for such a date, this has been faceted rather than turned. Although poor preservation of the accessible surfaces makes identification difficult, the wood most closely resembles a member of the apple family (Pomoideae), which includes apple, pear, hawthorn and mountain ash.

The ditches appear to be a continuation of a long-lived feature observed during excavations at Hopton Street, immediately to the north of the site (HNT94; Ridgeway 2000, 102–4). These may have formed part of a network of streams and ditches that drained the surrounding pasture and arable land and fed what was later known as the Pudding Mill pond (Ridgeway 2000, 104), powering the mill on the bank of the Thames to the north-west (above).

15TH–16TH CENTURY WATER MANAGEMENT AND LAND DIVISION (PERIOD 3)

Historical background

The first reference to Paris (or Parish) Garden manor occurs in 1420. Aside from the manor house (situated to the north-west of the site and shown on a later map, see fig 9a), for much of the period only the Thames frontage was developed. The manor was leased out by the Hospitallers until the suppression of the priory of St John in 1536. In 1540 the manor, which had been part of the parish of St Margaret's, became part of St Saviour's parish (Survey of London 1950, 101). The lease of the manor house was acquired by William Baseley, at which point it was described as falling into ruins, with its grounds flooded. Baseley turned the building into a public gaming house, with outdoor bowling alleys. By the late 16th century the general area was known for its places of entertainment and development began to spread southwards towards the site, notably including the Swan Theatre, built some 100m to the north-west in 1595 (labelled 'olde Playe house' on fig 9a). By 1596, the site itself formed part of a triangular piece of copyhold land in the east of the manor, owned by the Austin family, which comprised a garden, an orchard and several tenements (Survey of London 1950, 95–8, 111; see fig 9a). To the north, the mill and its pond (above) remained in use.

Archaeological evidence

Activity on the site increased during this period but remained concerned mostly with water management and land drainage. The area is likely to have remained prone to flooding. The north–south medieval ditch was recut, further ditches were dug on a new alignment, and two pits were excavated (OA3, fig 7b).

The latest recuts of the north–south ditch produced fragments of 15th–16th century building material, and a very small assemblage of animal bone. Samples taken from the fills (Stewart 2014; {16}, {25}, {31}) contained large concentrations of water and disturbed ground tolerant plant species, probably from the ditch itself. Food plants noted in the assemblage include fig (*Ficus carica*) and grape (*Vitis vinifera*), both probably the remains of imported dried produce, though both plants can be grown in the British Isles. Dried imported fruits were becoming increasingly available to the middle and lower classes during this period in Britain. Thorn-apple (*Datura stramonium*) is a powerful hallucinogenic and has in the past been cultivated for medicinal purposes, being used for conditions such as asthma. Though the origins of the species are opaque, its arrival in the British Isles may be a consequence of New World contact. Culpeper, writing in the early 17th century, noted that it was a native of 'Southern America' and that 'it flourished very well in our gardens' (Culpeper 1826, 182). The invertebrate assemblage was similar to that from the period 2 ditch, indicating that the feature was still not generally used for the dumping of post-consumption waste.

In addition to the recutting of the north–south ditch, two ditches were cut on a north-east to south-west alignment, with another at right-angles to them. These ditches produced only

occasional animal bone and small assemblages of 15th–16th century pottery and building material. It is assumed that these were drainage or boundary ditches of new fields, orchards or gardens. The northernmost ditch was revetted with timber stakes on its northern side.

Two refuse pits suggest nearby occupation. To the east, pit [81] contained pottery and fragments of peg roofing tile dated to 1480–1600 and fragments of ox scapula and sheep/goat humerus, with fragments of ox-sized rib. Another pit [244] to the west contained an assemblage of finds indicating a date of 1580–1600, including pottery, a possible medieval floor tile, an iron D-shaped buckle <365>, a small simple plate lock <98> that may be from an internal doorway, an iron nail with rove plate <317> and a large group of animal bone derived mainly from cattle and sheep/goat with smaller components of adult chicken and infant and juvenile pig and occasional finds of adult rabbit. In addition, there was a worn fragment of adult bird scapula probably from a turkey. With a probable introduction to Britain of around 1530 (Lever 1977, 443), this species may have been uncommon and relatively expensive at this date.

17TH CENTURY DEVELOPMENT (PERIOD 4)

Historical background

The riverside suburb spread gradually southwards during the 17th century, although building was largely restricted to the frontages of a few lanes running back from the river. A 1627

Fig 9 7–9 Holland Street. Details from: a) the 1627 plan of Paris Garden Manor (LMA: M/92/143, from the Paris Garden Manor, Southwark Collection), and b) William Morgan's map of 1682.

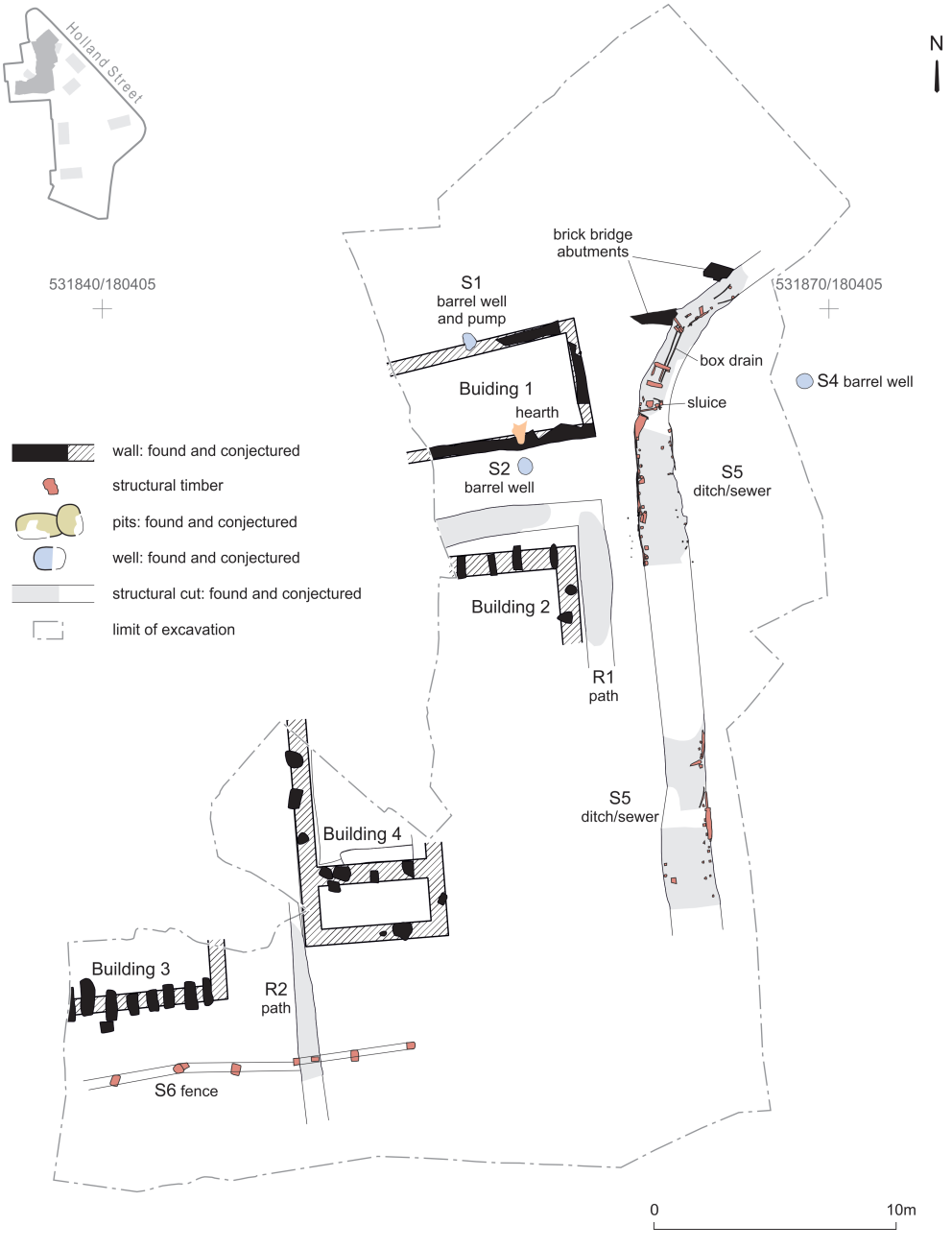

Fig 10 7–9 Holland Street. Plan of 17th century development (period 4) (scale 1:300).

plan shows most of the site as occupied by gardens and an orchard, with various groups of buildings fronting onto lanes to the east and west (later Gravel Lane and Green Walk respectively) (fig 9a). The plan also shows the north–south watercourse that fed the pond of what by then was known as Pudding Mill, and also formed the western boundary of the Austin property (above).

As a consequence of development and a growing local population, the manor of Paris Garden was made into the new parish of Christ Church. The first church, some 250m west of the site, was consecrated in 1671 (Survey of London 1950, 101). William Morgan's map of 1682 shows further development along the Gravel Lane and Green Walk frontages but only open ground behind (fig 9b). In 1699 plots on the east side of Green Walk were sold to James Price and John Morgan, who both built on the ground (Survey of London 1950, 111).

Archaeological evidence

The 17th century saw the construction of a substantial timber-lined ditch/sewer (S5) across the site. Activity intensified towards the end of the century with the construction of a number of buildings (B1–B4) (fig 10).

Ditch/sewer (S5)

One of the most prominent features on the site was a north–south aligned ditch or sewer (S5) that turned to the north-east near the northern limit of excavation (fig 10). The feature drained from the south. It lies too far east to be identified with the Pudding Mill stream itself and must represent one of many smaller channels that would have drained this marshy terrain. It may also have acted as a property boundary between plots fronting Green Walk and Gravel Lane. The disuse fills of the feature produced one of the largest finds assemblages from the site.

The earliest phase of the ditch (not illustrated) was 2m wide x 1.2m deep, with steep sides, but no trace of revetment. As it turned to the north-east, the ditch became narrower. The north-eastern stretch of the ditch was recorded for 6.3m where it was 1.2m wide and

Fig 11 7–9 Holland Street. View of timber-lined ditch/sewer (S5) under excavation, looking north towards the brick sluice [209].

only 0.5m deep. On the northern side of this stretch was a brick structure that might have been part of a bridge abutment. A small area of clay backfill was recorded at the north-west corner, behind the later timber revetment, with pottery dating to *c* 1550–1650 and a small but diverse group of marine/estuarine, terrestrial and, mainly, freshwater molluscs, together with a small group of animal and fish bone including vertebrae of herring family, cod family and plaice/flounder.

The ditch was strengthened in the second half of the 17th century with the addition of timber planking held in place by a number of vertical posts (fig 11). Silty sands behind this section of revetment contained a clay tobacco pipe dating from 1660–80, and the large joining fragments of two Frechen stoneware vessels (FREC: see Hurst *et al* 1986, 214–21): a drinking jug (Gaimster 1997, 384, no 50) and a Bartmann jug. In addition to these is the rim, neck and handle section of a starred costrel (STAR) of Mediterranean origin (Alejandra Gutiérrez, pers comm).

The raw materials for the piles or large stakes were very varied, from reused weathered oak building-type timbers to fresh offcuts of oak or softwood with occasional timbers of elm and probably pine of Scandinavian origin. A number of the piles had a mixed collection of joints such as mortices (both pegged and not), through mortices, lap dovetails and rebates. They also had a range of redundant fastening holes for large pegs or treenails and several sizes of iron nails. The quantity of joints and fastenings in some of the timbers suggest that they were used twice before ending up in the ditch. It is apparent that some timbers might derive from machinery such as mills or cranes, while other timbers seem more likely to derive from nearby domestic buildings. The sheathing planking was made up of a combination of reused sawn, oak, elm and softwood boards and cleft and hewn oak ship and boat planks.

Filling the base of this second phase and associated with the use of the feature were organic silty clays containing wood, twigs and grass as well as a large and most diverse invertebrate group. In addition to a single shell of common/flat oyster, there was a small group of terrestrial snail shells including garden (or common) snail, white-lipped snail, slippery moss snail and shiny glass snail. The much larger and more diverse freshwater group was dominated by common (or wandering) pond snail and, to a much lesser extent, common bithynia, with occasional recovery of common valve snail, twisted ram's-horn and white ram's-horn; in addition, there were one or two shells of great ram's-horn, margined ram's-horn, large amber snail, horny orb mussel and pea shell. There was also a moderate group of animal bones derived largely from sheep/goat with smaller contributions of cattle, rabbit, chicken, mallard/domestic duck, partridge and pig. Wet-sieved bulk samples produced a juvenile frog or toad vertebra and a femur with a small assemblage of migratory (eel) and marine/estuarine (cod and haddock) fish bones.

Among the remaining fills with pottery (contexts [152], [154] and [165]) assigned to this second phase of ditch filling), is a deep flanged dish in Surrey-Hampshire Border whiteware with olive glaze (BORDO; Pearce 2007), smashed among two of these deposits. It had a combed band applied to both the internal part of its lid-seated rim and the base.

Lastly, at the point where the ditch turned to the north-east, a brick sluice was inserted. A slot in the western wall may indicate the position of a small sluice gate, probably of timber, held in by stakes at the north end. The sluice was placed on a series of horizontal planks, now forming the base of the ditch, which were several sections of reused radially cleft oak clinker boat planking, regularly finished to a maximum of around 15mm (9/16in) thick and a maximum of *c* 165mm wide. The small iron rove nails (ship rivets) had diamond-shaped roves and were set around 80mm apart. Often the inboard tips of the nails were not neatly riveted over but simply bent over the rove as in the Blackfriars 2 boat (Marsden 1996). The fastenings for the frames were iron nails rather than oak treenails used in larger craft. The waterproofing or luting was of fine tarred hair and traces of cream paint were also found. Importantly one of the boards was from the curved stern or bow end of a boat ('hood ends'). This thin planking clearly derives from a small boat(s) with at least one curved stern or bow, which probably means that the assemblage derives from a small fishing craft or 'peterboat'.

The other likely possibility is a wherry-type vessel, but they are clearly depicted with near-straight sloping bows and straight vertical sterns. However, peterboats had convexly rounded bows and sterns.

Just to the north, at a slightly lower level, was a short length of planked box-drain made of 20mm thick (3/4in) pit-sawn oak planks nailed together. The planks [356] and [357] were placed vertically along the ditch cut. Along the top of the planks were halving lap joints measuring 0.18m wide to take horizontal supporting timbers. One such plank [355] was found *in situ*. It measured 0.75 x 0.18 x 0.12m thick. To the south were a number of vertical posts measuring on average 120mm x 60mm x 0.50m in height. The posts formed a channel measuring 0.50m wide, although the side planking had been removed.

Along the western top edge of the ditch was a line of very decayed stake tips. This must represent the base of a wattle fence that once bordered the feature. Such fences would have helped prevent injuries to livestock or passers-by.

Buildings to the west of the ditch/sewer (B1, S1, R1, B2, B3, B4, R2)

There were four buildings just west and parallel to the ditch, separated by a pathway (R1) found to the east of Building 2. They all lay above deposits that included 15th and 16th century pottery, tile and brick, probably demolition material from earlier buildings. It is suggested therefore that the buildings were broadly contemporary with the ditch. Only the foundations survived but brick superstructures are assumed.

Two decorative curved bricks (<T9> and <T10>, fig 12), cut to shape after firing, were found within a consolidation dump associated with the construction of Building 1; these may have formed part of an ornamental chimney stack or perhaps decorative half columns in an earlier building on or near the site.

The northernmost, Building 1, was constructed on shallow foundations of broken bricks, mortar and clay, and measured at least 7m long x 5m north–south. Along the southern wall were the remains of a fireplace or hearth that contained a few fragments of pipe stem, wine bottle, case bottle and animal bone. A possible drainage gully led from the east side of the building towards the large ditch/sewer (S5), and appeared to be associated with the earlier, unlined phase of the ditch.

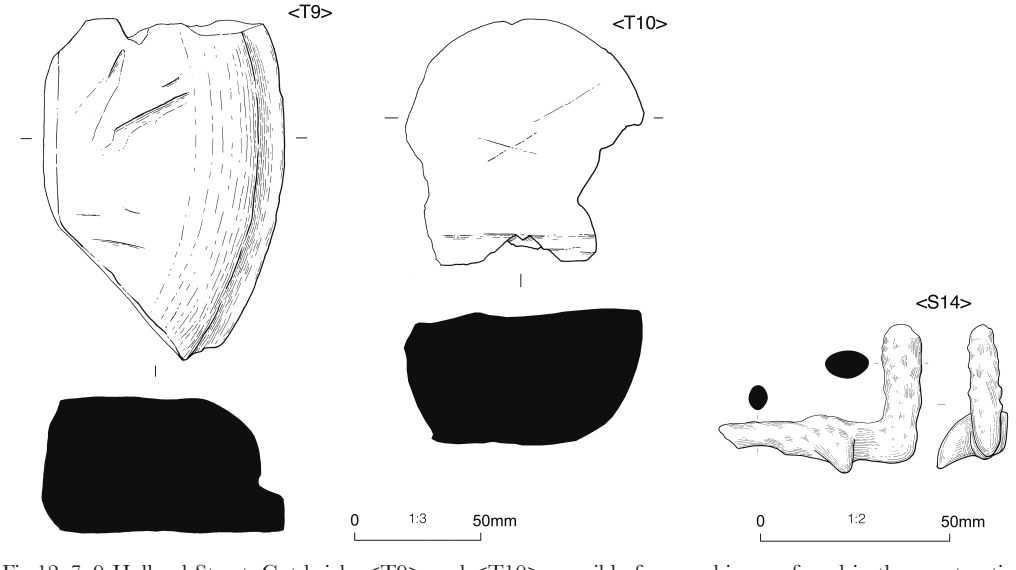

Fig 12 7–9 Holland Street. Cut bricks <T9> and <T10>, possibly from a chimney, found in the construction levels of Building 1 and iron pintle <S14> from the backfilling of barrel well (S1).

On the northern side of the building was a barrel well (S1) containing the remains of an oak cask, one of the staves of which was found to have a shield-like cooper's or merchant's mark cut with a race knife. The cask was fitted with a small elm log pump (fig 13). This had been truncated at the top but a length of 1.2m survived, with a diameter of 240mm at the base. The central bore was *c* 75mm in diameter and the base was stopped with a tapered elm bung, above which four holes had been bored to allow the well-water in. Wooden water pipes from the 17th to 18th centuries are documented from other sites in north Southwark (Goodburn 2009b, 221), and pump pipes made of elm were made until the turn of the 20th century even though they did eventually rot. This was partially because they had the advantage of resisting freezing up and being split by frost that could happen to metal pipes (Rose 1937, 77). The barrel was backfilled during the late 17th to early 18th century with material that contained pottery, brick, tile and clay tobacco pipes, as well as an iron pintle <S14> (fig 12), perhaps from a casement window from Building 1.

Building 2 lay immediately south of Building 1, separated by a path (R1) and a barrel-lined well (S2), the fill of which contained brick of 16th–17th century date. Only the north and eastern walls of Building 2 were revealed so the full size of the building can only be estimated. The north wall was founded on rectangular pads but the eastern wall was founded on piles and its extent is uncertain. One of the associated foundation pads produced pottery dated to 1675–1750.

Building 4 was just south-west of Building 2, and may be part of the same structure. Nevertheless, it appeared to be rectangular with evidence for timber pile-founded east, west and south walls. Bricks among the associated building rubble dated to the 16th century.

Building 3 was separated from Building 4 by another path (R2), which was constructed of chalk and mortar within a shallow cut. Building 3 was constructed in a similar manner to

Fig 13 7–9 Holland Street. View of barrel well and water pump (S1) under excavation, looking west.

Building 2, with the southern wall founded on a series of rectangular gravel foundation pads. These produced a small number of finds including pottery dated 1580–1700, a clay tobacco pipe stem and fragments of wine bottle, window glass and animal bone. A more unusual find was a partially complete triangular trivet – a type of kiln furniture associated with tin-glazed pottery manufacture. Similar-shaped trivets were found at the Pickleherring pothouse in Southwark (Tyler *et al* 2008, 35, fig 25, no 7). A small piece of crucible with a light blue glassy interior surface may be derived from another manufacturing process.

To the south of Buildings 3 and parallel to its southern wall was a fence line aligned east–west (S6), which continued to the south of Building 4.

Activity to the east of the ditch/sewer (S4)

A barrel well (S4) to the east of the ditch/sewer (S5) contained brick dated 1666–1900, but could not be related to any other features.

Backfilling of ditch (S5)

Although no documentary sources for a change in land use at the site have been found, archaeological evidence for the disappearance of these buildings and the infilling of the large ditch around the last decade of the 17th century is quite clear.

The ditch was systematically and comprehensively backfilled. There are many defined fill layers, mostly of clays and organic silts that must represent differing cart- or barrow-loads. Within these fills was an extensive assemblage of artefactual, as well as botanical and faunal material, most of which appears to be from a narrow date range from the late 17th to early 18th century. Further evidence that the ditch was filled rapidly after it had gone out of use is provided by the presence of sherds from the same ceramic and glass vessels within separate dumps of material. The artefacts incorporated in the backfills are generally derived from moderately prosperous domestic sources, and probably originated from dwellings in the immediate vicinity.

The large finds assemblages from the backfilling of the ditch are discussed in detail in the digital supplement (see *Endnote*). These include a broken copper-alloy gnomon (<S19>, fig 43), the shadow-casting piece from a sundial that may have graced a nearby garden or courtyard. The backfills produced other refuse, including a large and diverse assemblage of animal bone, dominated numerically by sheep/goat and sheep-sized fragments (51.5%) and to a lesser extent by cattle and cattle-sized fragments (32.5%) with a much smaller component of pig (6.3%). A juvenile goat metacarpal, the only example of this species from the assemblage, was also recovered. The small but diverse fish assemblage included migratory (smelt, eel), marine/estuarine (herring family, cod, haddock and plaice/flounder) and freshwater (common carp) species. Recovery of a common carp opercular (gill cover) from one of the ditch fills represents the only evidence for freshwater fish from the site assemblage. Game species were represented by single examples of grey partridge, teal, woodcock and rabbit. Commensal fauna included only two fragments of juvenile frog or toad, perhaps a chance casualty in a steep-sided feature acting as a 'pitfall' trap. Non-consumed domesticates were represented by a single bone of dog and six of cat. An adult sheep metatarsal had been polished and drilled through the proximal articulation, perhaps for use as an improvised tool handle.

In contrast to the earlier ditches, the samples from ditch (S5) (Pipe 2010a; 2010b; {1}, {7} and {13}) show some input of post-consumption waste, with recovery of marine/estuarine edible molluscs: common/flat oyster, common mussel, common cockle and fragments of a common lobster exoskeleton. The limited terrestrial and more diverse freshwater faunas indicate slow-flowing conditions with marginal vegetation and grass and ground litter, emergent vegetation and a soft substrate. The water quality was probably good, with some degree of seasonal drying and marginal flooding although the numerical dominance of the

very resilient common/wandering pond snail could indicate some degree of mild organic pollution.

Period 4 summary

Buildings 1–4 and the ditch (S5) all appear to have been built in the late 17th century; they do not appear on William Morgan's map of 1682 (fig 9b) and may have been built after this date. The large ditch (S5) does not appear on historical maps, but appears to continue the line of a ditch seen to the south of the site on the Morgan map. Initially dug for land drainage, the construction of the timber lining, brick sluice and short length of box-drain probably represents the reuse of the ditch as a sewer to service the buildings, the eastern boundary of which it also formed.

The buildings and the main section of the sewer appear to respect the north–south alignment of Green Walk, to the west, rather than Gravel Lane, suggesting that they were associated with a plot of land fronting the former, and may be contemporary with the establishment of this right of way in the late 17th century. If ditch (S5) did act as a property boundary to a plot of land on Green Walk, it does not agree with the alignment of the boundary shown on Morgan's 1682 map, which indicates that the eastern boundary of these plots was in alignment with the northern and southern stretches of Gravel Lane.

It is likely that the disappearance of Buildings 1–4 coincides with the backfilling of the various wells and the large ditch/sewer (S5) itself. The filling of the ditch must be seen as a single deposition – albeit of hundreds of wheel-barrow loads. The vast amount of artefactual material within the fills almost certainly represented household clearance while the numerous peg, pan and floor tiles – with a lesser quantity of brick – was probably associated with their final demolition. Although mixed with some earlier material, the backfilling operation seems to date from around 1690–1710. This is broadly contemporary with the backfilling of a 'foule Sewer or deadhead' in 1700/1 immediately to the south of the site (Survey of London 1950, 111) and it is possible that the same sewer continued to the rear of Price's houses and where it was backfilled at the same time.

18TH CENTURY OCCUPATION (PERIOD 5)

Historical background

The area of the site fell within the area owned by James Price (above). Morgan's land lay to the south, and as part of his redevelopment of the site in 1700/1 he applied to the Commissioners of Sewers for permission to cover over the 'foule Sewer or deadhead on the backside of his houses in Greenwalk' (Survey of London 1950, 111). James Price developed his plot of land fronting Green Walk (to the west of the site), building two houses on the ground immediately to the north of Morgan's. In 1713 these houses, one of which was occupied by schoolmaster Samuel Clark, who had a schoolroom behind them, and the surrounding garden were bought by the parish for the formation of Christ Church Charity School (*ibid*).

To the north of the school he built a number of houses, including five on either side of a passage running east from Green Walk. The present 61 Hopton Street to the west of the site, the oldest surviving building in the area, dates from *c* 1701–3 and is brick built, of two storeys with an attic and cellar. It is probably representative of the type of domestic buildings that were built on the site itself in the 18th century. In 1720 Edward Knight obtained the copyhold of this property and the five messuages behind it on the east–west passage that became known as Knight's Court (*ibid*, 111–12).

By the middle of the 18th century Rocque's map shows two pockets of development at the northern and southern ends of the site (fig 14a). At the northern end, within the main area of excavation, was a series of buildings with courtyards. Lady Clark's Yard was named after the

mother of William Austin who had married her second husband Sir Robert Clerke (*ibid*, 111, fn a), and Paradise Court lay on the same alignment further south. Hopton's Almshouses were built on the land immediately to the south of the area of excavation in 1746–9 and opened in 1752 (*ibid*, 112–14). Horwood's map of 1799 (fig 14b) generally shows that there was little change from the situation shown on Rocque's map, although Horwood shows the individual properties in more detail. Lady Clark's Yard and Paradise Court are collectively labelled as Castle Yard.

Archaeological evidence

Within the excavation there were no surviving traces of the 18th century buildings known to have stood on the site, though there were a number of associated waste-/cess- and rubbish pits (fig 15), some cutting into the earlier backfilled ditch (S5), which produced substantial assemblages of finds. This material dates from throughout the 18th century.

Cesspit (S7)

Truncating the backfill of the southern part of the ditch (S5) was a very large oval brick-lined cesspit (S7, figs 15 and 16). A subsequent addition to this pit was a north–south brick wall inserted at its western edge. Socket holes in this wall corresponded with others in the original eastern wall and presumably held some internal timber feature. Over the primary organic fill [110] were two further layers of backfill, [107] and [106], although there was probably some mixing of the fills. This feature produced one of the largest finds assemblages from the

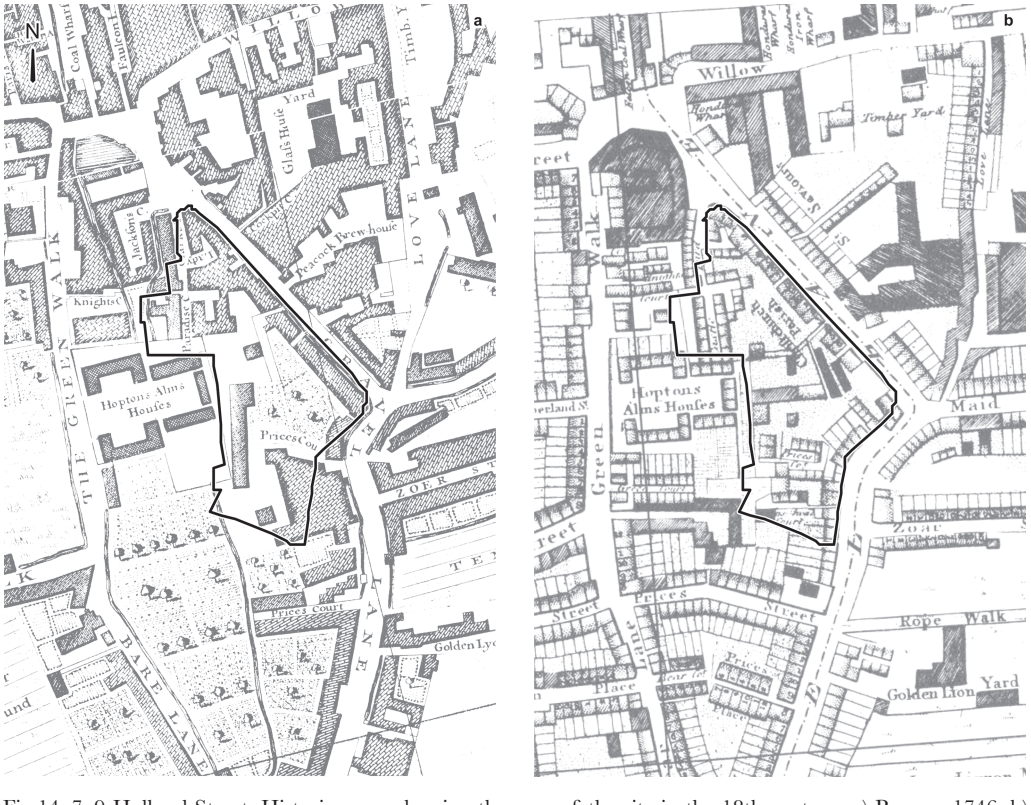

Fig 14 7–9 Holland Street. Historic maps showing the area of the site in the 18th century: a) Rocque 1746, b) Horwood 1799.

site, after ditch/sewer (S5), and the dating of this material suggests that the final backfilling took place between *c* 1780 and 1820, although there are also earlier 18th century finds. The assemblage is discussed in detail in the digital supplement (see *Endnote*). The material used to backfill the feature differs from that used to fill the earlier ditch (S5), although it is generally of a similar domestic character some finds suggest links to the local tavern trade

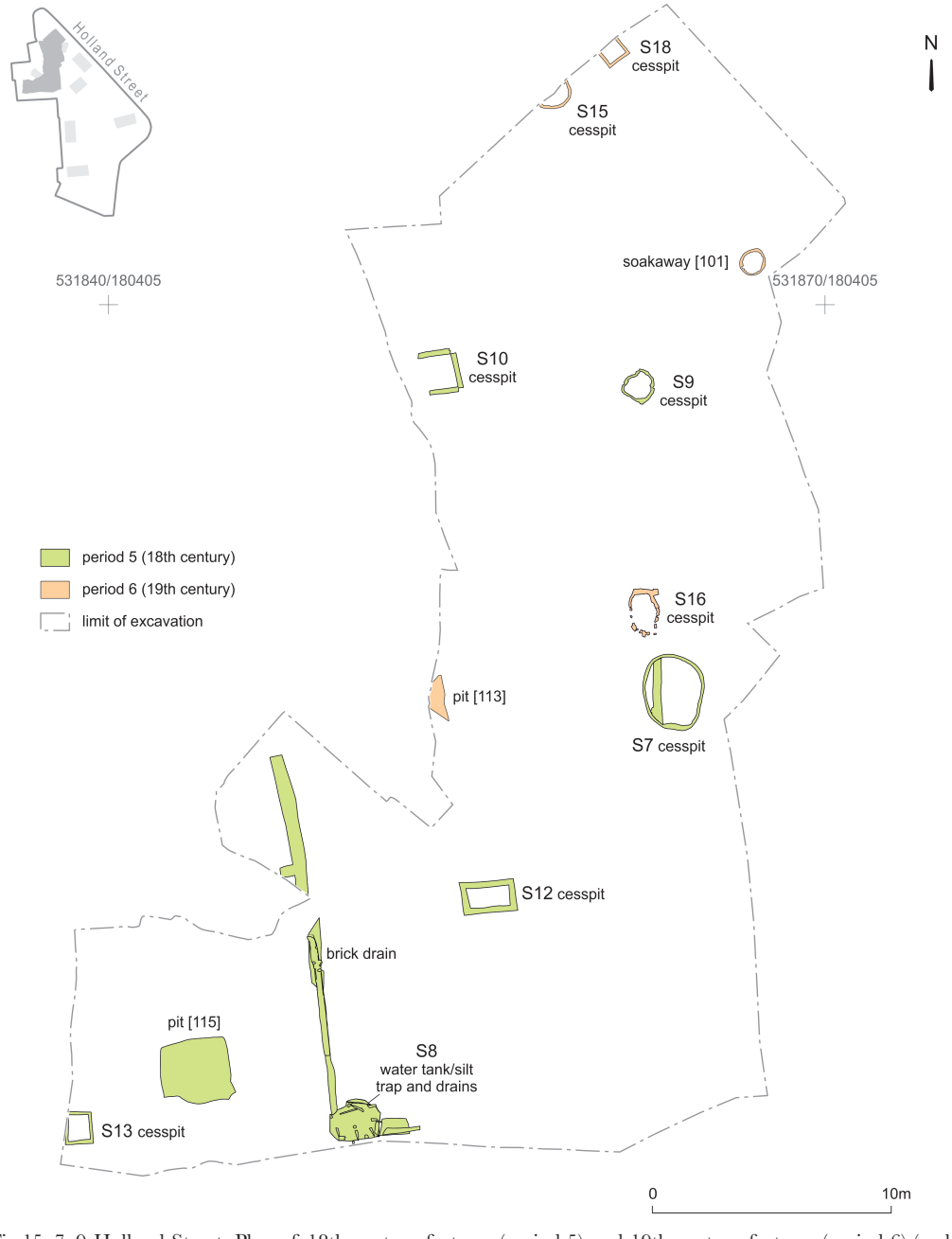

Fig 15 7–9 Holland Street. Plan of 18th century features (period 5) and 19th century features (period 6) (scale 1:300).

and industrial activity. Of particular note is a group of four tankards, two in ceramic (<P3> and <P4>, fig 20) and two in pewter (<S16> and <S17>, fig 21) that carry the names of inns/taverns together with the names of landlords (below, 'The tavern trade'). Three of these had evidently been curated for almost a century before their disposal in cesspit (S7), as had the complete lower two-thirds of a rare 17th century Dutch delftware vase <P32> (fig 30), made by Dutch delft potter Samuel Van Eenhoorn, that was much earlier in date than the backfilling of the feature (*c* 1780–1820). There was also a concentration of glass production waste (see below, 'Glass working', fig 22, <G1>) and clay pipes, including marked examples (see *Endnote*, fig 26).

Evidence for the use of the feature came from two samples of the organic primary fill and the later backfill (Stewart 2014; {9} and {8} respectively), which were found to contain significant concentrations of food plant remains, dominated by fruit, and typical of post-medieval cesspit samples. Grape seeds and cherry stones were the most common, and also common were blackberry, fig and mulberry. Fruits that occurred more rarely in the sample included raspberry, wild strawberry, plum/bullace, apple/crab apple and gooseberry. Other food remains noted in the sample were wheat/rye and oat bran, coriander, walnut and hazelnut shell and epidermis of the Allium family, which includes species such as leek, onion and garlic. Wild cabbage/mustard-type seeds were also noted, though very rarely. Blackberry/raspberry seeds were more numerous in the later backfill, which also contained remains of sloe/blackthorn.

Other food remains were also present in both fills, and included a few cattle and sheep/goat bones, the lower hind leg and foot of an adult rabbit, with a single adult humerus of woodcock providing evidence for the consumption of game. Shells from the fills included common/flat oyster, common mussel and common cockle, and cat bones (adult calcaneum and juvenile fibula) were also found.

Fig 16 7–9 Holland Street. View of cesspit (S7) under excavation, looking south.

Water tank or silt trap and drain (S8)

Within the southern part of the trench was a possible water tank or silt trap (S8), associated with numerous in/outflows, including a brick drain that ran into the feature from the north, on the alignment of Paradise Court/Lady Clark's Yard, and additional channels running to the east and west. The water tank/silt trap was constructed as a square pit lined with timber sheathing planks retained behind posts, the majority of which had been reused from an earlier structure. The associated brick drain to the north was also constructed with reused material, and contained bricks dated both pre- and post-1666, with the latest probably of 18th century date. At the southern end of the brick drain, where it met the water tank/silt trap, were the remains of a decayed timber (elm?) water pipe with the an iron binding <96> abutting the end of the brick drain. An additional two possible inlet channels were noted on the east side of the tank/silt trap. The lower of these contained traces of decayed wood, suggesting that this may also have held a wooden pipe that flowed into the tank/silt trap similar to that in the north–south drain. At a lower level was a possible outlet channel, and to the west of the tank/silt trap was a further possible outflow channel. The dates of the associated finds suggest that this group of features had gone out of use by *c* 1740.

The fills of the water tank/silt trap and associated features produced a modest but varied assemblage of finds, including a number of peg and pantile roofing tiles (one of which is unusually sharply curved, <T2>, fig 17), bricks and two worn unglazed Low Countries floor tiles (fabrics 2318 and 3063), fragments of crucible, clay tobacco pipes dating to 1700–40, a generally fragmented group of pottery dating to 1660–1700 and glass fragments of late 17th or 18th century date. A small group of animal bone and shell fragments suggest the disposal of some consumption waste, and although samples from the feature contained very low concentrations of food plant remains, including stone cells of either pear or quince, the presence of bran and fruit remains indicates that some cess material was present, either dumped purposefully or as a pollutant.

The pottery from the features includes a smashed (PMR), unglazed, flowerpot similar to examples published elsewhere (Divers 2004, fig 78, nos 1–3, 112–13), tin-glazed wares including a plain white tin-glazed ware (TGW C) chamber pot and biscuit-fired tin-glazed wares (TGW BISC), with the last largely represented by up to four rounded bowls. The glass comprises 27 fragments of bell jar (<370–3>), seven fragments from four shaft-and-globe/onion bottles, a phial, a fragment of window, a piece of cullet <507>, and a residual fragment of 17th century beaker <457>. A group of glassmaking crucible fragments and a waste drop or run of glass were found within the associated drain. Other small finds were meagre but included a sheet of lead waste <104>, a piece of copper-alloy wire <131> and a turned ivory handle of a whittle-tanged knife <S4> (fig 17).

Cesspit (S9)

This small brick-lined cesspit was cut into the fills of the earlier ditch (S5), just at its bend. It was filled with a dark grey clay-silt that produced clay tobacco pipes and pottery indicating that the feature went out of use *c* 1740–60. Among the 25 pottery vessels discarded (reconstructing from 87 sherds and weighing 2457g) are a few well-preserved examples, including the rim of a smashed tin-glazed ware plate <P1> (fig 18). The significant portion of a small teapot and lid, together with a smashed slop/rounded bowl <P2> (fig 18) in white salt-glazed stoneware (SWSG), also feature. A smashed Surrey-Hampshire Border redware (RBOR) chamber pot with internal residues completes the usable pottery discarded here. The remainder of the pots in the cesspit are otherwise represented by small-sized fragments (mostly tin-glazed wares and London-made red earthenwares). The backfill also contained the rim of a glass bottle (<326>) and a fairly large amount of bottle glass (3.063kg), with the remains of up to twelve bottles of mallet form, one of bladder onion form and a complete phial. There was also some glassmaking slag. The pit also produced a moderate group of

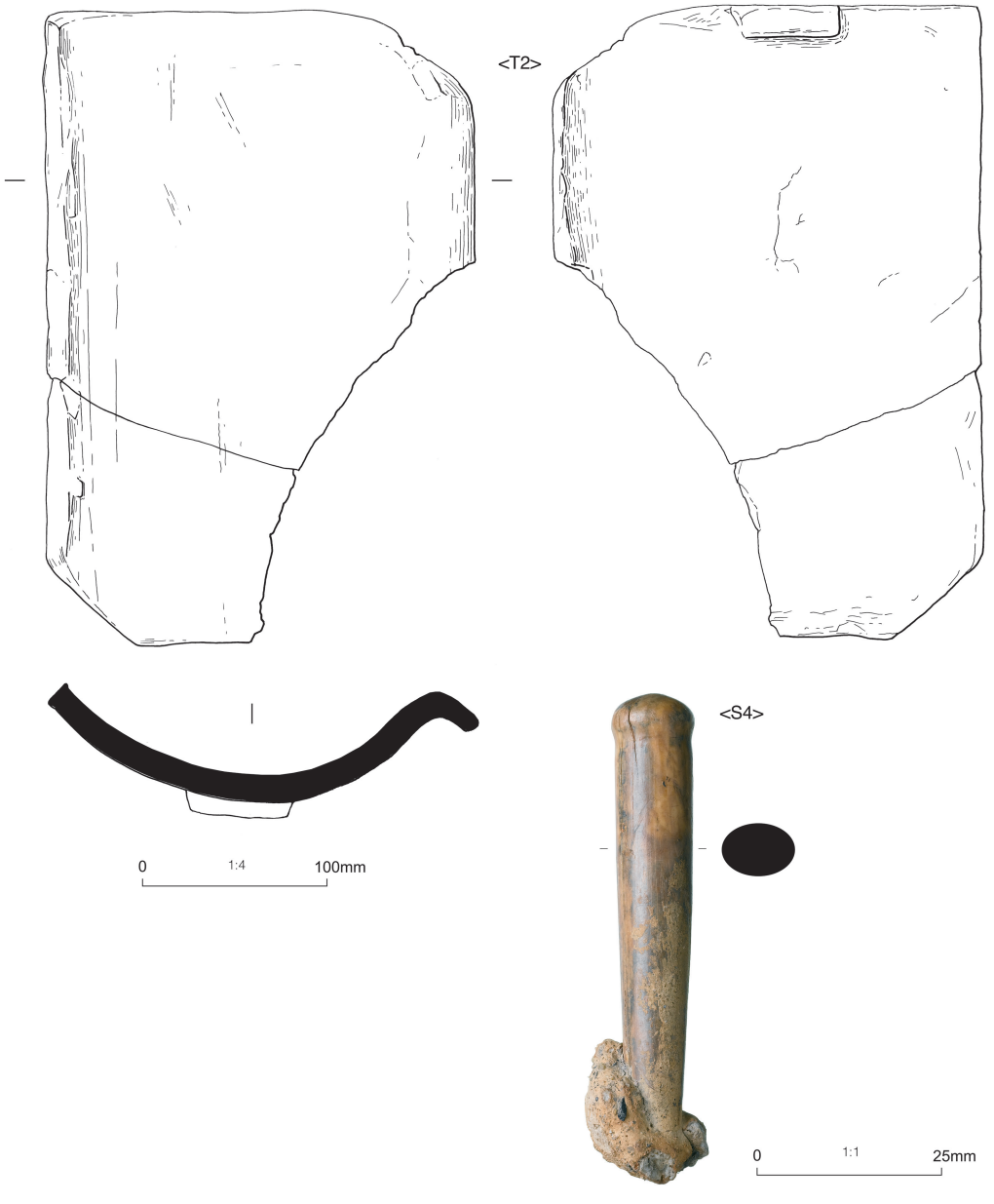

Fig 17 7–9 Holland Street. Unusual sharply curved pantile <T2> and ivory knife handle <S4> from the fill of water tank or silt trap (S8).

animal bone derived almost entirely from sheep/goat, with an ox-sized rib, adult chicken radius, and juvenile pig bones. Two rat femurs were also present.

Cesspit (S10)

A square brick-lined cesspit to the north-west was filled with a dark grey clay silt, which contained a modest group of finds, including pottery and clay tobacco pipe, the date of which suggests that the feature went out of use *c* 1780–1820. Also present within the fill was a

Fig 18 7–9 Holland Street. Tin-glazed ware plate <P1> and white salt-glazed stoneware slop/rounded bowl <P2>, from cesspit (S9).

small group of industrial waste, including a reused fragment of highly vitrified and distorted ceramic with a brown 'glaze'-like deposit on the surface that is almost certainly some kind of kiln furniture, a smithing hearth bottom and burnt coal. In addition, this pit produced a large faunal assemblage of 59 fragments derived mainly from juvenile and adult sheep/goat with smaller numbers of cattle and fragments of adult chicken, goose, mallard/domestic duck and a pig femur. The sheep/goat group derived mainly from areas of good meat-bearing quality, and a chicken coracoid was very large and may perhaps have derived from a capon – a castrated male chicken – a less-commonly eaten and more expensive bird of superior eating quality. The chicken coracoid and a calf femur showed evidence of cat and canine gnawing.

Cesspit (S12)

A large rectangular brick-lined cesspit (S12) towards the south of the site appears to be 18th century in origin, and its fills contained a wide range of material indicating that the feature probably went out of use between *c* 1748 and 1760. The material used to backfill the cesspit was largely domestic in character, and may have been derived from the property with which the cesspit was associated. The pit produced the best preserved pottery assemblage from the entire site, with up to 72 vessels represented. The finds assemblages from this feature are discussed in detail in the digital supplement (see *Endnote*).

The lower fills produced a large group of animal bones derived mainly from juvenile and adult sheep and sheep/goat with smaller components of chicken, cattle and pig. In addition, there were single fragments of goose, adult rabbit and three bones of juvenile cat.

Possible manufacturing waste within this largely domestic assemblage was confined to a fragment of what appears to be kiln shelving, made from partly vitrified coarse white-firing clay, and a fragment of sheep skull that showed removal of the horn core by a transverse chop through the base, probably as preliminary preparation for removal of the horn sheath for further manufacture.

Cesspit (S13)

Within the western part of the trench was a brick-lined cesspit (S13) filled with a dark grey/black sandy silt that produced a group of finds giving a date of *c* 1740–60 for the disuse of the feature. The pottery from this cesspit was generally more fragmented and poorly preserved than other assemblages from the site, perhaps suggesting that it had been redeposited, or indicating a slower and more incremental filling of the feature.

The cesspit fill contained 50 pottery vessels (reconstructed from 73 sherds and weighing 984g). Two tin-glazed ware (TGW) plates, an ointment pot and a rounded bowl were discarded together with a creamware (CREA) rounded bowl with plate fragments, and also Surrey-Hampshire Border redware (RBORB) dishes and chamber pots. Also found were two clay tobacco pipe bowls together with glass, including two small fragments of vessel glass and glass waste were recovered from a sieved sample <499>, <500>, fragments from three undiagnostic wine bottles, six phials and five pieces of window glass. Building material included a number of peg and pantile roofing tiles, bricks and two fragments of what may be kiln shelving made from the same yellow clay (fabric 3067) used in the manufacture of tin-glazed pottery and tile. Traces of white and blue tin-glaze on the base show that is was used in a kiln manufacturing blue-on-white tin-glaze ware, perhaps at one of the pothouses that operated in the vicinity. A moderate group of animal bones derived largely from sheep/goat with smaller groups of chicken, cattle and pig and a single bone of adult goose. Game species were represented only by a juvenile rabbit lower hind-leg and foot. There was a very small fish group including a few finds of migratory (eel) and marine/estuarine (herring family and plaice/flounder) fish.

Additional 18th century activity (OA5)

An unlined pit [115] in the south-western part of the trench had also been used for the disposal of rubbish, and its fill produced17th and 18th century finds including clay tobacco pipes, pottery, glass, including part of a jug <509>, a cylindrical beaker with applied trail <508>, the base of a jelly glass <374>, glass waste in the form of frit and cullet <375>, fragments from four wine bottles, part of a rectangular bottle with bevelled corners and two pieces of window glass. The pit also contained a plain copper-alloy lace chape <134> and animal bone (mainly from cattle and sheep/goat with only two fragments of pig and a single juvenile cat humerus). The final backfilling of the pit appears to have taken place *c* 1700–40.

Period 5 summary

The numerous brick-lined cesspits date from the early 18th century and serviced the properties around Paradise Court. The water tank/silt trap (S8) was probably related to the early 18th century houses built to the west of the site that were demolished to make way for Hopton's Almshouses in the middle of the century.

Finds assemblages from these features suggest three phases of 18th century disuse and redevelopment. To the south, the silt trap/soakaway (S8) and associated drains and channels appear to have gone out of use by *c* 1740, along with pit [115] in Open Area 5. Cesspits (S9), (S12) and (S13) went out of use during the mid-18th century, and the remaining cesspits (S7 and S10) were backfilled by the end of the century.

19TH CENTURY OCCUPATION AND INDUSTRIAL REDEVELOPMENT (PERIOD 6)

Historical background

The commercial and industrial development of Southwark intensified during the 19th century and domestic occupation gradually declined. By 1872 the Ordnance Survey map (not illustrated) shows the eastern part of the site occupied by industrial premises such as an iron foundry, a sealskin works and a coconut fibre works. To the west there were fur works, glassworks, warehouses, a school, public houses and the almshouses, with the small 18th century tenements surviving only at the northern and southern ends of the Gravel Lane frontage.

Archaeological evidence

Evidence for this last period is again derived from material within cut features that would have been associated with contemporary buildings that otherwise have left no traces. A brick well/cesspit (S15), oval brick-lined cesspit (S16), brick-lined soakaway [101], rectangular brick cesspit (S18) and unlined pit [113] (see fig 15) produced assemblages of largely domestic finds, including pottery, clay tobacco pipes, a variety of glass bottles including a seal from what was probably a squat cylindrical bottle <G28> (fig 40), window glass, animal and fish bone and other finds. Local industry is represented by a single piece of glass slag <501> from well/cesspit (S15). Well/cesspit (S15) produced the largest assemblage of material, and a sample from its fill produced a diverse assemblage of food plant remains including melegueta pepper, coriander and allspice (Stewart 2014; {5}). Both allspice and melegueta pepper were luxury spices before and during the 19th century. Melegueta pepper is especially rare in this period, although it had been quite popular during the medieval period. It had fallen out of favour in the post-medieval period and was mostly used as a flavouring for gin, although this was later banned as one of the measures to reduce the problems caused by gin consumption in the 18th century when it was thought to increase the alcohol content of the spirit. Two clay tobacco pipes from this period are also of interest. Stem <CP4>, from well (S15), is marked 'T WOOTTEN No 12 MAID LANE BORO', a local maker recorded as working from 1820–46. Pit [113] produced a Dutch pipe <CP3> made in Gouda marked on either side of the heel with a shield bearing arms quartered with pellets surmounted by S (meaning *slegte* for standard/ordinary quality) and a crowned DR on the base of the heel (fig 19). The dates of the finds suggest that the latest archaeological features on the site had gone out of use by *c* 1840 and were associated with domestic properties, which were then replaced by industrial and commercial redevelopment.

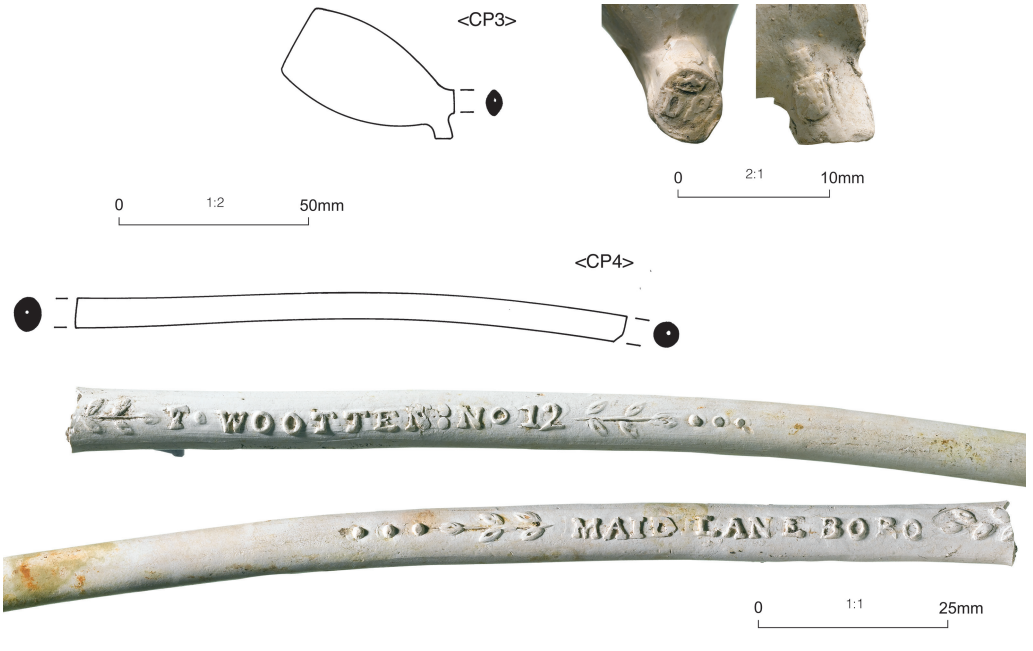

Fig 19 7–9 Holland Street. Clay tobacco pipes from period 6: Dutch pipe from Gouda <CP3> and a stem marked by a local maker <CP4>.

Discussion and conclusions

There is evidence among the finds for a number of trades and industries that operated in the vicinity of the site during the 17th and 18th centuries, including the local tavern trade, pottery manufacture and glassworking.

THE TAVERN TRADE

Prominent among the many and varied finds from the site were a number of ale/beer tankards, made of glass, ceramics and pewter. Many of these are clearly domestic drinking vessels, but there were five vessels, one from the backfill of the period 4 ditch (S5) and four from the period 5 cesspit (S7), that are annotated/inscribed with the names of taverns/inns and their landlords. These items are from a good chronological range and provide interesting information on local, and not so local, venues so that it is worth examining them as a separate theme. Three tankards (one from the lower fill and two from the upper fill) are much earlier than the late 18th/early 19th century date assigned to the backfilling of the cesspit (S7), suggesting they had been curated for a time prior to being discarded.

The earliest tankard (not illustrated) comes from the final fills of the ditch (S5), dated to *c* 1690–1710. This is an early Fulham stoneware jug with a medallion bearing the initials H C, for Henry Crosse, the Fleet Street publican of the Cock alehouse until his death in 1681 (Green 1999).

Two London-made stoneware tankards from cesspit (S7) are inscribed 'HENERY BAYLE AT YE PAUL HEAD IN ST LAWRENCE LANE' <P3> (fig 20), <P4> (not illustrated). Both are of a similar measure size, with the more complete one also burnt around its base, indicating its contents had been heated over the fire at least once. They can be dated to the period *c* 1702–14 by the Queen Anne (AR) excise stamps. St Lawrence Lane was in the city just south of Guildhall and north of Cheapside but Henry Bayley had a local connection at an earlier date. In February 1688 he was described as being the 'late keeper of the Bewar Garden' (*London Gazette*, 27 February 1688), which must have been that known as Davies Bear garden established in 1662 400m to the west. It is thought to have been closed down by about 1682 and it seems therefore that Bayley moved, like so many of his sort, into the licensed victuallers' trade in the City after the bear garden was closed. He was certainly still at the Paul's Head in 1714 when a reward was offered for lost South Sea stocks (*Daily Courant*, 10 March 1714). Perhaps he maintained links with, or even retired back to, the Bankside.

Fig 20 7–9 Holland Street. One of two London-made stoneware tankards <P3> bearing the inscription of landlord Henry Bayley at the Paul's Head, St Lawrence Lane (City of London) from cesspit (S7).

Two pewter tankards were also recovered from cesspit (S7). The earliest, a pint tankard <S16> (fig 21), is engraved on the handle with the owner's initials 'F/HH' and on its body: 'Henry French at ye Faulkon Inn on ye Bank Side Southk'. The Falcon Inn lay on the Thames immediately to the north of the site. Its exact origin is uncertain, but it had been rebuilt in about 1690 and this tankard was clearly associated with that building as it carries an 'excise stamp' A R and crown that appears to date to the early years of Queen Anne's reign (1702–14). Henry French has not yet been found but the three initials on the thumb plate of the handle 'F/HH', suggests he had a wife whose first name also began with H. Bankside was well known for its taverns and the Museum of London collection has another tankard inscribed 'George Sle[ ]y att ye Bell on ye Bankside in Southwark' of similar date (MOL Acc 8189. This tankard also has an A R with crown excise stamp and the 'marriage initials' 'S/GF' on the thumb plate).

Later in date is a half-pint tankard <S17> (fig 21) that has received more damage, but its inscription is largely legible. Around the main body of the tankard, within scrolls, is 'Hancox Whitehouse at y 2 Brewers H[ ]n Crucifix Lane Southw'. Although Whitehouse himself has not (yet) been identified there appear to be a number of inns called the Two Brewers and indeed a tankard found in excavations on Tooley Street is inscribed 'Mic[hae]l Robinson at ye 2 Brewers in Toolys Gate Southwark' (TYT98, <116>, [1274], with 'R/MM' on the thumb plate). However, the missing name after Brewers in our example may well be 'Horn' as there are references to an inn known as the 'Horns and 2 Brewers' in Bermondsey in 1792 and in 1809.[5] This tankard has what appears to be a secondary inscription around the base: 'Now [ ]er at ye Red Lion Gravill lane Southk'. This suggests that Whitehouse (for whom no record can be found at present) had moved from the Two Brewers to the east of London Bridge to the Red Lion close to the site. Gravel Lane is indeed the former name of this stretch of Holland Street and although there are many Red Lions recorded in Southwark (and elsewhere) a preliminary search has found only one, at an unspecified address, in Christ Church Parish in 1787.[6] The movement of inn landlords, and their goods, to new premises is not unknown. Another example of a tankard that appears to have been used in two different establishments was found in excavations in Bermondsey Street a few years ago, and was thought to be a unique find at the time (Wooldridge 2003, 193–4).

17TH–18TH CENTURY POTTERY MANUFACTURE

Evidence for the manufacture of tin-glazed ware, probably tile and pottery, was found on the site in periods 4 and 5, including biscuit-fired wares and kiln furniture. A number of pothouses are known to have operated in the area and may be the source for this material, including the pothouse at Gravel Lane, which was located some 250m south of the site and

Fig 21 7–9 Holland Street. Inscribed pewter tankards <S16> and <S17> from cesspit (S7).

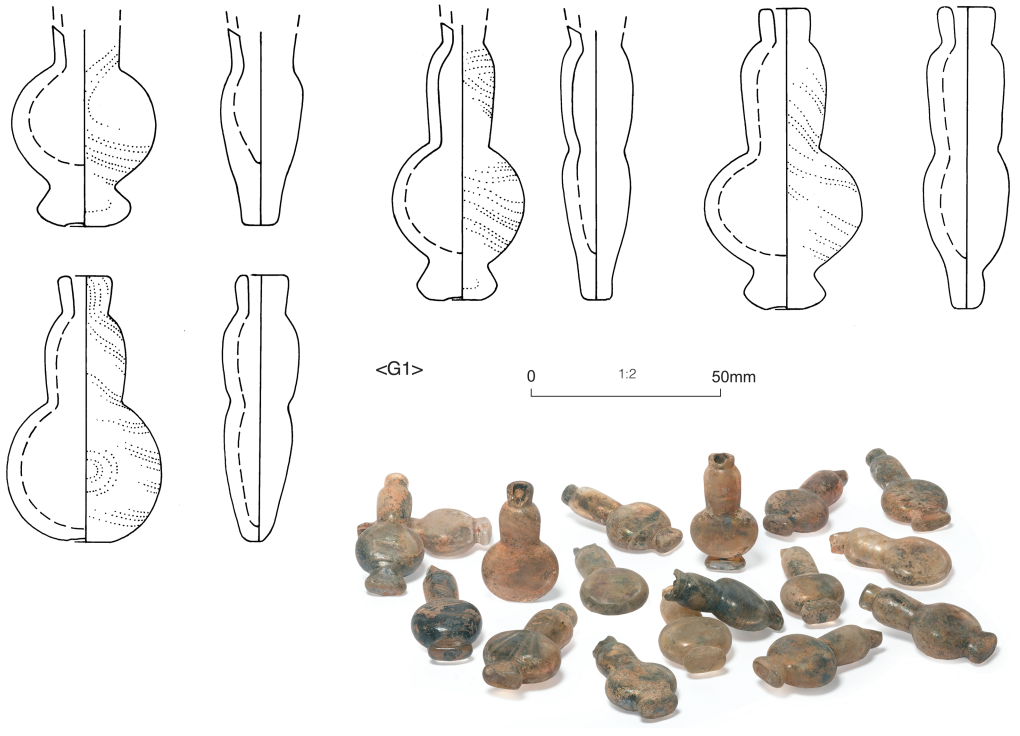

Fig 22 7–9 Holland Street. Waste from the manufacture of glass perfume bottles <G1> dumped in cesspit (S7) (photograph *c* 1:4).

operated from *c* 1694–1749 (Anthony & Jeffries in prep; Britton 1987) and at Bear Garden, *c* 400m to the east (Blackmore 2013; Britton 1987, 47; Mackinder & Blatherwick 2000, 25).

There are fragments of what may be kiln shelving from the fill of cesspit (S13) and a trivet from a post pad in Building 3. Both are connected to tin-glaze manufacture, and both are made from yellow 'Delft' clay. The shelving indicates the production of blue and white glazed pottery vessels or tiles, there being spots of both colours attached to the shelving.

Also recovered from fill [107] of cesspit Structure 13 was a circular kiln prop measuring 80–81mm in height x *c* 46–52mm in diameter. Similar props were found during excavation of the Doulton stoneware pothouse in Lambeth (Whittingham, 2005, 41, fig 48). This is made from what appears to be vitrified fine white sandstone. The external vitrification has formed a light green 'glaze' deposit on the exterior of the prop. The prop may be related to the production of either tin-glazed or stoneware. It was found associated with what appears to be the base of an oval-shaped crucible.

GLASSWORKING

Several glasshouses operated in the area immediately to the north of the site during the 18th century (Watts 2009, 115–28). The Falcon glasshouse was probably established by Francis Jackson and his partner John Straw before 1693. The works were partly on copyhold ground that had formerly belonged to James Austin, and partly on the site of the millpond. Excavations at 47–67 Hopton Street to the north of the site revealed the walls of the brick kiln of the glass works, which was dated to the mid-18th century with later 18th century modifications (Ridgeway 2000).

A range of glass production waste is present at Holland Street (including 33 accessions and 23 fragments of crucible). A single piece of shaped mortar, of a blunt wedge shape, had been highly vitrified to a maroon colour along one edge. This may have formed part of a kiln or oven structure, as may a piece of overfired ceramic with a maroon vitrified surface (Betts 2010). None of this material was associated with an industrial structure, and it must be assumed that it was brought onto the site from one of the nearby glasshouses, rather than representing evidence for glass manufacture at the site itself. The bulk of this material comes from the 18th century features, including cesspits (S7, S10 and S13), pit [244] in Open Area 5 and features associated with the water tank/silt trap (S8). There are some earlier finds from fills of the ditch/sewer (S5) and one crucible fragment was found within a consolidation layer below Building 3, and some later finds from 19th century features.

Various stages of the production process are represented. The basic processes of glass production have been described elsewhere (eg Thorpe 1969, 7–50; Willmott 2002, 10–18; 2005, 8–16; Tyler & Willmott 2005, 41–51; Watts 2009). The accessioned finds included possible frit, glass slag (gall), cullet (recycled glass melted down into lumps for reuse), drops or runs, lumps of waste, and moils and hollow rods/canes, possibly indicating the production of finewares nearby (Blackmore 2014).

The 23 fragments of crucible (glassmaking 'pots') are very similar in appearance suggesting they all derived from the same source. All the fragments show evidence of intense heat with vitrified 'glaze'-type deposits covering the smoothed curved interior and often the exterior vessel walls. These deposits are often brown or cream in colour, but on certain vessels they can be light blue.

A concentration of glass waste was present in cesspit (S7), the backfilling of which is dated by associated finds to the end of the 18th century. Most stages of production are represented, including six fragments of crucible. Of particular interest is a cluster of 27 waste perfume bottles from the primary fill (fig 22, <G1>). Most are near-complete but damaged at the rim.

Conclusions

The excavation at 7–9 Holland Street has made a number of significant contributions to knowledge of the development of the local area. During the prehistoric period, the site occupied the south side of a flood plain island (period 1). The ard marks located in the southern part of the excavation area show that farming was taking place during this period. Other nearby features, including pits and a small gully, contained pottery and flint suggesting a Late Neolithic/Early Bronze Age date, and added to the emerging picture of prehistoric exploitation of this and surrounding islands.

Geoarchaeological studies were unable to resolve the date of the onset of the inundation of the Hopton Street island, but no Roman or Saxon deposits or features were identified. Evidence for land drainage and probable pastoral land use is provided by the linear north–south channels located within the southern part of the excavation (period 2). A radiocarbon date from the carved wooden ball <S24> indicates that this reclamation was well advanced by no later than the 13th century. Further ditches and accompanying environmental material suggest that use of the land, largely for pastoral and recreational purposes, continued into the early post-medieval period (period 3) despite intermittent flooding.

The slow southward spread of the Bankside settlement is illustrated by the construction of four buildings (B1–B4) in the 17th century, associated with a north–south sewer lined with reused boat timbers (period 4). The sewer was backfilled in 1700/1. The 18th and 19th centuries (periods 5 and 6) were represented by wells, cesspits and pits only, but the large assemblages of 17th–18th century artefacts recovered suggest that the area of the site lay in a moderately prosperous, if not affluent, part of Southwark. The artefacts give an insight into the personal belongings and lifestyles of the inhabitants of the nearby properties, as well as activities in nearby taverns, pothouses and glassworks.

NOTES

1 The surface is mapped using height data from surrounding archaeological and borehole sediment profiles, as recommended by Merriman (1992) and Rackham (1994), using Rockworks 15 and ArcMap (10.1). This work was carried out using the dataset available in 2010.
2 The date derives from bulk organic sediment (plant macrofossils were absent), so it must be treated with caution (Nicholls 2013).
3 For a summary of Thames river levels from the Roman to medieval period, see Brigham 2001, 25–7, fig 14.
4 The date derives from a sample of wood from the ball.
5 LMA: P2/NEW/02/005 for the H and 2B in 'Bermondsey' in 1792 and LMA PS/NEW/02/018 for the H and 2B in Grange Road, Bermondsey in 1809–10.
6 LMA: PS/NEW/02/002. Other Red Lions in the parish, recorded in PS/NEW/02/018 in 1809, were in Broad Wall farther west and in Red Cross Street to the south-east.

Endnote

The appendix and figures listed below are available on the Archaeology Data Service website https://doi.org/10.5284/1000221
Select *Surrey Archaeological Collections* volume 102 and the files are listed as supplementary material under the title of the article.

APPENDICES

7–9 Holland Street. The large finds assemblages from selected 17th and 18th century features
- Building material
- Clay tobacco pipe
- Pottery
- Glass
- Accessioned finds

7–9 Holland Street. Catalogues of illustrated finds
- Catalogue of illustrated tile
- Catalogue of illustrated clay tobacco pipe
- Catalogue of illustrated pottery
- Catalogue of illustrated glass
- Catalogue of illustrated accessioned finds

FIGURES

23 7–9 Holland Street. Tiles from the backfill of ditch/sewer (S5): decorated tin-glazed floor tile <T3> and decorated German stove tile <T8>
24 7–9 Holland Street. Tiles from cesspit (S7): complete pantile <T1>, decorated tin-glazed floor tile <T4> and two decorated tin-glazed wall tiles <T6>–<T7>
25 7–9 Holland Street. Decorated delft floor tile <T5> from cesspit Structure 12
26 7–9 Holland Street. Clay tobacco pipes from cesspit (S7) decorated with the feathers of the Prince of Wales <CP1> and the royal (Hanoverian) coat of arms <CP2>
27 7–9 Holland Street. London-made tin-glazed ware from ditch/sewer (S5): cylindrical jars <P6> and <P7> (a second), plates <P8> and <P9>, a possible example of a pre-1670s tin-glazed ware plate <P10>; and a London- or Wincanton-made tin-glazed ware octagonal dish with manganese ground panel decoration <P11>
28 7–9 Holland Street. Surrey-Hampshire Border whiteware shallow flared skillet <P12>, Surrey-Hampshire Border whiteware miniature chafing dish <P13>, Surrey-

Hampshire Border redware internal lid-seated jar <P14>, coarse red earthenware collared lid <P15>, Low Countries whiteware with yellow glaze colander <P16> and Dutch slipware bowl <P17>, all from ditch/sewer (S5)

29 7–9 Holland Street. Applied facemask and rosette decoration from a London stoneware jug <P18> and the stamp from a Midlands purple butter pot or storage jar <P19>, from ditch/sewer (S5)

30 7–9 Holland Street. Chinese blue-and-white porcelain soup plate <P29>, two London-made tin-glazed ware plates from cesspit (S7) each depicting a swan as the central motif <P30>–<P31>, and Dutch delftware vase <P32> copying a Chinese form, the base bearing the initials of potter Samuel Van Eenhoorn and his De Grieksche A pothouse, all from cesspit (S7)

7–9 Holland Street. London- (Fulham-) made stoneware gorge with applied medallion <P5>, detail of a Staffordshire-type 'fine' redware rounded bowl with applied relief decoration in pipe clay depicting a cock <P33>, Spanish mercury jar <P34> and detail of London-made tin-glazed ware with exterior manganese ground panel decoration rounded bowl <P35> from cesspit (S7)

32 7–9 Holland Street. Complete pottery vessels from cesspit (S12): Surrey-Hampshire Border whiteware with green glaze carinated bowl <P20>, a Border redware with brown glaze pipkin <P21> and Staffordshire- or Bristol-made mottled ware concave-sided bowl <P28>

33 7–9 Holland Street. Tin-glazed ware plates from cesspit (S12): London-made and decorated with a perched peacock <P22>, basket of flowers motif <P23>–<P24> and two joined towers and a line banded rim <P25>, Bristol- or Liverpool-made with Chinese style decoration <P26> and a London-made commemorative plate <P27> with initials L.H.M and date 1748 on the base (detail at 1:1)

34 7–9 Holland Street. Glass beakers from ditch/sewer (S5): <G2>–<G7>

35 7–9 Holland Street. Glass Römer-type beakers from ditch/sewer (S5): <G8>–<G10>

36 7–9 Holland Street. Wine glasses/goblets from ditch/sewer (S5): Anglo-Venetian forms <G11>–<G15> and English forms <G16>–<G18>

37–9 Holland Street. Other glass vessels from ditch/sewer (S5): a jug <G19>, a jar <G21> and a large fragment from a bell jar <G23>

38 7–9 Holland Street. Shaft-and-globe bottles from the backfill of ditch/sewer (S5) with seals <G26>–<G27> from shaft-and-globe/onion bottles from the same feature

39 7–9 Holland Street. Selection of late 17th century phials from ditch/sewer (S5)

40 7–9 Holland Street. Glass from cesspit (S7): jug/decanter <G20>, lamp <G22>, bell jars <G24> and <G25>, bottle seal <G28>, a mallet bottle from [107] and two cylindrical phials from [110]

41 7–9 Holland Street. Kitchen items from ditch/sewer (S5): ivory and wooden knife handles <S5>, <S6>, <S7>, <S9> (ivory), and <S10> (wood); copper-alloy spoon <S11> with maker's mark (heart over GG); wooden bowl <S27>

42 7–9 Holland Street. Household items from ditch/sewer (S5): latten candlestick <S12>; iron padlock <S13>; wooden (scrubbing) brush <S26>

43 7–9 Holland Street. Items associated with leisure from ditch/sewer (S5): lead bird feeder <S18>, copper-alloy gnomon <S19>, playing alleys <S20>, <S21>, <S22> and wooden bowling ball <S25>

44 7–9 Holland Street. Finds from cesspit (S7): copper-alloy buckles <S1> and <S2>, wooden button with textile covering <S3>, antler handle <S8>, copper-alloy cup hook <S15> and stone playing alley <S23>

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BIBLIOGRAPHY

Documentary sources

LMA: London Metropolitan Archives
PS/NEW/02/002 Calendar of Licences, 1787
PS/NEW/02/005 Calendar of Licences, 1792
PS/NEW/02/018 Calendar of Licences, 1809–10

Published and secondary sources

Anthony, S, & Jeffries, N, in prep From pothouse to glasshouse: excavations at Great Suffolk Street and Lavington Street, Southwark, London, *Post-Medieval Archaeol*

Atkinson, D R, 1972 A brief guide for the identification of Dutch clay tobacco pipes found in England, *Post-Medieval Archaeol,* **6,** 175–82

Atkinson, D R, & Oswald, A, 1969 London clay tobacco pipes, *J Brit Archaeol Ass,* **32,** 171–227

Betts, I M, 2009 Building material from Southwark, in Blatherwick & Bluer 2009, 167–75

——, 2010 Holland Street buildings, Bankside Industrial Estate, 7–9 Holland Street and 118–120 Southwark Street (HLS08), unpub MOLA rep

Biddle, M, 2005 *Nonsuch Palace: the material culture of a noble Restoration house,* Oxford: University Press

Biddle, M, & Webster, J, 2005 Green glass bottles, in Biddle 2005, 266–92

Bird, J, Graham, A, Sheldon, H, & Townend, P (eds), 1978 *Southwark excavations 1972–4* (2 vols), Joint Publ London Middlesex Archaeol Soc/SyAS, **1**

Blackmore, L, 2011 The bulk and accessioned glass from Holland Street Buildings, Bankside Industrial Estate, 7–9 Holland Street and 118–120 Southwark Street SE1 (HLS08), unpub MOLA rep

——, 2013 Tin-glazed pottery production, in A Mackinder, with L Blackmore, J Bowsher & C Phillpotts, *The Hope playhouse, animal baiting and later industrial activity at Bear Gardens on Bankside: excavations at Riverside House and New Globe Walk, Southwark, 1999–2000,* MOLA Archaeology Studies Ser, **25,** 48–62

——, 2014 Catalogue and description of the bulk and accessioned glass from Holland Street Buildings, Bankside Industrial Estate, 7–9 Holland Street and 118–120 Southwark Street SE1 (HLS08), unpubl MOLA rep

Blatherwick, S, & Bluer, R (eds), 2009 *Great houses, moats and mills on the south bank of the Thames: medieval and Tudor Southwark and Rotherhithe,* MOLA Monogr Ser, **47**

Bloice, B, 1971 Norfolk House, Lambeth: excavations at a delftware kiln site, 1968, *Post-Medieval Archaeol,* **5,** 99–159

Bowsher, J, 1991 A burnt mound from Phoenix Wharf, south-east London: a preliminary report, in M A Hodder & L H Barfield (eds), *Burnt mounds and hot stone technology: papers from the 2nd international burnt mound conference, Sandwell, 12–14 October 1990*, West Bromwich, 11–19

——, 2013 The accessioned finds [from Holland Street Buildings, Bankside Industrial Estate, 7–9 Holland Street and 118–120 Southwark Street SE1 (HLS08)], unpubl MOLA rep

Bowsher, J, & Miller, P, 2009 *The Rose and the Globe – playhouses of Shakespeare's Bankside, Southwark: excavations 1988–1991,* MOLA Monogr Ser, **48**

Brain, C, 2000 *English stemmed drinking glasses 1642–1702,* Finds Research Group Datasheet, **28**

Brigham, T, 2001 The Thames and the Southwark waterfront in the Roman period, in B Watson, B, T Brigham & T Dyson, *London Bridge: 2000 years of a river crossing,* MoLAS Monogr Ser, **8,** 12–27
Britton, F, 1987 *London delftware,* London: Horne
——, 1990 The Pickleherring potteries: an inventory, *Post-Medieval Archaeol,* **24,** 61–92
Bronk Ramsey, C, 1995 Radiocarbon calibration and analysis of stratigraphy: the OxCal program, *Radiocarbon,* **37.2,** 425–30
——, 2009 Bayesian analysis of radiocarbon dates, *Radiocarbon,* **51.1,** 337–60
Brownsword, R, 1985 *English latten domestic candlesticks 1400–1700,* Finds Research Group Datasheet, **1**
Buckley, F, 1913 *Old London drinking glasses,* Edinburgh: Ballantye Press
Charleston, R J, 1984 *English glass and the glass used in England,* c *400–1940,* London: Allen and Unwin
——, 2005 Fine vessel glass, in Biddle 2005, 200–65
Cotton, J, 2014 Holland Street – Bankside, 4 Hopton Street, Southwark (HSL08): prehistoric pottery, unpubl MOLA rep
Cowan, C, Seeley, F, Wardle, A, Westman, A, & Wheeler, L, 2009 *Roman Southwark settlement and economy: excavations in Southwark 1973–91,* MOLA Monogr Ser, **42**
Culpeper, N, 1826 (1653) *Culpeper's complete herbal,* repr, Manchester
Dam, J D van, 2004 *Delffse porcelyne. Dutch delftware 1620–1850,* Amsterdam: Rijksmuseum; Zwolle: Waanders
Devoy, R J N, 1979 Flandrian sea-level changes and vegetational history of the lower Thames estuary, *Phil Trans Roy Soc London,* **B285,** 355–407
Divers, D, 2004 Excavations at Deptford on the site of the East India Company dockyards and the Trinity House almshouses, London, *Post-Medieval Archaeol,* **38,** 17–132
Dumbrell, R, 1983 *Understanding antique wine bottles*, Woodbridge: Antique Collectors Club
Eames, E S, 1980 *Catalogue of medieval lead-glazed earthenware tiles in the Department of Medieval and Later Antiquities, British Museum*, 2 vols, London: British Museum
Egan, G, 1992 Marks on butterpots, in D Gaimster & M Redknap (eds), *Everyday and exotic pottery from Europe* c *650–1900: studies in honour of John G Hurst,* Oxford: Oxbow Books, 97–100
——, 2005 *Material culture in London in an age of transition: Tudor and Stuart period finds* c *1450–*c *1700 from excavations at riverside sites in Southwark*, MoLAS Monogr Ser, **19**
Francis, A, & Saxby, D, 2008 Holland Street Buildings, Bankside Industrial Estate, 7–9 Holland Street and 118–120 Southwark Street, London SE1: post-excavation assessment (HLS08), unpubl MOLA rep
Gaimster, D M, 1997 *German stoneware 1200–1900: archaeology and cultural history,* London: British Museum
Garner, F H, 1948 *English delftware,* London: Faber & Faber
Goodburn, D, 2009a Outline analysis/publication summary of the waterlogged woodwork recorded at Holland Street, Southwark (HLS08), unpubl MOLA rep
——, 2009b Woodwork from Southwark, in Blatherwick & Bluer 2009, 200–21
Graham, A H, 1978 The geology of north Southwark and its topographical development, in the post-Pleistocene period, in Bird *et al* 1978, 501–17
Green, C, 1999 *John Dwight's Fulham pottery: excavations 1971–9*, English Heritage Archaeol Rep, **6**
Grey, T, 2009a The clay tobacco pipes from Holland Street Buildings, Bankside Industrial Estate, 7–9 Holland Street and 118–120 Southwark Street SE1 (HLS08), unpubl MOLA rep
——, 2009b The prehistoric flint from Holland Street/4 Hopton Street, Bankside, Southwark, London (HLS08), unpubl MOLA rep
Harward, C, Holder, N, & Jeffries, N, 2015 *The Spitalfields suburb 1539–*c *1880: excavations at Spitalfields Market, London E1, 1991–2007,* MOLA Monogr Ser, **61**
Heard, K, Sheldon, H, & Thompson, P, 1990 Mapping Roman Southwark, *Antiquity,* **64,** 608–19
Hilton Price, F G, 1908 *Old base metal spoons, with illustrations and marks,* London: B T Batsford
Hinton, P (ed), 1988 *Excavations in Southwark 1973–6, Lambeth 1973–9,* Joint Publ London Middlesex Archaeol Soc/SyAS, **3**
Hohler, C, 1942 Medieval paving tiles from Buckinghamshire, *Rec Bucks,* **14,** 1–49, 99–132
Horne, J, 1989 *English tin-glazed tiles,* London: J Horne
Hurst, J G, Neal, D S, & Beuningen, H J E van, 1986 *Pottery produced and traded in north-west Europe 1350–1650*, Rotterdam Papers, **6,** Rotterdam
Jeffries, N, 2010 The post-medieval pottery from the Bankside Industrial Estate, 7–11 Holland Street and 118–122 Southwark Street, London SE1 (HSL08)), unpubl MOLA rep
Jones, H, 1988 Excavations at Bricklayers Arms (BLA87), unpubl MOLA rep
Lever, C, 1977 *The naturalized animals of the British Isles*, London: Hutchinson
Long, A J, Scaife, R G, & Edwards, R J, 2000 Stratigraphic architecture, relative sea-level and models of estuary development in southern England: new data from Southampton water, *Coastal and estuary environments: sedimentology, geomorphology and geoarchaeology*, Geol Soc Spec Publ, **175,** 253–80
Long, A J, & Tooley, M J, 1995 Holocene sea-level and crustal movements in Hampshire and south-east England, United Kingdom, *J Coastal Res, special issue* **17**: *Holocene cycles: climate, sea-levels and sedimentation*, 299–310
Mackinder, A, & Blatherwick, S, 2000 *Bankside: excavations at Benbow House Southwark, London SE1*, MoLAS Archaeol Stud Ser, **3**
Marsden, P, 1996 *Ships of the port of London – 12th to 17th centuries AD*, Engl Heritage Archaeol Rep, **5**

Merriman, N, 1992 Predicting the unexpected: prehistoric sites recently discovered under alluvium in central London, in S P Needham & M G Macklin (eds), *Alluvial archaeology in Britain*, Oxbow Monogr, **27,** 261–7
Miles, A, 2004 Holland Street Buildings, Bankside Industrial Estate, 7–9 Holland Street and 118–122 Southwark Street, London SE1: an archaeological impact assessment (HLS08), unpubl MOLA rep
Miles, A, & Clark, A, 2006 Holland Street Buildings, Bankside Industrial Estate, 7–9 Holland Street and 118–122 Southwark Street, London SE1: an archaeological desk-based assessment (HLS08), unpubl MOLA rep
Mook, W G, 1986 Business meeting: recommendations/resolutions adopted by the 12th international radiocarbon conference, *Radiocarbon,* **28,** 799
Moorhouse, S, 1972 Medieval distilling apparatus of glass and pottery, *Medieval Archaeol,* **16,** 79–121
Nicholls, M, 2013 Holland Street (HLS08): geoarchaeological analysis, unpubl MOLA rep
Noël Hume, I, 1977 *Early English delftware from London and Virginia*, Williamsburg: Colonial Williamsburg Occas Pap Archaeol, **2**
——, 1991 (1970) *Guide to artifacts of Colonial America,* repr, New York: Knopf
Nunn, P D, 1983 The development of the Thames in central London during the Flandrian, *Trans Inst Brit Geogr,* **8,** 187–213
Oriental Ceramic Society, 2003 *The world in blue and white: an exhibition of blue and white ceramics, dating between 1320 and 1820, from members of the Oriental Ceramic Society,* London: The Oriental Ceramics Society
Orton, C R, 1988 Post-Roman pottery, in Hinton 1988, 295–364
Pearce, J, 1992 *Post-medieval pottery in London, 1500–1700: Vol 1, Border wares*, London: HMSO
——, 2007 *Pots and potters in Tudor Hampshire: excavations at Farnborough Hill Convent,* 1968–72, Guildford: Guildford Museum, Guildford Borough Council and MOLAS
Pipe, A, 2010a Hand-collected and wet-sieved animal bone from Bankside 4; 7–9 Holland Street and 118–120 Southwark Street, London SE1 (HLS08), unpubl MOLA rep
——, 2010b Hand-collected and wet-sieved invertebrate remains from Bankside 4; Holland Street, London SE1 (HLS08), unpubl MOLA rep
Powell, A B, & Leivers, M, 2012 Mesolithic, Neolithic and Bronze Age activity on an eyot at Addington Street, Lambeth, *Trans London Middlesex Archaeol Soc,* **63,** 19–32
Rackham, D J, 1994 Prehistory in the Lower Thames flood plain, *London Archaeol,* **7,** 191–6
Reimer, P J, Bard, E, Bayliss, A, Warren Beck, J, Blackwell, P G, Bronk Ramsey, C, Buck, C E, Cheng, H, Lawrence Edwards, R, Friedrich, M, Grootes, P M, Guilderson, T P, Haflidason, H, Hajdas, I, Hatté, C, Heaton, T J, Hoffmann, D L, Hogg, A, G, Hughen, K A, Felix Kaiser, K, Kromer, B, Manning, S W, Niu, M, Reimer, R W, Richards, D A, Marian Scott, E, Southon, J R, Staff, R A, Turney, C S M, & van der Plicht, J, 2013 IntCal13 and Marine13 Radiocarbon Age Calibration Curves 0–50,000 Years cal BP, *Radiocarbon,* **55.4,** 1869–87
Ridgeway, V, 1999 Prehistoric finds at Hopton Street in Southwark, *London Archaeol,* **9,** 72–6
——, 2000 Post-medieval glass manufacture at Hopton Street in Southwark, *London Archaeol,* **9,** 102–9
Ridgeway, V, & Meddens, F, 2001 Changing prehistoric environments on a Southwark island margin, at Butler's Wharf Estate, *London Archaeol,* **9.10,** 283–91
Rogers, W, 1990 Mesolithic and Neolithic flint tool-manufacturing areas buried beneath Roman Watling Street in Southwark, *London Archaeol,* **6.9,** 227–31
Rose, W, 1937 *The village carpenter,* Cambridge: University Press
Ruggles-Brise, S, 1949 *Sealed bottles,* London: Country Life
Saxby, D, 2008 Bankside 4, 7–9 Holland Street and 118–120 Southwark Street, London SE1; a report on the evaluation (HLS08), unpubl MOLA rep
Scaife, R.G, 2009 Holland Street (HLS 08): pollen analysis, unpubl MOLA rep
Sheaf, C, & Kilburn, R, 1988 *The Hatcher porcelain cargoes: the complete record,* Oxford: Phaidon
Sheldon, H L, 1978 The 1972–4 excavations: their contribution to Southwark's history, in Bird *et al* 1978, 11–49
Sidell, E J, Wilkinson, K N, Scaife, R G, & Cameron, N, 2000 *The Holocene evolution of the London Thames: archaeological excavations (1991–8) for the London Underground Limited Jubilee Line Extension Project,* MoLAS Monogr Ser, **5**
Sidell, J, Cotton, J, Rayner, L, & Wheeler, L, 2002 *The prehistory and topography of Southwark and Lambeth,* MoLAS Monogr Ser, **14**
Smith, T P, 2001 On 'small yellow … bricks from Holland', *Construction History,* **17,** 31–42
Stewart, K, 2014 Analysis of plant remains from Holland Street (HLS08), unpubl MOLA rep
Survey of London, 1950 *Bankside (The parishes of St Saviour and Christchurch Southwark),* Survey of London, **22**
Thomas, C, & Rackham, J (eds), 1996 Bramcote Green, Bermondsey: a Bronze Age trackway and palaeo-environmental sequence, *Proc Prehist Soc,* **62,** 221–53
Thorpe, W A, 1969 (1929) *A history of English and Irish glass,* repr, London: P Holland
Tyers, I, 1988 The prehistoric peat layers (Tilbury 4), in Hinton 1988, 5–12
Tyler, K, Betts, I, & Stephenson, R, 2008 *London's delftware industry: the tin-glazed pottery industries of Southwark and Lambeth*, MoLAS Monogr Ser, **40**
Tyler, K, with Egan, G, Goodburn, D, Gray, L, Nailer, A, & Stephenson, R, 2001 The excavation of an Elizabethan/Stuart waterfront site on the north bank of the river Thames at Victoria Wharf, Narrow Street, Limehouse, London E14, *Post-Medieval Archaeol,* **35,** 53–95
Tyler, K, & Willmott, H, 2005 *John Baker's late 17th-century glasshouse at Vauxhall*, MoLAS Monogr Ser, **28**

Watts, D C, 2009 *A history of glassmaking in London,* Barnet: Watts Publications
Whittingham, L, 2005 Kiln furniture, in K Tyler with J Brown, T P Smith & L Whittingham, *The Doulton stoneware pothouse in Lambeth: excavations at 9 Albert Embankment, London,* MOLAS Archaeol Study Ser, **15,** 37–42
Wilkinson, K N, Scaife, R G & Sidell, E J, 2000 Environmental and sea level changes in London from 10,500 BP to the present: a case study from Silvertown, *Proc Geol Assoc,* **111,** 41–54
Willmott, H, 2002 *Early post-medieval glass in England, 1500–1670,* CBA Res Rep, **132**
Wooldridge, K, 2003 The archaeology of 151–153 Bermondsey Street, Southwark, *SyAC,* **90,** 181–210
Yule, B, 1988 Natural topography of north Southwark, in Hinton 1988, 13–18