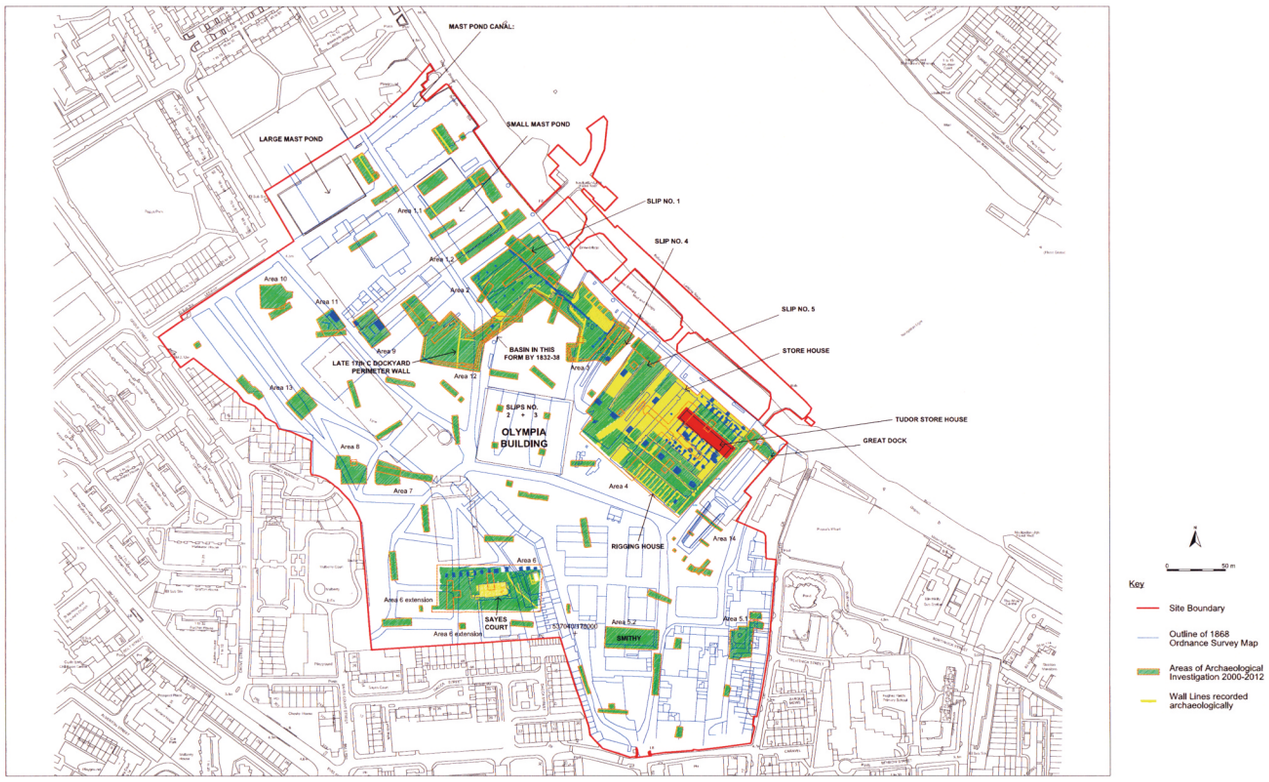

Fig. 1: location plan and plan of areas of archaeological investigation

Deptford's Royal Dockyard: archaeological investigations at Convoy's Wharf, Deptford, 2000–2012

Duncan Hawkins with Caroline Butler, Antony Francis, Christopher Phillpotts and Andrew Skelton

Introduction

Convoy's Wharf, Prince Street, London, SE8 3JH, centred at NGR 537000 178200, is the location of the principal part of the former Deptford Royal Dockyard, operational between 1513 and 1869. Following preliminary archaeological investigation in 2000 by Pre-Construct Archaeology, a 5% sample of the total site area was evaluation trial-trenched by Museum of London Archaeology (MOLA) from January to April 2010 to determine the quality and extent of any surviving archaeological deposits. This was followed between May 2011 and May 2012 by a programme of archaeological excavation and recording by MOLA – the largest ever undertaken in a Royal Dockyard (Fig. 1). All phases of archaeological investigation were overseen by CgMs Consulting and scoped to preserve the structural remains of the Dockyard *in situ*, in accordance with a Scheme of Archaeological Resource Management (SARM).

Geology and topography

The south and east part of the site lay on a gravel headland, while the north and west were characterised by deep alluvial deposits associated with a tributary of the Thames, the 'Orfleteditch'. A former mouth of this river, first recorded in 1279,[1] formed a natural tidal 'Dock' in the riverbank which was converted into the Dockyard basin by 1517, while the dry gravel was utilised in 1513 as the location of the Tudor storehouse, the first permanent Dockyard building.

The form of the archaeological record

The Royal Dockyards were the largest industrial complexes in Britain until the mid-19th century, comprising factories for the construction and repair of warships. As the dimensions and displacement of warships increased

Fig. 2: the Tudor Storehouse as excavated (© MOLA)

over time, so the infrastructure of the Dockyards profoundly altered. The introduction of steam power, both to vessels and to Dockyard operations in the early 19th century, led to radical changes in Dockyard facilities. At each rebuilding much evidence of earlier structures was removed. Consequently, because of the massive scale of the late Georgian and early Victorian docks and slipways on the site, only limited evidence for their early-19th-century predecessors survived. No evidence was found for any 16th- or 17th-century docks or slips, and very limited evidence for the 16th- and 17th-century basin.

With the exception of part of the iron slip cover roofs to slipways Nos 2 and 3 of 1844–46 (now known as the Olympia Building) and parts of the Dockyard perimeter wall, all of the Dockyard buildings within the site boundary had been demolished to foundation level – either during the lifespan of the Dockyard or following its closure in 1869. Consequently, the physical evidence for well-documented buildings had in many cases almost entirely vanished, and building remains above foundation level, machinery bases, support fittings and floor surfaces were generally absent.

Therefore, while it was possible to recover the ground plans of some former Dockyard buildings (with those of the late 18th and 19th century predominating), in general the activities and processes undertaken within the buildings were not represented in the archaeological record.

Conversely, the five 19th-century slipways on the site, together with the stone-lined 19th-century entrance to the Great Dock, and the contemporary masonry-lined version of the Dockyard basin survived – filled in – in relatively good condition as archaeological monuments (though no longer as functional pieces of civil engineering).

With the exception of structural timberwork, (including a number of reused ships' timbers) the site was found to be artefact-poor. The impression is that waste management during the operation of the Dockyard was highly efficient, and at closure the site was 'picked clean' of recyclable

Fig. 3: flame-headed arch, UCL

Fig. 4: Tudor Storehouse, March 1952 (©2012 Getty Images 156993167, 156993168, 156993169)

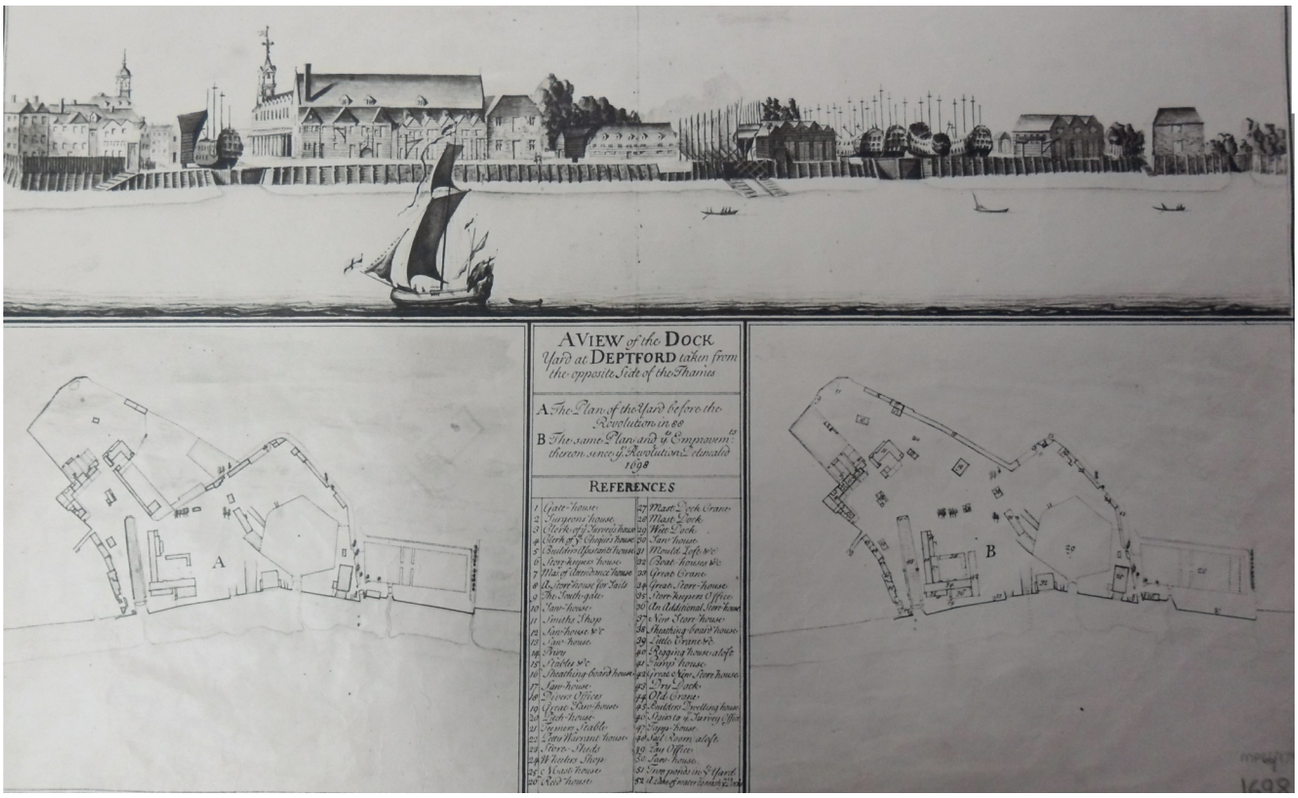

Fig. 5: Edmund Dummer's 1688/1698 survey (© British Library Board Kings MS 43 Vol 65v & 66)

material – particularly metal work. It is therefore the analysis of the surviving documentary, cartographic, pictorial and photographic sources that will be critical to understanding the operation of the Dockyard and the context of the archaeological remains.

The Tudor and early Stuart Dockyard

The earliest Dockyard structure known to have existed on the site and recorded in the investigations was a Tudor storehouse. This building, which was oriented east-west flanking the Thames, survived at foundation level, with up to 0.74m (2.4ft) in height of brickwork present. The original north, south and west walls were traced giving a building footprint 52.30m (172ft) long east-west by 9.50m (31ft) wide north-south (Fig. 2). The east wall was a Georgian rebuild. No floor levels within the building survived, and it had been completely truncated in several areas by modern foundations. This building originally consisted of two storeys and an attic, and stood to a roof plate height of 10.67m (35ft) until it was demolished by order of the Admiralty in March 1952.[2] A foundation stone and flame-headed arch were salvaged and preserved at University College London (Fig. 3). Photographs taken at the time of demolition (Fig. 4), together with Edward Dummer's 1698 survey (Fig. 5),[3] and the dimensions recorded in 2011–2012, allow a comprehensive understanding of the form of the building.

West of the Tudor storehouse on a very distinctive northeast-southwest alignment was the Treasurer of the Navy's House, probably in existence by the 1540s and with surviving 16th- and 17th-century fabric (Fig. 6). It measured 50.50m (166ft) north-south by 5.70m (19ft) east-west and contained floor levels, including tiled floors, *in situ*. The Treasurer's House is shown in John Evelyn's sketch plan of 1623 (Fig. 7), but was demolished before 1688.

Between 1688 and 1698 a 'Great

Fig. 6: excavation of the Navy Treasurer's House (© MOLA)

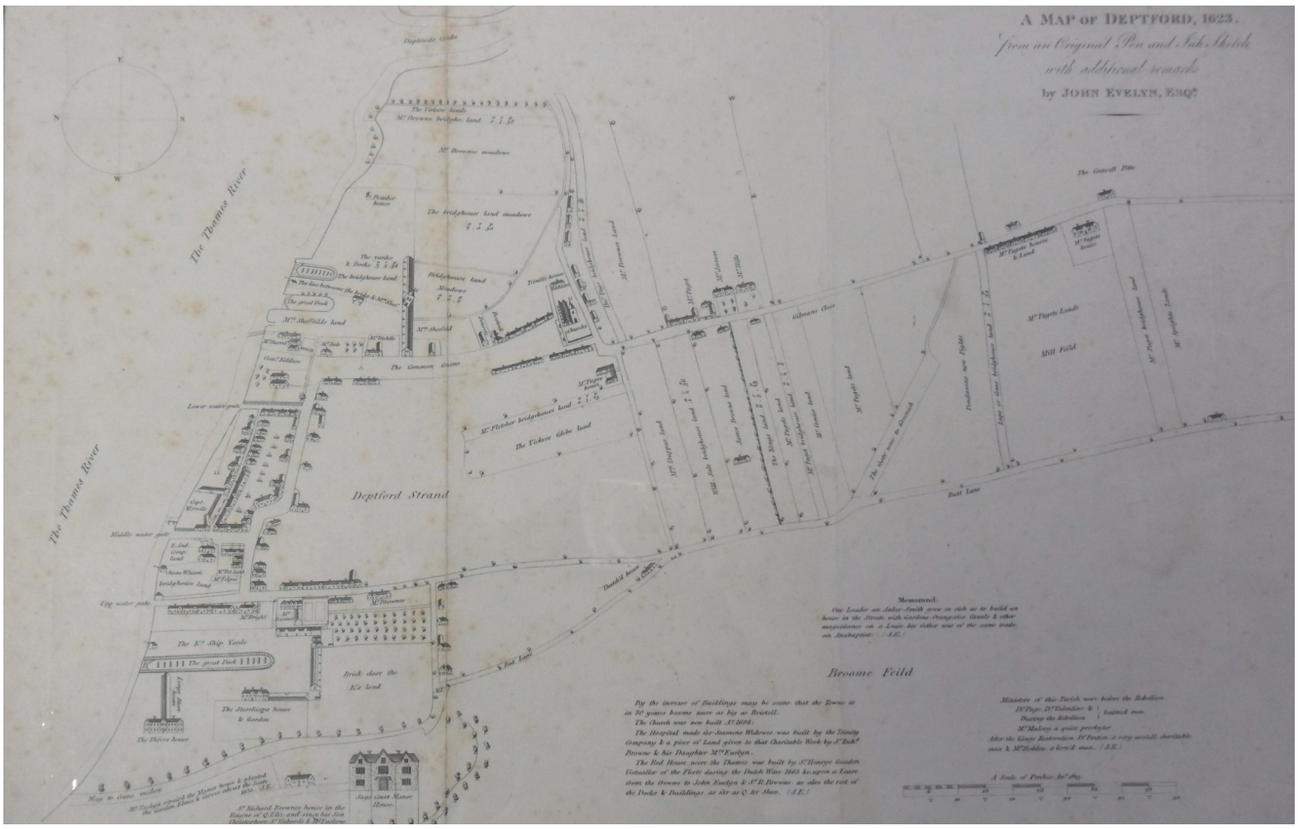

Fig. 7: John Evelyn's sketch, 1623 (© British Library Board Add. MS 78629A)

New Storehouse' was added to the west end of the Tudor Storehouse, replacing the Treasurer's House and, shortly after, to the south of the Tudor Storehouse 'the new storehouses' were added, forming a basic quadrangle of buildings, the foundations of which were in part traceable during the 2011 to 2012 investigations.

To the west of the basin, but between it and the 'small' mast pond, (built 1676–1688), a long section of mid-17th-century Dockyard perimeter wall was identified. Arched openings built through the 1.3m (4.3ft) wide wall accommodated timber tiebacks (retaining beams) that braced a substantial timber revetment along the southwest side of the Dockyard – possibly channelling the ancient 'Orfleteditch' stream away from the basin and the core of the Dockyard (Fig. 8).

Fig. 8: demolished 17th-century boundary wall of Dockyard (© MOLA)

Evidence for the 1676–1688 small mast pond, or possibly an early 18th-century replacement, was identified on the north-west of the site in the form of sawn off timber tiebacks (Fig. 9). They had been cut back and the wooden lining of the small mast pond removed to insert a new brick lining between 1774 and 1808, which had in turn undergone several phases of rebuilding, possibly as late as the 1840s.

Although the Dockyard basin is recorded as present from 1517,[4] very little archaeological evidence was identified for the Tudor and early Stuart basin, with a short length (*c.* 2m) of timber revetting at the north-east corner of the mid-18th-century timber-lined basin possibly relating to these periods. It is known that in 1676 part of the basin was itself being used as a mast pond.

Fragmentary later-17th-century brick foundations were identified in part

of the Officers' Quarters and the Dockyard smithy.

The 'Great Dock' – a large dry dock – was probably first built in or around 1517. A substantial rebuild is known to have taken place in 1574, and the Dock is shown in John Evelyn's sketch of 1623 as a large wooden structure (Fig. 7). Edmund Dummer's Survey of 1688/98 (Fig. 5) shows the 'Great Dock' as timber-lined with a single dock gate to the Thames. There was at this time no subdivision between the front and rear of the Dock, and internal dock gates between a 'Head Dock' to the south and 'Stern Dock' to the north do not appear to have been added until a comprehensive rebuilding of the Dock (again in timber) in 1711, when it became a true double dock. Evidence for the Tudor or Stuart Great Dock was not identified in 2010 or 2011–12.

Fig. 9: redundant tiebacks of 17th-century mastpond and Georgian mastpond walls (© MOLA)

Fig. 10: Georgian Storehouse from the Riverfront *c.* 1930 (note Royal Coat of Arms)

The Late Stuart and Georgian Dockyard to 1821

Between 1698 and 1753 the somewhat haphazard storehouse complex which had evolved between 1513 and 1698 was largely rebuilt in a more formal quadrangular form, though retaining the Tudor Storehouse at its core together with parts of the Stuart Storehouse. Following closure of the Dockyard in 1869, elements of the east and west ranges of the Storehouse complex were demolished though much survived until the Second World War (Fig. 10).

The foundations of this Georgian rebuilding form the principal surviving element of the Storehouse. No contemporary floor surfaces survived (Fig. 11). A contemporary multi-phase timber river wall was recorded north of the storehouse behind the existing river wall, containing timbers spanning the late 17th to early 19th century.

After 1774 but before *c.* 1808 a substantial rigging house of three storeys plus attic, 75.0m (246ft) east-west by 17.3m (57ft) north-south, were added to the south of the Storehouse complex. A surviving photograph of *c.* 1880 shows this as an elegant late Georgian building range (Fig. 12). It was demolished before 1916. The 2011 to 2012 investigations revealed the whole footprint of the building with

Fig. 11: the Georgian Storehouse and Rigging House under excavation 2012 (© MOLA)

Fig. 12: from left to right: Slip Cover Roof No 5 pre-1842; Rigging House of 1774-c. 1808; Great Dock Cover Roof pre-1842, photograph of c. 1880 (© Courtesy of Lewisham Local History & Archive Centre. Thankfull Sturdee Collection PH87-13391 SS63)

Fig. 13: Georgian Slipway c. 1800 (© MOLA)

robust foundation arches to carry the heavy superstructure (Fig. 11).

Only a single late Georgian slip was identified on the site, sandwiched and truncated by the early Victorian slipways No 4 and No 5. It comprised a heavily truncated bed of timber on a chalk ballast base with revetted tieback timber sides (Fig. 13). The base at 3.61m OD was significantly shallower than that of the adjacent Victorian slipways by *c.* 1.65m (5.4ft). Prior to the introduction of slip cover roofs in 1814, slipways were very much regarded as 'formwork' for individual ship construction projects and were readily dismantled following launches.[5] The numbering of slipways after 1842 reflected their 'permanent' status.

Three phases of 'Georgian' basin were identified. Over time the basin was progressively reduced in area but deepened. This is indicated most vividly by comparing a depth gauge of *c.* 1750 formed of copper plate numerals (Fig. 14) with a stone depth gauge forming part of the remodelling of the basin entrance of *c.* 1813–14 (Fig. 15).[6] The base of the latter depth gauge was 1.73m below that of the former, suggesting the basin entrance – and by implication the basin itself – was considerably deeper by the early 19th century. The final Georgian re-working of the basin included a Dock and two slips on the south side and a boat slip on the north side. These were all demolished and filled in during 1844–46, from which time only two slips, Nos 2 and 3, suitable for relatively small warships, ran into the basin.

A 'large mastpond' had been built on the west of the site (and extended westward beyond the current site boundary) between 1765 and 1774, and was subsequently rebuilt in brick. The wall of the large mastpond including a stone base for an iron capstan (the ironwork for which had been removed) was found to have largely collapsed into the pond itself. This may have taken place during the backfilling of the mastpond in 1949–50. The canal feeding this mastpond (which in turn fed the small mastpond after the

Fig. 14: Timber Basin entrance of c. 1750 with depth gauge (© MOLA)

1774–1808 rebuilding) and connecting to the River Thames is still partly open and partly traceable at ground level within the site. Investigation of the final Georgian version of the small mastpond revealed it to be 37m (121ft) wide with walls 1.5m (5ft) wide and 5m (16ft) deep to the base of the brickwork.

The Late Georgian and Victorian Dockyard

From 1815 Deptford Dockyard was effectively operated as a dual facility with Woolwich Dockyard. Ships launched at Deptford were fitted out at Woolwich or further downriver.[7]

The Great Dock

Following the Napoleonic Wars, Deptford as the smallest Royal Dockyard was virtually disused. By Admiralty order from 31 January 1821, the Dockyard was to be maintained only as a depot for small maintenance work. However, the Dockyard does appear to have been used for experimental work, as one of the first steamers built for the Royal Navy, the "Comet", was launched here in 1822.[8] From 1832 to 1837 the Dockyard was used for ship-breaking, as many of the warships constructed during the Napoleonic Wars wore out and were broken up. No new ships appear to have been completed and launched from the Dockyard during this period.[9]

However, it is known that a single warship, a fourth-rate of 50 guns, HMS Worcester; was kept "under construction" in the Dockyard at this time to satisfy the Admiralty's lease of the Evelyn land. She was not finally launched until 1843, by which date she had lain on her slipway for 21 years.

So poor did the material condition of the Dockyard become that by 1833 part of the Head Dock of the Double Dry Dock collapsed.[10] Evidently the Double Dry Dock, though not its entrance, was still wholly of timber at this time. Map evidence indicates the Dock was rebuilt between 1774 and *c.* 1808, suggesting it may not have been substantially repaired for over 25 years before its collapse.

The Dock was repaired again in timber, though this time with a lime concrete backing, by a civilian contractor 'Mr Guest' under the direction of the Admiralty's Civil Architect, George Leadwell Taylor (1788-1873).[11] The methodology employed was extremely crude:

"The ground to be excavated behind the planking at each side the Dock at Deptford and a concrete backing 4 feet thick down to the bottom put in"[12]

Subsequent correspondence shows that the material excavated by 'Mr Guest' was left alongside the Dock for several months before finally being removed.

The timber and concrete profiles of the Head and Stern Docks were recorded in a drawing of 1838 by W.T. Rivers – later Clerk of Works at Chatham Dockyard.[13] A supplementary evaluation trench across the Head Dock executed in 2012, revealed demolished backfill and a stone foundation pad for the cover building, with 20th-century foundations cut across the line of the Dock. Virtually identical results had previously been obtained during investigations of the contemporary Double Dock at Woolwich Dockyard.[14]

By October 1834 the Dock gates were evidently defective, and Leadwell Taylor was directed to inspect them.[15] This letter also records that the caisson which sealed the entrance to the basin was defective, and the steamer 'Messenger' was directed to tow it to Woolwich Dockyard for repairs.

In 1835 there is reference to repair to the stonework of the entrance to the Great Dock.[16] From this it is clear that the entrance to the Dock had been rebuilt in stone before this date, probably by 1808.

Repairs to the Double Dock dragged on into 1839, at which time work commenced on completely

Fig. 15: Stone Basin entrance of *c.* 1814 with depth gauge (© MOLA)

Fig. 16: Great Dock entrance, 2010 (© MOLA)

Fig. 17: No 1 Slipway by George Baker and Sons, 1845–46, 2012 (© MOLA)

Fig. 18: No 2 Slipway by George Baker and Sons, 1845–46, part of Baker's original iron roof in background, 2010 (© MOLA)

rebuilding the Great Dock entrance again in stone.[17]

By 1841 the rebuilding of the Great Dock was still continuing as in that year 'Messrs Kitt and Elwell' were providing costs for:

"… the repairs at the river wall, and the return wall at the entrance of the Double Dock"[18]

The reconstructed stone dock entrance of 1839–41 was identified in the 2010 evaluation. Although partly truncated by later development the entrance still survived to an internal height of 5.2m (17ft) (Fig. 16). Construction of a Portland stone facing, was held in place by a timber frame of tiebacks (now largely perished) bedded in a brick and lime concrete backing. Map and photographic evidence (Fig. 12) show that the Great Dock was covered by a substantial timber 'roof', a single stone foundation pad for which was identified *in situ*, on the east side of the 'Head Dock'. This roof dates to no later than 1842, when a switch to all iron construction was made. There are very strong parallels between this dock cover roof at Deptford and No. 3 slip cover roof of 1838 at Chatham Dockyard.[19]

Slipways 1 to 5

From 1837 ship construction had recommenced at Deptford, and a large number of (generally small) steamships were built over the next 32 years; they typically were fitted with machinery at Woolwich Dockyard.[20] By 1841 it was apparent that the old slipways within the Dockyard also needed rebuilding or replacement. On 30th November of that year it was reported that:

"Slips; the one occupied by Worcester requires repairs to be done as early as Con.t"[21]

Between 1844 and 1846 new slipways (No. 1 running into the Thames and Nos 2 and 3 running into the basin) were constructed by Messrs George Baker and Sons of Lambeth.[22] The slipways were provided with wooden decks using scrap or rejected timber from the Dockyard for the

Fig. 19: Baker's iron roofs over Slipways Nos 1, 2 and 3 engraving of 1869 (© British Library Board ADD MS 32360)

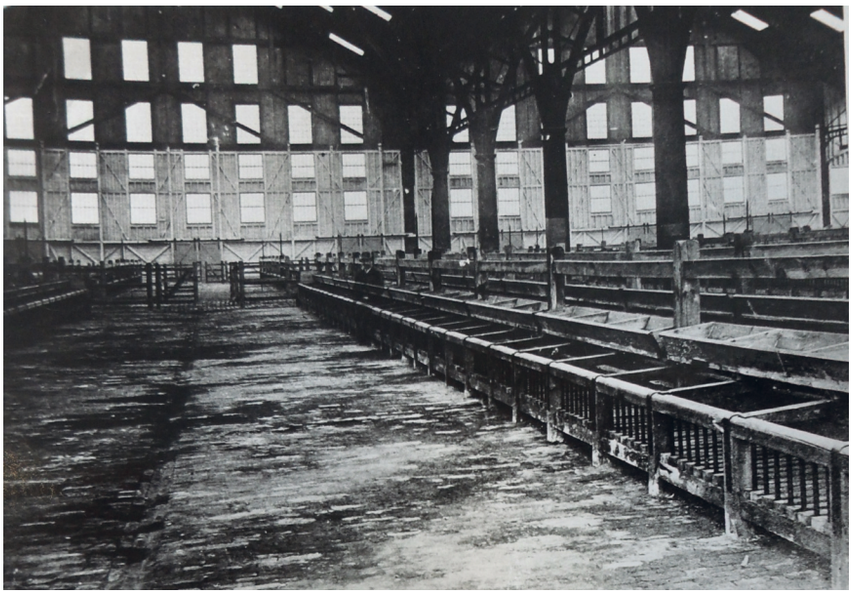

Fig. 20: Baker's iron roofs over Slipways Nos 2 and 3 interior photograph, *c.* 1880
(© Courtesy of Lewisham Local History & Archives Centre, PH 71-4157 LS33)

horizontals, which were supported on vertical Baltic Deal piles shod with iron, driven into the underlying alluvium. The slip walls were of yellow stock brick backed with lime concrete (Figs 17 and 18). Baker also modified the basin walls on the south side at this date.

Slips 1, 2 and 3 were all roofed in iron by Baker, with cast and wrought iron frames clad in galvanised corrugated iron pierced by numerous windows (Figs 19 and 20). Baker produced eleven such roofs in total at Chatham, Deptford, Pembroke and Portsmouth of virtually identical form.[23] The three Chatham roofs still survive intact over their filled in or decked slipways.

The iron slip cover roof over No. 1 slipway appears to have been destroyed during the Second World War, and only the foundation piers for the building and fragments of the cast iron standards set in them now survive, flanking either side of the slipway. The iron slip cover roofs for slipways Nos 2 and 3 survive in a much mutilated form as the Olympia Building, the original roof having been largely replaced between 1880 and 1913 (Fig. 21).

The archaeological evidence suggests that slipways Nos 4 and 5 were also rebuilt in the mid-1840s, the form of construction and material as identified in the 2011–2012 excavations being identical to that in slipways Nos 1, 2, and 3 (Fig. 22). A drawing of 1844 records both these slips as 'old' suggesting replacement was after that year and probably after 1845.[24]

Fig. 21: Olympia Building, 2011
(© Duncan Hawkins)

Fig. 22: Slipway No 5 as rebuilt *c.* 1844–46 (© MOLA)

Map and photographic evidence (Figs 12 and 23) shows that slipways Nos 4 and 5 had been previously provided with wooden 'roofs'. The construction of these was discontinued in 1842 as a fire risk, with wood being superseded by iron. Slipways No. 4 and No. 5 were however evidently reconstructed under these wooden slip cover buildings, which were retained until the closure of the Dockyard in 1869, though then progressively demolished between 1869 and 1916.

Fig. 23: interior of wooden cover building over slipway No 5, c. 1880
(© Courtesy of Lewisham Local History and Archives Centre Thankfull Sturdee Collection PH 71-4158 LS34)

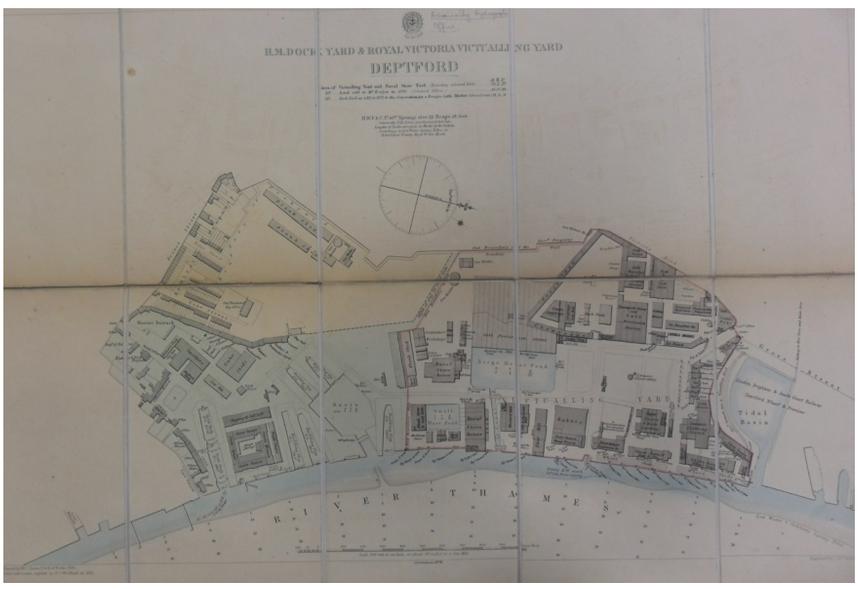

Fig. 24: map of Deptford Dockyard, 1878 (© Courtesy of Institution of Civil Engineers 1878 ADMNDP)

Fig. 25: timber baseplate to Tank Shed
© MOLA)

The brick foundation piers of these cover buildings were identified, with cut off timber standards still in place. However, analysis of the surviving internal photograph of the wooden 'roof' over Slipway No. 5 (Fig. 23) shows that the complexity of the wooden structure could never have been reconstructed from the surviving archaeological evidence alone.

Interestingly, examination of the workmanship in the rebuilt slipways Nos 1 to 5 and particularly the timber decking, brickwork, lime concrete and foundations for the iron cover buildings to Slipways Nos 1, 2 and 3 showed that these were often crude, poorly executed and in places defective. The builders George Baker and Sons were at this time in 'sharp' competition with other contractors for Admiralty contracts; while project management by the Admiralty Works Department could be weak. At Chatham similar workmanship by Baker and Sons led to the near collapse of several slipways and their cover buildings.[25]

Investigation of part of the range of officers' houses, the plank store and sail loft, Naval Store House, saw pits and plank sheds, revealed truncated foundations comprising a few courses of brickwork or timber base plates (Fig. 25) all superstructure and floor levels to the buildings having been entirely removed.

Parts of the Dockyard smithy were examined in an area excavation in 2011–2012. Evidence for the bases of hearths and flue work was identified, together with the base for an early Victorian steam hammer. The majority of survival was at foundation level, making recovery of the process flow within the building impossible (Fig. 26).

The Dockyard was finally closed in 1869, the last ship built in the yard being the sloop "Druid" launched on the 13th March of that year.

Fig. 26: excavation of the Dockyard Smithy, 2012 (© MOLA)

Conclusions

Significant programmes of stratigraphic, artefactual and documentary analysis are likely to refine and expand the analysis presented in this paper, though the general overview of the principal heritage assets forming the archaeological resource, as presented here, is unlikely to alter fundamentally. The archaeological team, through implementation of the SARM, is also providing direct input into the design process for the new development, working with the local community, the project architects and master-planners, the London Borough of Lewisham, English Heritage and specialist interest groups to create an unique character to the future developments, layout and architecture which will reflect the site's maritime history.

The full report of the excavations up to 2012 will be published by MOLA in their monograph series as *The Deptford royal dockyard and manor of Sayes Court, London: excavations 2000–12*, by Antony Francis

Duncan Hawkins BA, MSc, FSA, MCIfA is a company Director and archaeological and heritage consultant. He is currently advising on proposals to redevelop the former Royal Dockyard at Deptford. Former projects include work on various parts of Chatham Dockyard, the site of the East India Company's Deptford Dockyard, The Forge, Millwall, and Penn and Son's Boilerwork's at Paynes and Borthwick Wharves, Deptford. Duncan is co-author of a paper on Deptford Dockyard and co-author of a paper on the Forge, Millwall and Paynes and Borthwick Wharves, Deptford.

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10. The National Archives, ADM 12/291; 1833.

11. The National Archives, ADM 12/299; 26/31834.

12. *Ibid.*

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15. The National Archives ADM 12/299, 17/10/1834.

16. The National Archives, ADM 12/309; 22/5/1835.

17. The National Archives, ADM 12/345 1838; ADM 12/357 1839.

18. The National Archives, ADM 12/384; 5/4/1841.

19. *Evans, op. cit.* fn 5, 115, Plates 94 and 95.

20. *Op. cit.* fn 7.

21. The National Archives ADM 12/397; 30/11/1841.

22. The National Archives ADM 12/428; National Maritime Museum ADM/Y/D/11, 1844.

23. R.J.M. Sutherland 'Shipbuilding and the long span roof' in R.J.M. Sutherland (ed) *Structural Iron 1750-1850 studies in the History of Civil Engineering* **9** (1997) 123–142, Table 1, p. 133.

24. National Maritime Museum ADM/Y/D/11, 1844.

25. Coad, *op. cit.* fn 5, 49.