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THE HULKS OF A 19TH-CENTURY COWES KETCH AND A LIGHTER AT CENTENARY QUAY, WOOLSTON, SOUTHAMPTON

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ABSTRACT

The redevelopment of the former Vosper Thornycroft shipyard in Woolston, Southampton led to the discovery of two hulks of 19th-century vessels in remarkable states of preservation. The craft have been identified as those of a Cowes Ketch (also known as a Solent Barge) and a lighter or dumb barge. These are rare examples of local workboats whose numbers, once relatively large, have declined to presumed extinction within the last century. This article presents a summary of the results of the archaeological investigations of the hulks before and after their removal in advance of the construction of a 27-storey tower overlooking the River Itchen.

INTRODUCTION

In 2009, two largely complete hulks were exposed alongside the shoreline of the River Itchen in Woolston, Southampton (NGR SU 43433 10749). The vessels, a Cowes Ketch (also known as a Solent Barge) and a lighter or dumb barge, had been found during remediation and clearance work in advance of the Centenary Quay development at the former Vosper Thornycroft shipyard. The degree of preservation of the remains was exceptional and the two craft were virtually complete from the keel up to the level just above the deck, with only relatively minor deterioration and collapse affecting the timber frames.

Site location and history

The site, now known as Centenary Quay, is located within a portion of reclaimed foreshore that was occupied by the former Vosper Thornycroft shipyard (Fig. 1) in what was considered a brownfield site.

This part of the shore has been radically transformed over the last 150 years. In the mid-19th century the riverfront was associated with the ballasting of ships coming to and from the Southampton Docks, which lie opposite the site, across the River Itchen. Two ballast wharves and a service jetty were built on the Woolston side of the shore to help with the operations (shown on Brannon's map of 1848).

From the 17th century shipbuilding had been a major industry on the west bank of the Itchen, but in the mid-19th century shipyards were established on the east bank (Rance 1981, *passim*). Luke's yard at Itchen Ferry built fishing boats and also larger vessels such as the ketch *Robert and Sara* of 1876. She was 62ft long, with a beam of 18.4ft, and had a gross tonnage of 39.7 tons. John Foot had a yard close to the Floating Bridge where yachts, fishing boats and trading ketches were built (Rance 1981, 57). The 1868 Ordnance Survey (OS) map shows a shipbuilding yard some 160m north of the current site. This was probably the Victoria Wharf establishment of Messrs Millward and Payne, listed there in the 1863 directory. Payne's had been building boats in Southampton since at least 1841 and the name of Payne dominated the British Yachting scene until the 1920s (Rance 1981, 49). In 1876 the firm of Thomas Ridley Oswald, later becoming Oswald, Mordaunt & Co, relocated from Sunderland and established its premises at the Victoria Wharf site. The yard was the first to start large-scale iron ship building in the Woolston area. Specialising in large bulk carrying iron vessels it launched over 100 vessels in the years up to 1889 when the firm moved the operation to

Fig. 1 Site location plan

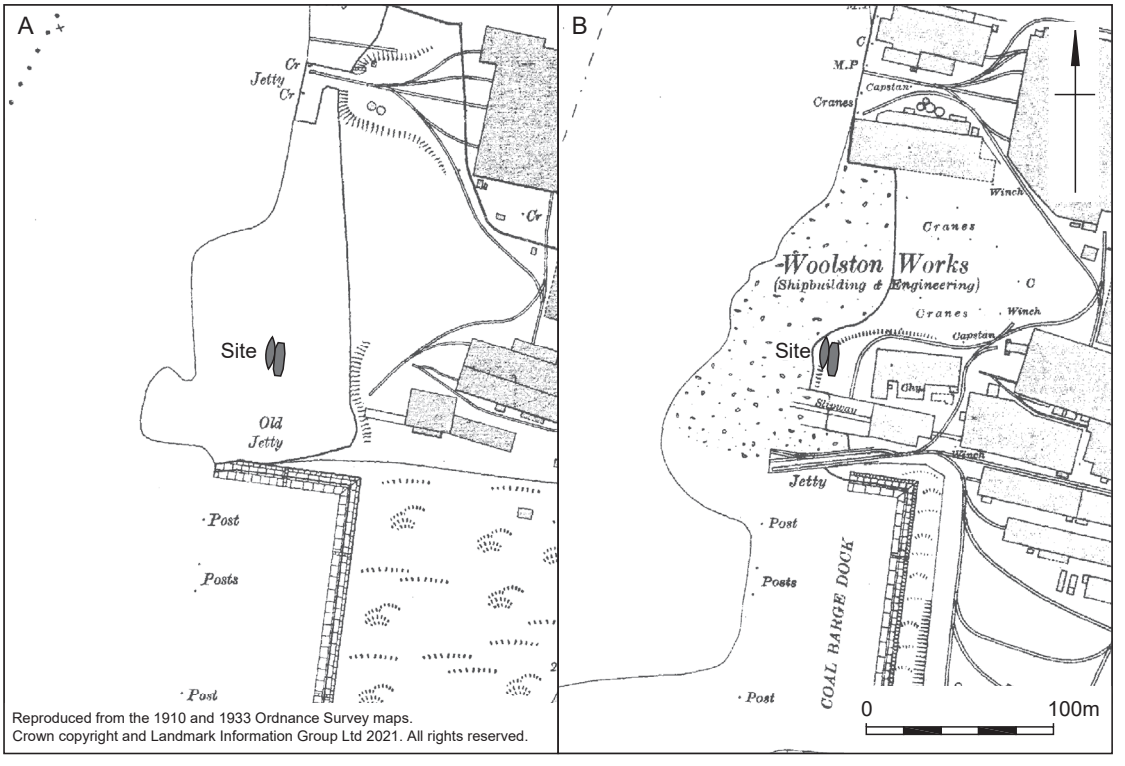

Fig. 2 Details from the Ordnance Survey maps of 1910 (a) and 1933 (b), showing the location of the hulks

Milford Haven (Rance 1981, 62; Grace's Guide to British Industrial History).

A series of acquisitions followed. First, the yard was taken over by the Southampton Naval Iron Works, then it was occupied by the Northam yacht builder J.G. Fay & Co in 1897, until the yard was purchased by Mordey Carney & Co in 1900. Finally, the yard ended in the hands of John I Thornycroft & Co in 1904. Thornycroft (Vosper Thornycroft after the merger with Vosper in 1966) remained in Woolston for over a century, dominating the waterfront until the early 2000s when production was moved elsewhere.

In the years around the First World War and during the interwar period the Thornycroft Works expanded considerably to accommodate the surge of orders from the Royal Navy. The Ordnance Survey 25inch survey of 1910 shows the site of the hulks as foreshore, while the edition of 1933 shows the site reclaimed (Fig. 2). An aerial photograph of the Thornycroft works, taken from a position over the Southampton Docks in 1928, shows the reclamation in progress with two further hulks about to be buried. (Britain from Above, ref. EPW020528). Just behind it there is a slipway and, further into the distance, several other lighters, all full of coal, moored at what was then called the 'coal barge dock' (OS 25-inch map of 1933).

Further developments took place during and after the Second World War and a concrete quay can be seen over the site in RAF photos of 1946. A substantial modernisation of the shipyard took place in the 1970s.

Discovery and excavation of the hulks

The two hulks were surveyed and partially excavated by the Southampton City Council Archaeological Unit at the time of their discovery in June 2009 (Cottrell 2009). After

the initial investigation it was decided that full excavation was inappropriate due to concerns for the structural integrity of the remains, so the hulks were re-buried until further work could take place.

Unfortunately, the opportunity for full excavation never transpired. In 2018 Wessex Archaeology was commissioned by CgMs Consulting (now RPS) to re-expose the hulks and complete the record of the remains (Wessex Archaeology 2019). After the first exploratory trenches were undertaken, it became apparent that in the nine years that had elapsed since the initial investigation there had been significant changes to the Itchen shoreline which was now approximately 15m to the east of its position in 2009 and had a much steeper profile. As a result of ground remediation, consolidation and construction works that took place after 2009, the two hulks were now found to be buried much deeper than had been anticipated and within reach of tidal waters. Because of the changed circumstances, concerns were raised with regard to the risk of pollution of the Itchen Estuary SSSI with brownfield contaminants, as well as the threat of damage to the new shoreline defences immediately adjacent to the site of the hulks.

Due to these limitations, the hulks were sequentially part-exposed, dismantled and removed with an excavator, then the constituent parts transported to a location where they could be stored for inspection and recording by the monitoring archaeologists.

THE VESSELS

The hulks were found under a raised bank on the foreshore, laid upright, side by side, and parallel to the direction of the shore, with the Cowes Ketch closer to the river and the lighter adjacent to the shoreside (Fig. 3).

The remains were identified at the time of discovery as those of a lighter and a Cowes Ketch (Cottrell 2009). These were local work boats which probably spent most of their operational life in the Solent's waters and may well have been built at a yard nearby.

From map regression and early photographs of the shipyard, the reclamation of this part of shore can be dated to the years between 1910 and 1933. The lighter had been converted to a mooring platform and there is some evidence that the Cowes Ketch might have been used as a dumb barge before being buried under industrial waste as the first stage of a further reclamation process during the expansion of the Thornycroft works. Given that the working life of vessels such as these could be in excess of 50 years, then it is reasonable to suggest that the two craft were built during the second half of the 19th century. However, as certain features of the Cowes Ketch are consistent with an early type of this class of vessel (discussed below), it cannot be discounted that the vessel could have been built as early as the first half of the 19th century. Nevertheless, the presence of iron reinforcements and machine-made hexagonal bolts hint at the years after the 1860s as a more likely date of construction (McCarthy 2005).

COWES KETCH

Background

The vessel closest to the river was a Cowes Ketch, or, as it is also called, a Solent Barge. This is a type of shallow draught, round-bottomed and double-ended wooden sailing barge that was used to transport goods in Solent waters (Greenhill 1997, 120). The type is local to the Solent area and there are references to its use from at least the late 18th century (Leather 1984, 146).

Averaging between 20 and 30 tons and able to load 30–40 tons on a shallow draught, these small cargo vessels populated the watersides and creeks between the major harbours of Southampton and Portsmouth and sailed the open waters off Spithead and the Isle of Wight (Leather 1984, 144; Finch 1976, 140–1). The bulk of their trade was grain and coal, but they could when necessary transport a variety of products, for example sand, shingle, potatoes, farming equipment, tiles, bricks, timber and various other construction materials.

An example of an early 19th-century Cowes Ketch can be seen in a plate entitled 'Cowes Boat leaving the harbour', engraved by E W Cooke in 1829 as part of his work *Fifty Plates of*

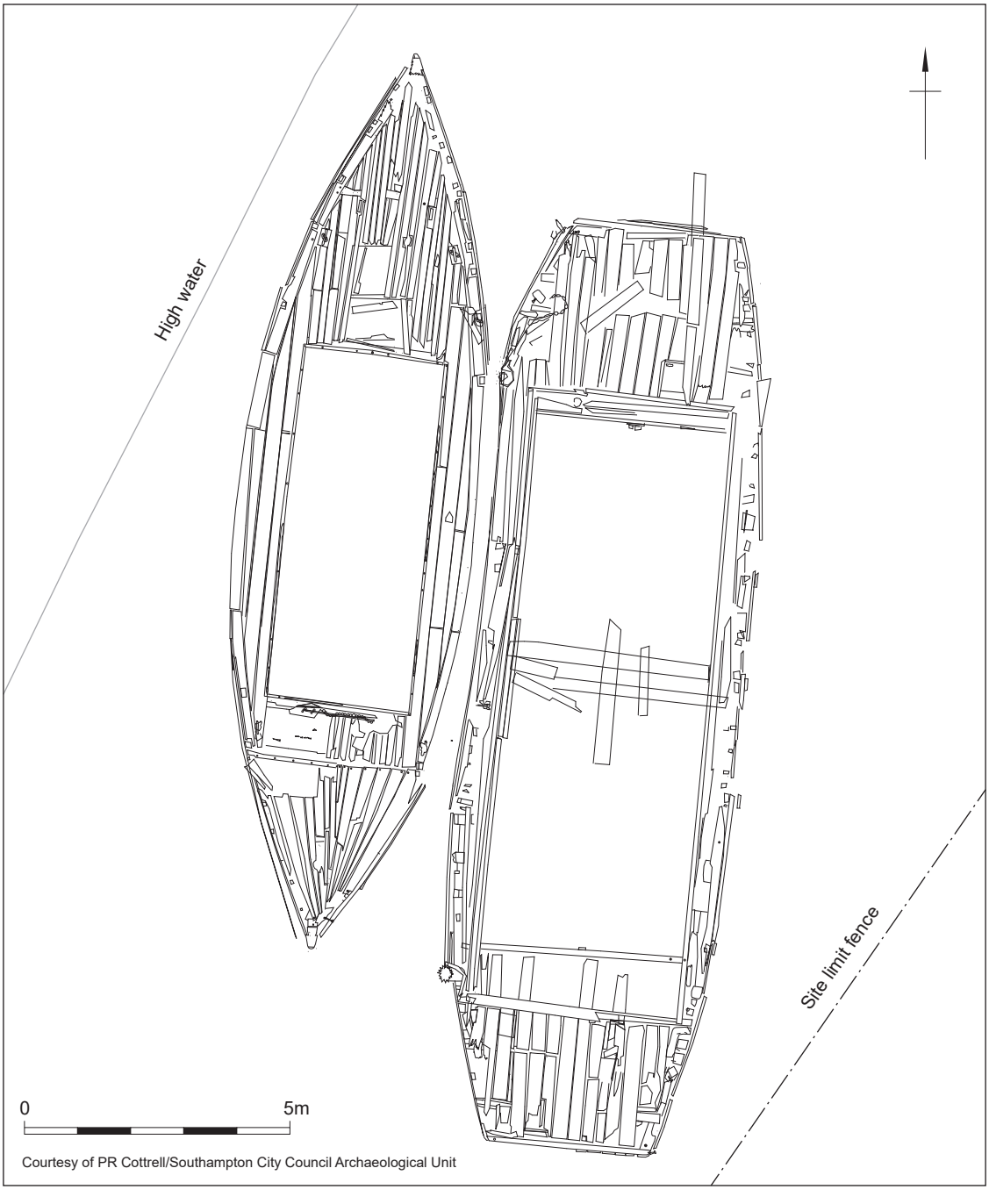

Fig. 3 Plan of vessels (SCCAU 2008)

Fig. 4 Engraving of a 'Cowes Boat' in *Fifty Plates of Shipping and Craft* by E W Cooke (1829)

Shipping and Craft. As shown in the illustration, in the early 19th century these vessels had full lines and a rounded bottom, they were rigged as a ketch – that is having a main and a mizzen mast, with fore-and-aft sails – steered by a tiller and had a recognisable rounded stern with open wooden rails which were also fitted to the fore deck (Fig. 4).

Throughout the course of the 19th century the form of the vessel changed quite significantly. The line became less full, the double-end became uncommon by the 1870s when they were replaced by a transom stern, and full bulwarks were preferred to the rails which were typical of the earlier vessels (Finch 1976, 140–1). The adoption of carvel planking is generally dated to the mid-19th century, in parallel with the local fishing vessels (Leather 1984, 146). As a result, by the late 19th century the type had developed into a carvel-built, closely-framed, transom-sterned, tiller-steered, ketch-rigged cargo vessel.

By this time also, the fittings on deck were quite similar to other small cargo barges: tiller-type rudder, a main sheet horse to work the gaff sail aft, a single large cargo hatch with low coamings, one smaller hatch leading to the aft cabin and another one for the forepeak store, a chain pipe fore of the main mast, handspike windlass and bowsprit bitts.

The rapid decline of trading under sail during the 20th century meant that these traditional crafts ceased to be economically viable and quickly became superseded by motorboats. Today, no reasonably complete example of a Cowes Ketch is known to exist by the authors.

Fig. 5 Cowes Ketch (background) and lighter (foreground), from the south-west (SCCAU 2008)

Furthermore, although the Solent Barges are mentioned in published works that deal with barges or traditional vessels (Carr 1971; Finch 1976; Leather 1984; Greenhill 1997), there is no detailed study that discusses their construction. Fortunately, we have general construction plans and sail plans of two representative Cowes Ketches, *Bee* and *Arrow*, as they were surveyed before being lost, and there are photographs of the *Bee* and other Cowes Ketches taken by Henry Oliver Hill (National Maritime Museum Greenwich, CCBB0029, P72065).

Bee was a Cowes Ketch of the early double-ended type. Launched at East Cowes in 1801, it sailed for more than a century before being hulked on the Isle of Wight in 1926. The vessel is reported to be still buried in mud on the west bank of the Medina (Isle of Wight History Centre). Registered for 27 tons, *Bee* had the characteristic pointed-stern and was carvel built, though it has been suggested that the vessel had been re-planked and was originally clinker built (Leather 1984). Its dimensions, 51ft long and with a beam of 14ft 6in, are not far from those of the vessel recorded in Woolston.

Arrow was the last Cowes Ketch to operate under sail and was laid up in 1938 (Leather 1984, 148) at an unknown location. Built at East Cowes in 1875, this was an example of the later local type with a transom stern and finer hull form. Registered for 20 tons she was 50ft long with a 14ft 6in beam.

The vessel

The hulk exposed at Woolston and identified as a Cowes Ketch measured 16.95m (55ft 7in) in length with a beam of 4.58m (15ft) (Fig. 5. See Appendix for dimensional data).

The vessel was missing her rudder, masts, and some of the other deck fittings such as the windlass and the bowsprit, possibly because she

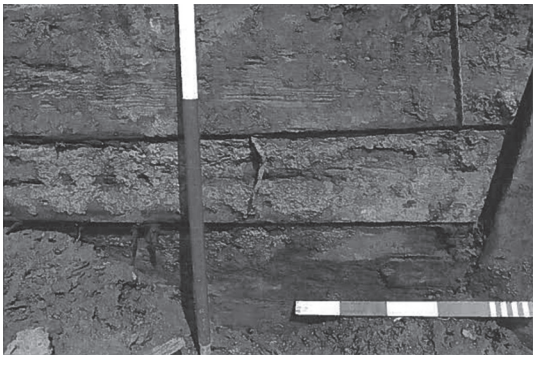

Fig. 6 Cowes Ketch: planking at stern, port side (SCCAU 2008)

had ceased to be used under sail. Whether this decision was taken when the vessel was made redundant or because it had been adapted for different work is not clear, but it was not unusual for sailing barges to be stripped of their masts and converted into dumb barges at some point later in their life.

Hardwood, probably oak, was used in the construction of the frames and beams whilst softwood, possibly pine, was chosen for the planking of the vessel. The use of iron or steel seems to have been limited to hanging knees, bolts and nails, and certain deck fittings such as the main horse sheet and cleats.

Each frame was doubled, fastened side by side and joined to the keel and keelson with a large iron bolt clenched over a washer. There was wide use of compass oak timbers for the V-frames at the bow and the stern, and hedgerow oak was also used for some of the wooden lodging knees. The planking was laid in carvel fashion and was caulked with fibrous material, probably oakum, and tar (Fig. 6). The planking of the vessel was fastened to the frames with iron nails and was topped with a thicker rubbing strake with a rounded outboard face (Fig. 7).

Fig. 7 Cowes Ketch: port side, deck plank removed to show internal framing and deck supports (SCCAU 2008)

The vessel was of the double-ended type. The stempost was approximately trapezoidal in section and had a deep rabbet to accommodate the ends of the outer strakes (Fig. 8a). Forward of the post a false stem piece was attached by iron bolts. The sternpost was slightly more upright than the stempost but it was otherwise similar in arrangement and dimensions (Fig. 8b). Furthermore, the stern piece had a line of holes on the port and starboard faces that marked the positions of iron bolts that fastened the gudgeon straps.

A single large cargo hatch measuring 6.61m by 2.68m divided the deck in to two parts. The

foredeck was 5.27m long and had similarly sized planks laid in the fore–aft direction. It sat on five crossbeams bolted onto the frames, a large carling running on the centre line between the stempost and the first beam, and two horizontal planks acting as shelves. It is likely that the top of the frame timbers extended upwards onto a rail or bulwarks that went above the deck level, but it appears that these had been truncated flush with the decking.

The deck fittings at the bow were consistent with those shown in the general plans of the *Bee*, apart from the fore hatch which seemed to be absent. The remains of the possible bowsprit bitt were visible just to port of the centre line, butting against the forward face of the last beam beneath the deck. The two standards that supported the windlass and the chain pipe below it were just aft of the bowsprit bitt. On both sides of the fore deck an iron cleat was fastened with two square headed bolts onto a wooden support. An area of missing planks just forward of the cargo hatch indicated the probable former location of the main mast.

The coamings of the hatch were made of thick planks that were protected by a strip of iron. The coamings were bolted directly onto the beams or through the planks of the side decks onto the half beams which supported the side decks. Iron hanging knees provided reinforcement to the structure and were attached with bolts secured with hexagonal nuts to the beams and half beams.

The side decks were planked with two planks curved to follow the profile of the boat and triangular planks in between as fillers. The side decks were flush to the upper edge of the last strake of the outer hull with no evidence of rails or bulwarks.

The afterdeck was slightly shorter than the foredeck, measuring 3.08m from the very end of the stern to the aftermost coaming of the cargo hatch. It was decked with planks that tapered radially towards the sternpost and supported in a similar way to the fore deck by four transverse beams. Immediately aft of the cargo hatch was the mainsheet horse, an iron or steel rod that ran athwartships and had an inverted U-shape. A large chain twisted around the horse

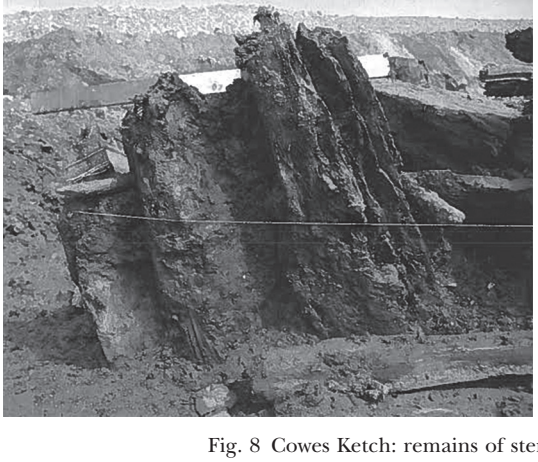

Fig. 8 Cowes Ketch: remains of stem (a) and sternpost (b) (SCCAU 2008)

suggested that the horse had been re-purposed. At a distance of 1.5m from the sternpost, and cut on the centreline of the vessel, was a circular hole suggesting the position of the mizzen mast. Finally, an approximately rectangular area of missing planking showed the location of a possible cabin hatchway.

The hold contained a light yellowish-brown sand with grey patches that could be moulding sand from the shipyard and was possibly of local origin. On top of this, filling most of the space beneath the fore and after decks, was a dumped deposit of gravel, iron slag and other industrial refuse including coal, cinders, fragments of fire bricks and graphite crucibles, building material and scraps of rope.

LIGHTER

Background

The lighter, also called a dumb barge, is a simple flat-bottomed box-like craft used for transportation of bulk cargoes such as coal, stone and aggregate in riverine and sheltered environments. These craft did not have an autonomous means of propulsion as they were not equipped with a sail or an engine. Therefore, to move up and down the rivers and canals they relied on the force of the tide, horses or, especially in the later years, were towed by a tug. Instead of a rudder, they were steered by large oars called sweeps, although some also had a fixed fin under the stern that was termed a 'budget' (Greenhill 1997, 91).

Lighters were the real workhorses of harbours and rivers and they were common in the 19th and early 20th centuries (Dawkes & Goodburn 2009). Lighters were initially built in wood, usually according to the 'bottom-first' tradition, but quickly adapted to the new boat-building materials of iron and steel, and became larger. The traditional wooden types were rapidly replaced by their new iron or steel counterparts, and, as often is the case for ordinary crafts such as these, there was little record left of them.

In the late 19th and early 20th centuries many of these craft would have been seen swarming around and loading or unloading steamers in the waters between the Southampton docks and Woolston as well as carrying cargo locally. Their main job was the transportation of bulk cargo and, in particular, the bunkering and ballasting of incoming and ongoing steamers.

The vessel

The lighter discovered at Woolston had the characteristic swim-headed ends, similar to those of a punt which are square-cut. The sides were straight but came in slightly towards the bow and the stern (Fig. 9).

It had a flat bottom so that it could beach and dry out at low water. Although the lower hull could not be seen in its entirety, the presence of a flat bottom with a hard chine was confirmed by the shape of the floors and frames that were recorded after their removal by machine.

The overall dimensions of the lighter were 17.55m (57ft 7in) long by 5.29m (17ft 4in) across, which made it slightly longer and broader than the Cowes Ketch (see Appendix for dimensional data).

The timbers used in the construction of the planking and the framing consisted of pine, though the concurrent use of other species for some large structural pieces cannot be completely ruled out as only some of the timbers were assessed by a specialist.

The outer hull was carvel planked with the planks attached to the frames with iron fastenings. The floors that ran amidships were straight and joined to the frames with bridle joints, a type of connection that is well attested in the traditional building methods of Thames Barges, and has been previously documented in lighters (Dawkes & Goodburn 2009; Cooper 1955, 37).

Underneath the bow and the stern, the hull sloped down at an angle but the presence of a budget under the stern could not be confirmed. The transoms were each made of a single substantial timber that ended with a deep lap rebate that accommodated the longitudinal beams or shelves that ran along the frames for the length of the deck.

At deck level the large cargo hatch of over 9.9m by 3.81m was the main feature. The coamings that lined the hatch were fastened to the crossbeams below with iron bolts, and under the port and starboard sides a thick

Fig. 9 Cowes Ketch (left) and lighter (right), from the south (SCCAU 2008)

plank that acted as a shelf was attached, so that loose boards could be temporarily laid down to protect the cargo from the weather.

Within the fore end of the cargo hatch there was a small decked area with (collapsed) planks laid across. This was defined by a second, lower coaming and contained a chain pipe. At the aft end there was a similar decked area, although in this case the planks were laid fore and aft and the decked area was slightly larger.

The cargo hatch was divided into two parts by a timber that ran athwartship slightly forward of the centre of the hatch. This timber was topped by a roughly finished longitudinal plank and supported by a vertical post located approximately on the centre line of the vessel and probably sitting on the keelson.

The deck fore and aft of the hatch was supported by heavy crossbeams, some of which had collapsed, and these were fastened to the frames with iron bolts. All the deck planks were of approximately similar width, laid in the fore and aft direction and flush with the top of the hull. A small square hatch was cut slightly off centre in both decks. Similar hatches can be seen in historic photographs of lighters and it is likely that were used to store ropes, other equipment or to access a cabin. On each side of the hatch the deck was made of two wide planks that rested on deck carlings.

The fill of the hold comprised industrial waste, similar to that in the upper part of the hold of the Cowes Ketch, and dumped in and around the vessels after they were abandoned.

The lighter had subsequently been adapted as a pontoon or makeshift jetty. Two substantial posts, made of a different wood to the rest of the structure, possibly elm, had been driven through the hull near the corners of the main hatch. The timbers were probably used as bollards as one was still wrapped with an iron chain. On the side towards the shore, the hulk

had four large fenders fastened with bolts that went through the hull and the frames. These would have protected the lighter when it was tied to a fixed structure or a moored ship.

CONCLUSIONS

Although attempts to find the names of the vessels were not successful, and their individual histories remain unknown, the excavation and recording, albeit partial, has provided an insight into the techniques and materials used in the shipbuilding traditions of these two local craft.

As often is the case, once-common and not-so-picturesque workboats such as these are rarely recorded in detail by the historical sources, while the variety of traditions and changes in design are often not registered in the written records. Apart from a few general studies on regional barges, there is no specific study of the construction of Cowes Ketches and only a handful of articles take lighters into due consideration (Dawkes & Goodburn 2009; Milne *et al.* 1999).

Therefore, critical study of the remains of traditional boats might offer clues as to what these watercraft were like before they were superseded by the introduction of motor vessels and new materials.

Unfortunately, overriding safety and environmental constraints limited the scope and results of the investigation and the timbers that were recovered could not be retained as they were assessed as potentially contaminated by the former industrial use of the site.

Notwithstanding these limitations, which fortunately apply only to a limited number of sites, opportunities for investigation, such as those provided by the redevelopment of Centenary Quay in Woolston, should be fully grasped wherever possible.

ACKNOWLEDGEMENTS

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The 2018 fieldwork was directed by Phil Andrews and Tom Blencowe, while the subsequent recovery and recording of the remains of the hulks in 2019 was overseen by Paolo Croce, with the assistance of Lowri Roberts, Robbie Trevelyan and Phil Trim. This report has been edited by Phil Andrews and Philippa Bradley, illustrations are by Kitty Foster, and the project managed by Toby Gane on behalf of Wessex Archaeology.

We would also like to acknowledge the Southampton City Council Archaeological Unit, particularly Pete Cottrell and Mike Smith who supervised the earlier work in 2009, and whose records have proved invaluable to the current project. Graham Dall and Francesco Caputo also deserve mention for all their hard work in exposing and cleaning the hulks. Figures 3 and 5–9 have kindly been provided by Andy Russel, Archaeology Unit Manager, and have been adapted by Kitty Foster for publication here. Final thanks go to Julian Whitewright who made a number of constructive comments on an earlier draft of this report.

The project archive will be deposited with Southampton City Council under site code SOU 1509.

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APPENDIX VESSEL DIMENSIONAL DATA

Cowes Ketch

Overall length	16.95m
Beam	4.58m
Cargo hatch opening	6.61m by 2.68m
Foredeck	5.27m long
Aft-deck	3.08m long
Floors	95–150mm sided by 210–260mm moulded. Iron bolts (40mm diam.) with square washer (75mm sided) to keel
Frames (possible)	85–160mm sided by 90–100mm moulded
Stem post	360mm fore–aft, 172mm sided. Rabbet 70mm deep and 34mm wide. Treenails 30mm (diam.)
Beams	210–270mm sided by 170–220mm moulded. Iron bolts (30–35mm diam.)
Ledges	130mm sided by 50mm moulded
Knees, wooden	Arms 640–545mm and 510–470mm, 110–235mm thick at throat, width 110mm. Square iron nut and bolt (25mm diam.) through throat.
Outer planking	230mm wide, 28–35mm thick
Deck planking	80–270mm wide
Coaming	300mm wide and 80mm thick

Barge

Overall length	17.55m
Beam	5.29m
Cargo hatch opening	9.90m by 3.81m
Floors	150–230mm sided by 130–170mm moulded. Treenails (25mm diam.) or bolts (30mm diam.) with square washer (60mm sided) to frame. Spacing 330–340mm ?.
Frames	Moulded 120–170mm by 110–180mm sided. Treenails (35–40mm diam.) to outer planking
Beams	250–268mm sided
Ledges	160mm moulded by 115mm sided (iron bolt 20–25mm diam.)
Knees, iron	560–500mm by 100mm wide, with screws and bolts (15mm) with square washers (50mm sided)
Bottom planking (possible)	400mm wide by 70mm thick
Deck planking	215–280mm wide and 70mm thick. Max length 3105mm
Outer planking	50–70mm thick
Possible transoms	80mm thick (fore/aft), 150–230mm wide and 3100mm long
Coamings	70–80mm thick