

FURTHER FIELDWORK AND POST-EXCAVATION: MAGOR PILL, GWENT LEVELS INTERTIDAL ZONE

by Nigel Nayling

Fieldwork on the foreshore at Magor Pill, a tidal outlet on the coast of the Gwent Levels, has been the subject of papers in the last two Annual Reports. Allen and Rippon (1995) described the complex of palaeochannels exposed on the foreshore and associated, but often transported, artefacts. In last year's Annual Report, the discovery, excavation and recovery of a medieval wreck from within these palaeochannel deposits was briefly described (Nayling 1996). This report summarises ongoing results from post-excavation analysis of the wreck and,

firstly, interim results of additional fieldwork carried out at Magor Pill in 1996.

A second wreck at Magor Pill

During an initial geoarchaeological survey of the intertidal palaeochannel system exposed on the foreshore at Magor Pill, Allen and Rippon (1995) noted a variety of apparently *in situ* structures and transposed material, much of which could have been associated with either the former landing place/harbour of

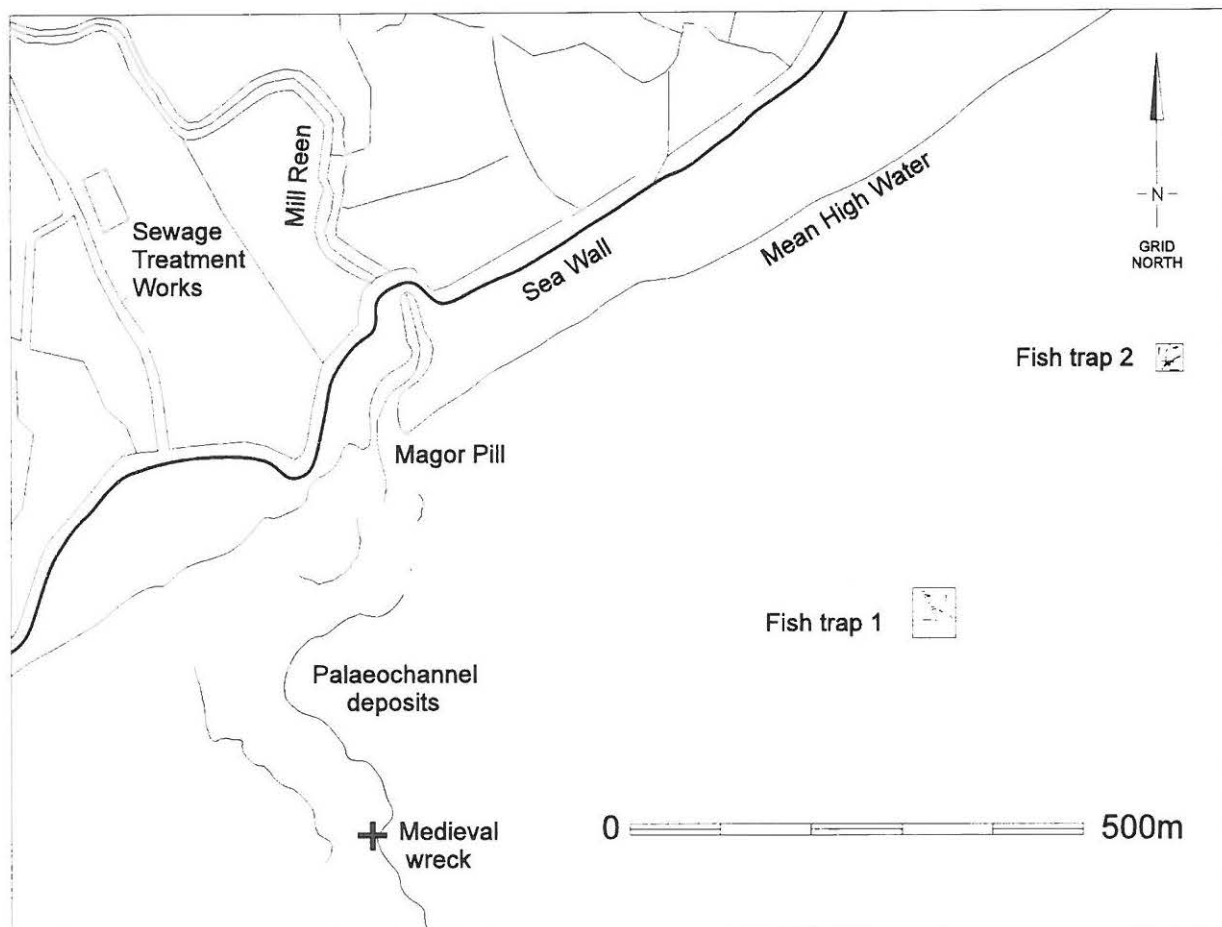


Figure 1: Magor Pill and its environs. Location of palaeochannel deposits after Allen and Rippon 1995.

Abergwaitha or with fishing practices. One structure identified during the geoarchaeological survey of the area (Allen and Rippon, 1995b, 31), was located approximately 75 m north of the medieval boat find in part of the foreshore which is never completely dry as water entering the Severn from the gout at Magor Pill crosses the area during low tides (fig 1).

During fieldwork in the vicinity, to excavate and subsequently recover the 13th century wreck in the summer of 1995, it was noted that these remains had become more exposed with mobile sand and gravel having been scoured from its surface. It became clear that the timbers comprised at least 4 m in length of a clinker built vessel lying upside-down with the keel uppermost. The keel form was sufficiently different from the previously excavated wreck to suggest that this fragment was from a separate vessel.

At the beginning of the winter of 1995/6, the remains were covered with geotextile and steel mesh to reduce further erosion and discourage damage by bait diggers. Subsequently, an application to



Figure 2: Magor Pill Boat II: the vessel during excavation and sampling. Scale 1m.

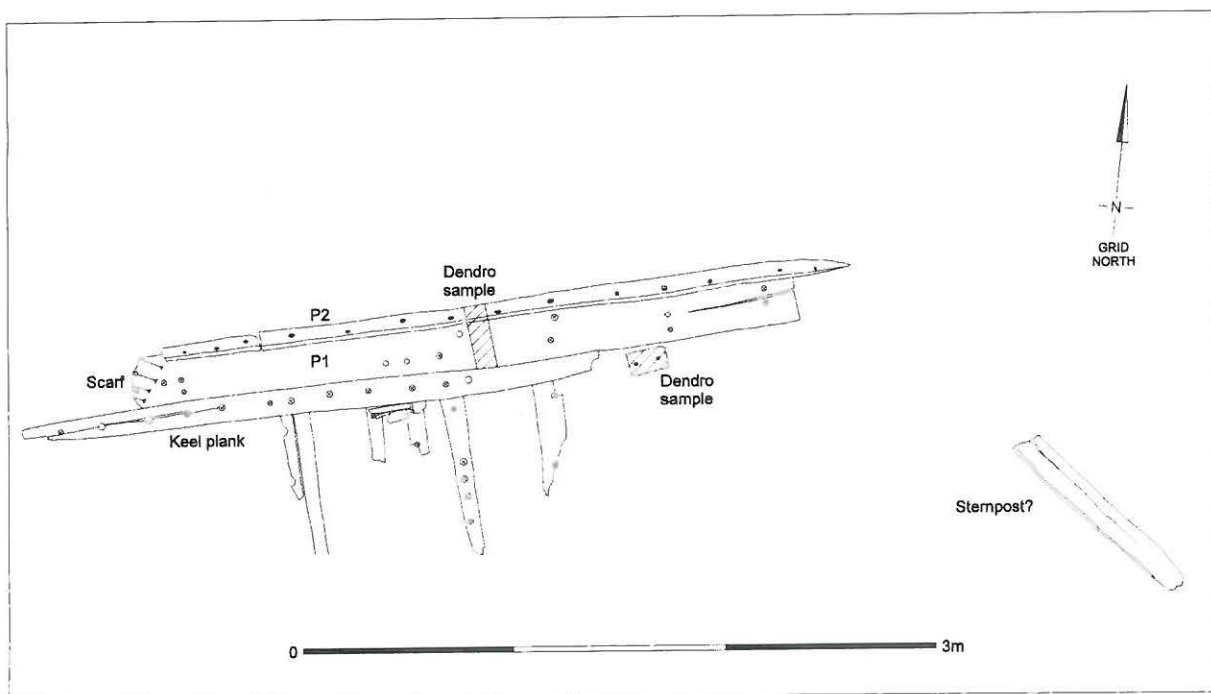


Figure 3: Magor Pill Boat II: the vessel remnants, which are upside-down, appear to consist of a keel plank, the remains of the port-side garboard strake (P1), the second port strake (P2), the remains of five floors and a possible stempost. The presence of treenails is indicated by a cross in auger holes.

carry out an evaluation of the site was made to Cadw (Welsh Historic Monuments) which provided the Glamorgan-Gwent Archaeological Trust with funds to carry out this work.

The evaluation sought to characterise the nature of the remains through limited excavation and to recover dendrochronology samples to provide an indication of date. During removal of the semi-mobile surface sediment of sand and gravel, it became clear that the timbers were not stratified within the palaeochannel deposits, but rather lay within this surface matrix of mobile material with only the ends of some floor timbers extending into the underlying palaeochannel deposits. Probing of the surrounding area located a further timber to the east which was subsequently enclosed within an additional bund of sandbags and exposed. Following completion of recording, the timbers were covered in geotextile matting and sandbags.

Although the vessel was found in close association with palaeochannel fills, it cannot be considered stratified. At present it seems possible that the vessel has been exposed, and possibly transported a limited distance, through natural erosion of nearby palaeochannel deposits. There was partial survival of sufficient structural elements to make some initial observations on the original boat building techniques and attributes. All timbers appear to be oak (*Quercus* Spp.) with the possible exception of treenails (see figs 2 and 3).

A timber 2.76 m long, up to 130 mm wide and approximately 50 mm thick is interpreted as a keel plank: it was proud of the adjacent hull plank, had treenails at between 100 mm and 250 mm along its length attaching it to presumed floor timbers and had slightly angled faying surfaces along both sides to take hull planks. Its conversion was not clear during the evaluation. It was not complete with an uneven break at its eastern end across an auger hole for a treenail. The western end appeared to have been cut in antiquity, possibly to form a scarf to join the timber to a continuation of the keel or to a stempost.

A substantial and apparently complete, tangentially-converted plank, butted against the

north side of the keel, measured 3.17 m long, up to 275 mm wide and 33 mm thick. Clear saw marks survived on the timber's outboard surface. Its eastern end appeared to be a cross-cut butt end rather than a scarf as seen on the western end where a short, angled scarf up to 150 mm long had been cut with an adze/axe. Two iron fastenings at the feather edge of this scarf suggest the timber had been attached to the next plank at this strake by iron nails. The angle of the scarf, with the outboard face worked rather than the inboard, suggests that the west end of the vessel was the forward end. It follows that this plank was the garboard strake on the port side (P1). On the evidence of the dendrochronological sample taken, there would appear to be a well-defined bevel forming an angled land of approximately 5 mm along its outboard northern edge.

Fragments of two planks attached to this garboard strake with iron fastenings at intervals of 150-300 mm formed the remains of P2. The fastenings appeared to be nails driven from outboard: these were most probably secured on the inboard face of P1 by being clenched over roves. On the evidence of the slice taken out during sampling of P1 for dendrochronology, the planks of this strake were also tangentially converted. A compressed mat of unidentified material on the land between P1 and P2 is interpreted as the remains of caulking. The sternmost plank measured 2.80 m long by 95 mm wide (incomplete) by approximately 30 mm thick. It appeared to butt the forward plank (which measured 0.66 m by 80 mm by c 30 mm). Neither of these planks survived to their original full width and no remains of P3 or other strakes survived.

An unattached timber, located just to the east of the keel plank, had no clear function but given its tangential conversion, iron fastenings and dimensions (130 mm by 93 mm by 25 mm) is interpreted as part of the vessel, possibly from the interior.

Approximately 1 m to the south-east of the main remains an eroded timber 1.05 m long by 150 mm by 150 mm could be part of the vessel. It has an irregularly converted oak timber with an apparent crack which could be a cut rebate to take the angled ends of hull planks. It could therefore be the remnants of a sternpost.

The floor timbers which made up five apparent frame groups, all oak with relatively small scantling, seem to have been cut from straight-grained timber rather than having been made from 'natural crucks'. Their irregular spacing, and the presence of timbers on the inboard face of the keel plank between them suggested the presence of a mast step or keelson. Treenails on P1 suggested the former presence of an additional three frame groups, and that frame groups were generally spaced at intervals of 0.4-0.5 m.

The remains exhibit sufficient attributes to allow confident interpretation as elements of a boat hull. The sawn tangential planking, the shallow draft of the keel plank, and the small scantling of the floors argue against these being elements of the vessel previously recovered some 75 m to the south. The separate timber to the east may be part of this second vessel. The method and conversion of the planks suggest the boat post-dates Magor Pill Boat I: in his recent review of boat fragments from the Port of London, Marsden (1996, 184) observed the occurrence of sawn tangential planking only in later, 16-17th century, material. The conversion of the few published examples of frames from the same date range from London (Marsden 1996, fig 187) are also in accord with the limited observations of the frames from Magor Pill II. Analysis of the tree-ring samples did not produce an absolute date, but a subsequent radiocarbon sample gave a delta 13-corrected age determination of 410 ± 50 BP (SWAN-237). Calibrated to two standard deviations, this gives date ranges of 1416-1528 AD and 1554-1634 AD (using OxCal v2, Stuiver and Pearson 1986).

Medieval fish traps

Post-excavation assessment of the medieval wreck recovered in 1995 identified the need to clarify, if possible, the contemporary 13th century landscape. Whilst analysis of environmental remains could provide information on vegetation (see below), the location of the

coastline at this time although suspected to be substantially further out to sea than at present on the basis of cartographic and documentary evidence, is not well defined. Magor Pill has been linked to the former harbour or landing place of *Abergwaitha*, recorded as having been lost to the sea in the 14th century although the place name is still present on 17th century maps. Significant set back of the sea wall during the 13th or 14th century would be in keeping with landscape development seen elsewhere in the Gwent Levels.

It was felt that this evidence could be complemented through rapid survey and dating of a small sample of numerous remains of fish traps located to the east and north of the palaeochannel complex. On the foreshore between Magor and Collister Pill to the east, formerly thick layers of sand and gravel have been actively eroding in recent years, exposing one of the most prolific concentrations of stake structures on the Severn coast. Some of these are hundreds of metres from the present saltmarsh edge, potentially datable by dendrochronology and, being fishing structures, could provide independent dating evidence for land loss through coastal erosion.

Two structures were selected for examination during a two week programme of fieldwork. Both were located far from the present shore, on a par with the find spot of the medieval vessel (fig 1), and contained split oak stakes with moderate to good dating potential. Following rapid survey, tree-ring samples were taken from eleven stakes. Seven of these dated.

Approximately 650 m to the east-north-east of the boat site, some 450 m from the present Mean High Water line, two linear concentrations of posts were recorded ('trap 1' on fig 1, fig 4). Although no attempt was made to clean the area, and only clearly visible posts were recorded, it was evident that the 60 m long, east-north-east facing line of posts consisted of at least nine V-shaped groups. Their size and spacing suggest that they formed a line of large basket traps similar to the three part baskets known locally as putts which have become

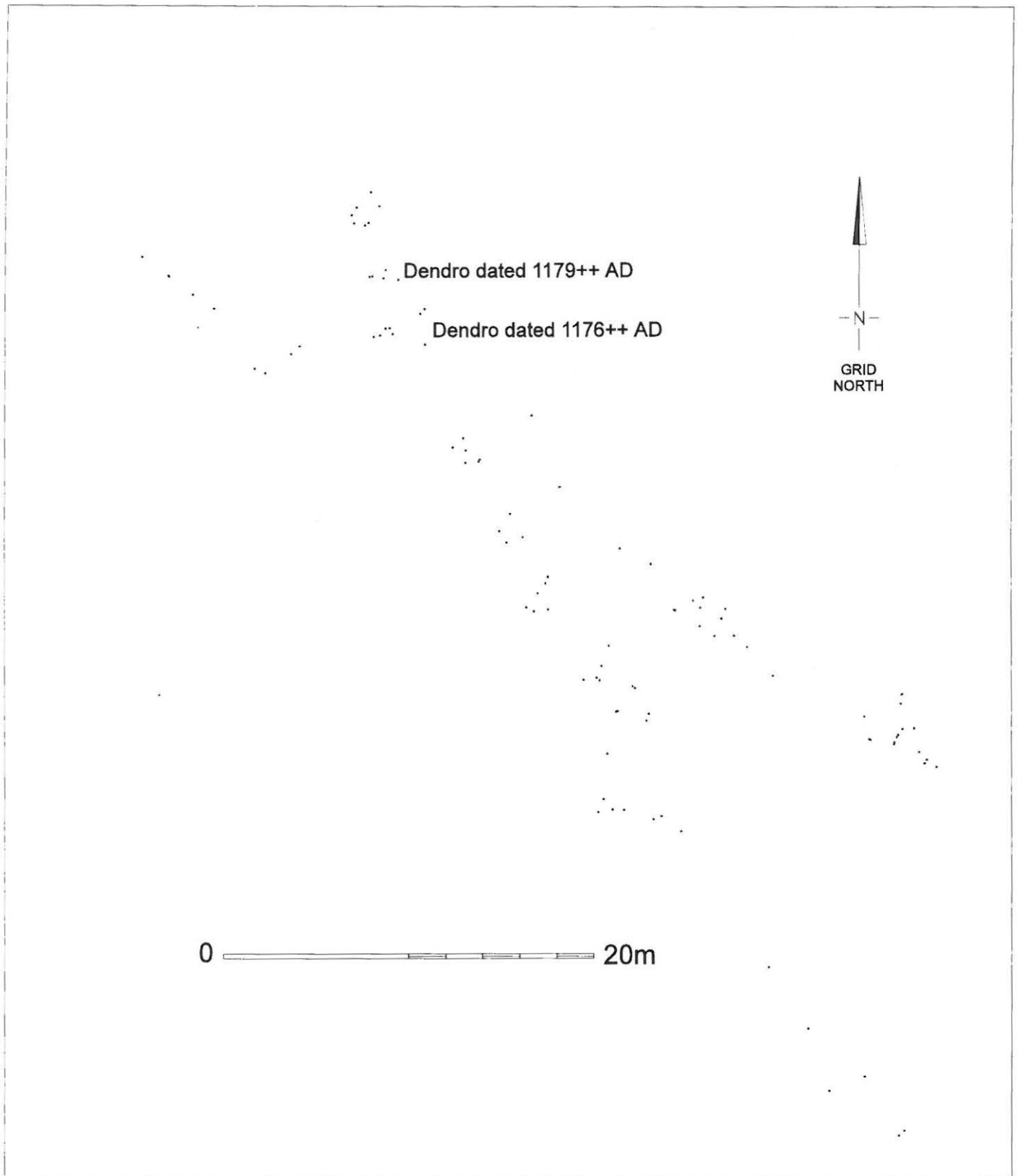


Figure 4: Magor Pill: Fish Trap 1

replaced by smaller baskets in putcher ranks. Their orientation indicates that they were designed to take fish on the falling tide. Samples from two of the V-shaped groups gave dendro-

chronological dates of 1176++ AD and 1179++ AD implying construction probably in the 13th century. A second irregular line of less well defined posts, some 50 m long and north-east

facing, remains undated but probably represents a separate phase, implying continuity of use.

A further 350 m to the east-north-east, some 350 m from the present Mean High Water line, a north-east facing structure comprising a V-shape concentration of posts 27 m long and 18 m wide at its mouth is interpreted as a fishing structure although its form is less familiar with no clear modern parallels ('trap 2' on fig 1; fig 5). The posts were predominantly non-oak roundwood but lesser numbers of split oak stakes were also observed. Tree-ring dates indicate initial construction in or soon after 1120 AD with repairs in 1149 AD, again

showing renovation of structures at the same site.

Whilst the relationship of the second dated structure to the contemporary coastline is unclear, lines of putt traps were usually located close to the salt-marsh edge. Hence the dating of the putt line provides additional data to support the view that the coastline at Magor Pill during the late 12th and early 13th centuries was located some 400-500 m out from the present Mean High Water line. The successful dating of this very limited sample of structures highlights the information potential of the many post alignments on this part of the foreshore.

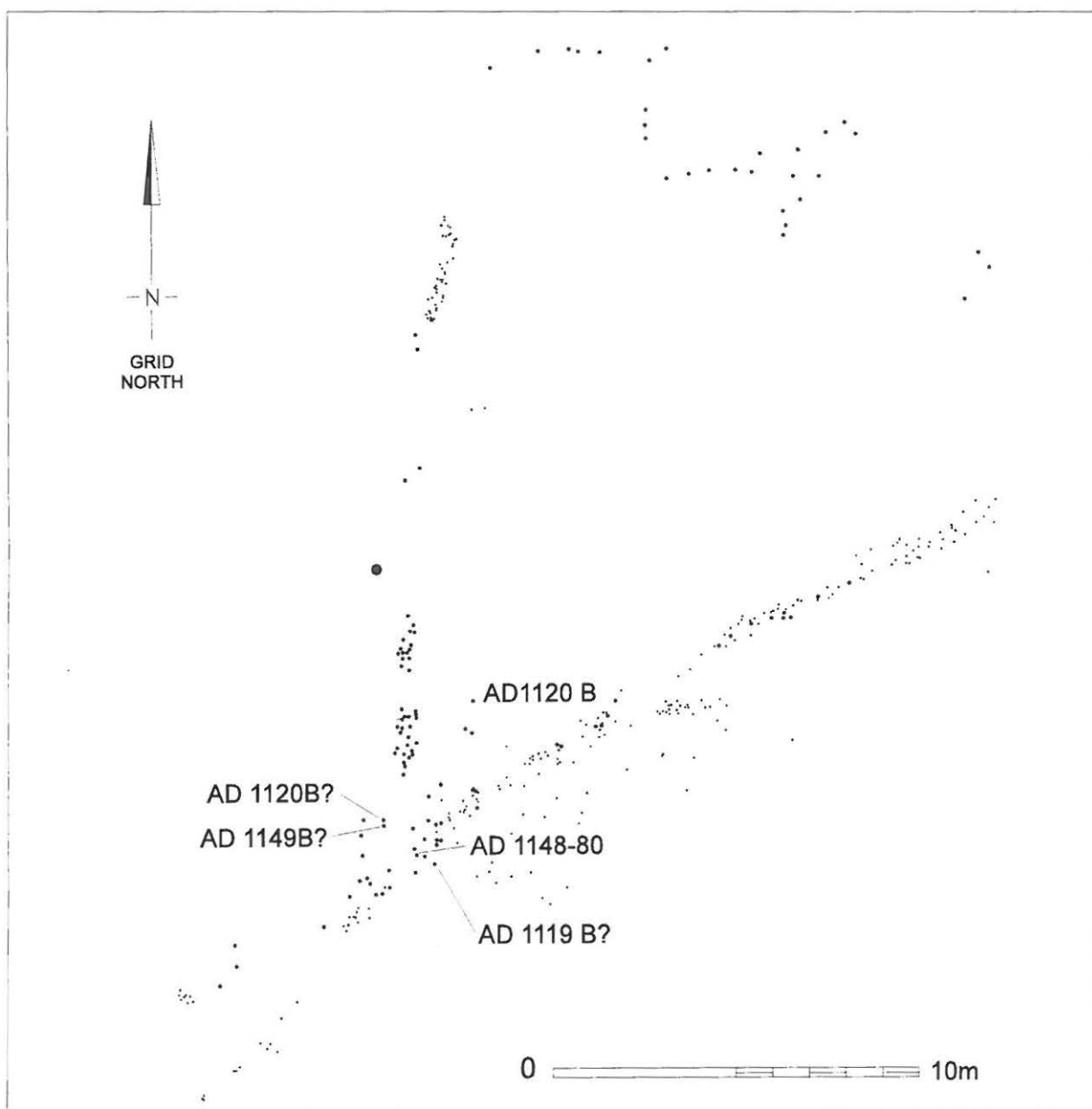


Figure 5: Magor Pill: Fish Trap 2

The ongoing threat from coastal erosion, aggravated by increasingly intense bait digging in the area argues for investigation of a wider range of these structures to record data on the development of fishing practices and the evolution of the coastline during the medieval and post-medieval periods.

Excavations in the vicinity of the medieval wreck

A year after the recovery of the original Magor Pill vessel, limited excavations were carried out to the east in an attempt to characterise the nature of the palaeochannel at the time of the boat's demise. Four 1m² pits were excavated unstratigraphically on a line perpendicular to the long axis of the boat, and their west facing sections were drawn, photographed, and context descriptions recorded.

The surface level was lower than in the immediate vicinity of the boat, at 1.3-1.45 m below Ordnance Datum (BOD). Ancient palaeochannel deposits had been more deeply scoured away, with the base of mobile sediment lying between 1.6 and 1.7 m BOD. This reflected the location of an active channel draining from north to south. The sequence between 1.7 and 2.2 m BOD was characterised by silt or silty clay palaeochannel fills, with occasional lenses of subangular gravel, and occasional clasts of Wentlooge Formation clay, sloping down from south to north. Examination of adjacent undrawn vertical sections suggested many of these deposits sloped down from SSW to NNE, and that the channel may have been turning somewhat towards the south. This unit is interpreted as sedimentation resulting from channel migration to the NNE and possibly some associated heightening of contemporary river bed level. It is not possible to correlate the sequence of deposits contiguous with the medieval boat timbers with specific contexts within this unit. A basal unit of reddish sand overlying subangular gravel, below 2.2 m BOD, which became progressively thicker to the north where it was not bottomed, was tentatively interpreted as the coarse bed load of this channel complex.

Whilst this limited excavation could not determine the width of the contemporary

palaeochannel, the direction of slope of the sediments suggest that the boat had grounded on the SSW edge, near the right bank, of a palaeochannel running from ENE to WSW. This offers a partial explanation for the differential survival of structural elements of the boat. The bow and port side may have become partially embedded in the soft river bed/ bank near its southern edge, leaving the stern and starboard side more exposed nearer to the centre of the channel which promoted the break up and loss of the latter elements.

The medieval wreck: post-excavation progress

Detailed examination of the wreck timbers continued during 1996 and a number of specialist studies were commissioned. The overall description given last year remains largely valid (Nayling 1996) but many points of fine detail have been recorded.

Completion of tree-ring dating of both the oak hull timbers and the beech ceiling planks has resolved the question of construction date. It would appear that the oaks for the hull were felled in the winter/early spring of 1239/40 AD and the beech probably in the summer of 1240 AD suggesting work on construction of the hull had commenced before delivery of beech for the ceiling.

The keel was hewn from the whole trunk of an oak approximately 75-100 years old at felling. Many knots from side branches occur along the length of the keel: the presence of a large side branch at the broken stern end may have contributed to its fracture at this point. The hull planks were hewn from radially split oak trunks of straight grained mature trees. At least 22 of the planks were derived from only two trees, 147 and at least 154 years old at felling. The uniformity of the timbers could be taken to imply direct supply of wood from woodland to shipbuilder in contrast with the diversity of source for wood seen in other structures, including boats (eg reused hull planks from Penners Wharf, Bristol (Groves and Hillam 1987)), suggestive of more complex methods of wood supply involving large wood yards in urban contexts.

The nails and roves used to secure the hull

planks to the keel and stempost, and to one another along the overlaps between adjacent strakes, appear to have been manufactured in the manner outlined by Bill (1994). Nails appear to have been produced by hammering out the shank from a hot iron bar; cutting the nail off the bar, including the material for the head, with a chisel and then hammering out the head with a nail-making iron. The rivets (or roves), through which the nails passed and were then turned over on the inboard face of the planks, appear to have been made by hammering out an iron bar or rod to form a strip in which holes were made with a chisel at regular intervals before individual roves were cut from the strip with a chisel (Bill 1994, fig 1).

The floor timbers and side-frames were cut from main trunks, naturally curving oaks either where branches ran out from the main trunk or completely from branch wood. Surviving bark surfaces on some of these timbers have enabled dating of the felling season to AD 1239/40. They were secured to the shell of hull planks with willow treenails driven through augered holes from outboard and secured on the inboard end with oak wedges.

The ceiling planks, nailed to the upper face of the floor timbers in the lower hull, comprised radially split beech planks. Dating of these, in addition to providing an insight into vessel's building timetable, reflects a major advance in the construction of an absolutely dated beech chronology from Britain (Tyers 1997). The majority of the analysed beech ceiling planks probably derived from just two trees, one over 330 years old.

Detailed examination of the timbers has identified a repair on the port side of the vessel. A longitudinal split along the sixth port strake had been patched with two laths of oak secured with nails which had been driven through the patches and hull planks before being turned over on the inboard face of the hull planks. Sadly, these patches have not been dated by dendrochronology. In order to gain access to the inboard faces of the sixth port strake, the overlying ceiling planks must have been removed. This may explain why the majority of ceiling planks port of the third port strake comprise often reused oak timbers. Four of these have been dated by dendrochronology. One substantial plank, probably felled between 1214

and 1248 AD, correlates especially well with tree-ring masters from medieval Dublin, suggesting reuse of a hull plank from an Irish vessel. A second, smaller plank, derived from one of the two oak trees which produced most of the original hull planks, may indicate reuse of a hull plank implying repairs to the hull elsewhere on the vessel. Two further fragments of thin radially split oak, with no clear signs of reuse, are dated to 1235-1256 AD and 1197-1242 AD. Further structural analysis is required before the full implications of this dating evidence can be assessed.

Research on hypothetical reconstruction of the original vessel form is on-going, largely through the efforts of the National Museums and Galleries of Wales which commissioned Ed Gifford to construct a full scale model of the vessel from prow to just aft of the surviving length of the remains. In addition to acting as a research tool, this model is providing a template for reshaping the original timbers during conservation to permit display of the remains on a supporting frame from the vessel's original lines.

It is hoped to publish this boat find, along with the Roman vessel from Barland's Farm (Nayling and McGrail 1995), as a Council for British Archaeology Research Report.

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Many of the details presented on post-excavation progress on the medieval vessel reflect the hard work of specialists, particularly Ian Tyers (beech dendrochronology) and Richard Brunning (woodworking technology and treenails).

Fieldwork in spring and summer 1996 was carried out by a small field team from the Glamorgan-Gwent Archaeological Trust with support from Phil Parkes under the Cadw conservation contract and undergraduates from the University of Wales, Lampeter. I am indebted to all for their enthusiasm in less than comfortable working conditions. As always, the shared knowledge and support of fellow SELRC members, has been invaluable.

Bibliography

- Allen, J. R. L. & Rippon, S. 1995 Magor Pill, Gwent: the Geoarchaeology of a Late Flandrian Tidal Palaeochannel, *Archaeology in the Severn Estuary 1995*
- Allen, J. R. L. & Rippon, S. J. 1995b *Geoarchaeological Survey of a Late Flandrian Palaeochannel at Magor Pill, Gwent, 1994*. University of Reading. Unpublished report to Cadw
- Bill, J. 1994 Iron Nails in Iron Age and Medieval Shipbuilding in C Westerdahl (ed) *Crossroads in Ancient Shipbuilding*. Oxbow Monograph 40, 55-64
- Groves, C. & Hillam, J. 1987 *Tree-ring analysis of timbers from waterfront structures at Bristol Bridge, 1980-1*. Ancient Monuments Laboratory Report 31/87
- Marsden, P. 1996 *Ships of the Port of London: twelfth to seventeenth centuries AD*. English Heritage, London.
- Nayling, N. 1996 The Excavation, Recovery And Provisional Analysis Of A Medieval Wreck From Magor Pill, Gwent Levels, *Archaeology in the Severn Estuary 1996*
- Nayling, N. & McGrail, S. 1995 Barland's Farm, Magor, Gwent: A Romano-Celtic Boat Find, *Archaeology in the Severn Estuary 1995*
- Stuiver, M. & Pearson, G.W. 1986 High-precision calibration of the radiocarbon timescale AD 1950-500 BC. *Radiocarbon* 28, 805-38
- Tyers, I. 1997 Dendrochronological Analysis Of Beech Timbers From The Magor Pill I Wreck, Gwent. ARCUS Archive Report 261.

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