

A Trial Excavation of the Suspected Site of the Caisson Lock, Combe Hay, 1997

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In the thirty years since the exploration by BIAS for the famous Caisson Lock on the Somersetshire Coal Canal at Combe Hay¹, and Hugh Torrens' subsequent documentary identification of its suspected site near Caisson House² no excavations have been undertaken except for various casual and unproductive 'prospective digs', none of which were recorded or analysed. A possible reason for much of the difficulty in locating any physical remains of the lock (despite its spectacular dimensions) may be due to the nature of its abandonment. It is thought likely that, following the removal of the superstructure (but before backfilling), much of the stone lining of the upper part of the lock chamber was removed for use elsewhere along the canal, and only the deepest part of the structure remained. It is also evident that surface features in the neighbourhood of Caisson House had been much altered by subsequent landscaping after the house was adopted as the canal engineer's residence. However, significant new information recently acquired about the site suggested that further archaeological investigation might be worthwhile.

The Geophysical Survey

In the spring of 1996 a magnetometer survey by Geoquest Associates was authorised for Avon County Council by Mary Stacey (now Built Heritage manager, Bath & North East Somerset (B.&N.E.S.) Council) in anticipation of a conservation study of the canal. The survey covered the northern sector of 'Caisson Field' (on the south side of Caisson House) in the neighbourhood of the chestnut tree, identified by Dr Torrens as a site marker for the Caisson, which was planted in the early nineteenth century. Several 'anomalies' were detected, one of which appeared to be a pair of parallel walls not far below the surface (the geomagnetic equipment has a limited range of about 3 ft) Being of similar scale to the known dimensions of the lock and on a similar alignment, they were interpreted (with a 70 per cent 'confidence rating') as being the walls of the Caisson chamber. Next to them was a much larger interference which extended northward towards the present entrance gate into the field. These results were later compared with a survey carried out by Adrian Tuddenham using his own ground resistance equipment. Although in this instance no 'walls' were indicated, a similar large-scale disturbance was detected towards the gate.

The Canal Map

Whilst the survey was in progress, a previously unknown early map of the canal was coincidentally discovered at the Public Record Office by Roger Halse (chairman of the Somersetshire Coal Canal Society), indicating the exact location of the lock and its exit tunnel. Although

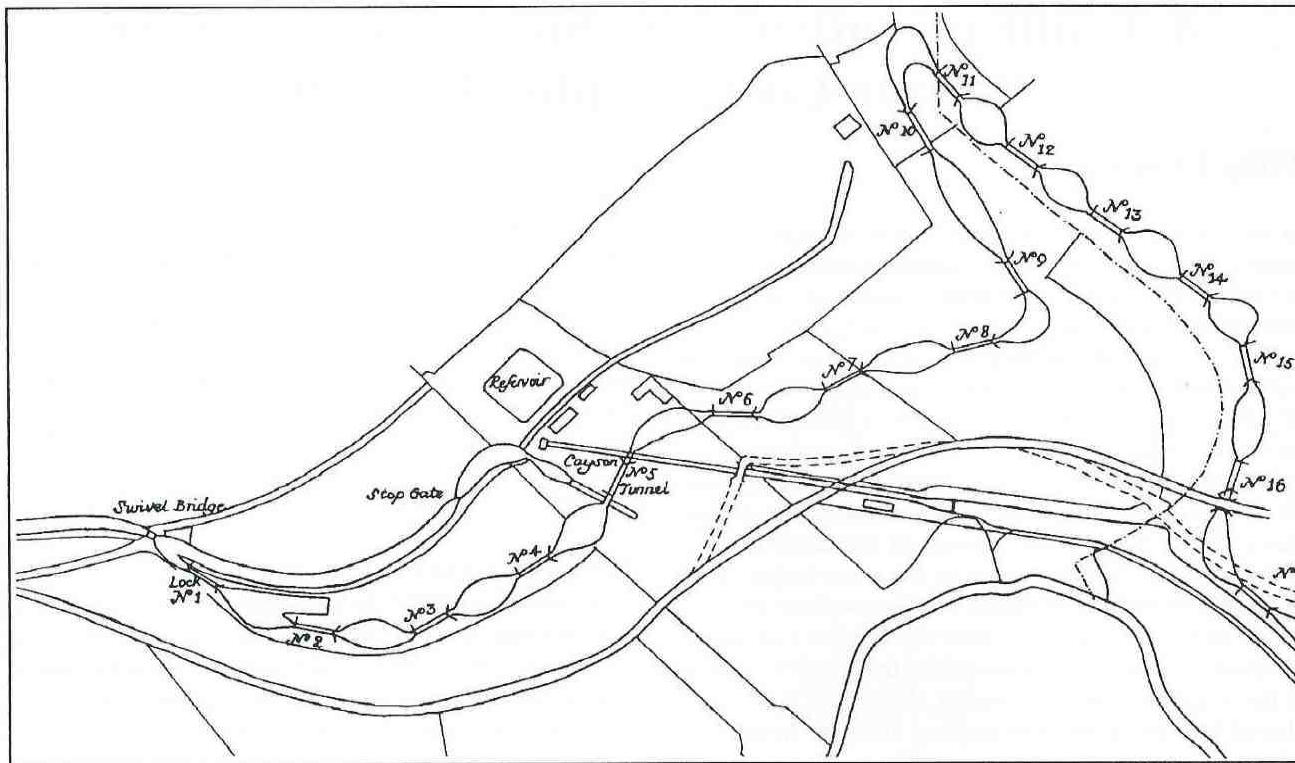
undated, internal evidence shows that this map was surveyed during, or soon after, the construction between 1804 and 1806 of the neighbouring lock flight which replaced the Caisson, and was the basis for the Canal Company map (now in the possession of the Bath Royal Literary and Scientific Institute) drawn up a few years later - possibly by Jeremiah Cruse, partner of William Smith. The new map shows the Caisson lock extending eastward from the upper terminal basin of the canal in the direction of the chestnut tree (roughly coinciding with the line of the 'walls' of the geophysical survey) - the tunnel terminating a little further beyond the top gate of lock 5.

The Trial Excavation

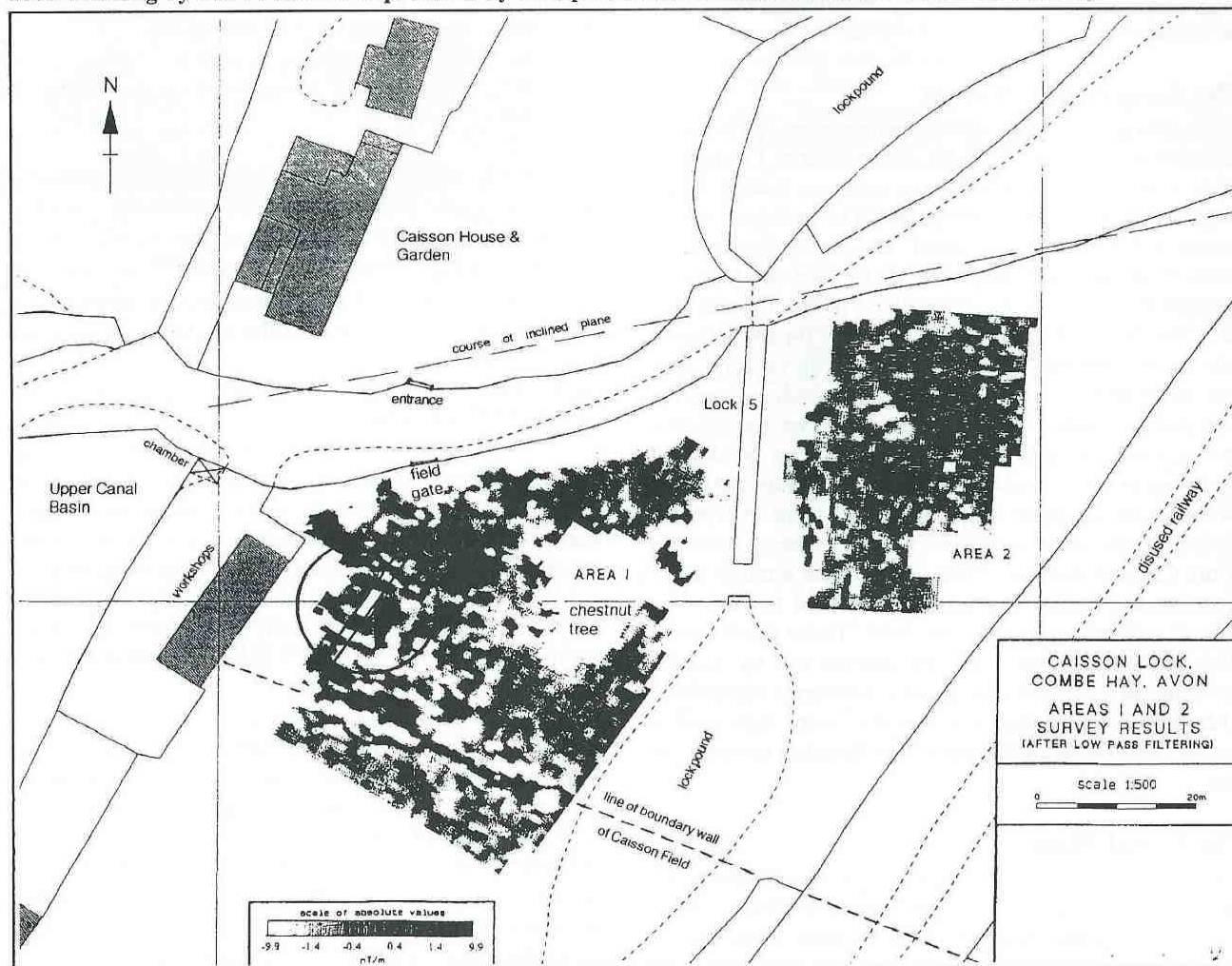
In the autumn of 1997 the opportunity arose to test these new findings by means of a trial excavation - on this occasion to be carried out by hand under controlled archaeological conditions by professional volunteer staff from Bath Archaeological Trust in collaboration with the Coal Canal Society's works team. Backed by B.&N.E.S. Built Heritage department, the project was directed by Marek Lewcun from the Trust and supervised by Council Archaeologist, Bob Sydes. The following report is the result of the work carried out over two days (plus a day for backfilling) at the end of August and the beginning of September.

A trench 1 m wide and 11 m in length was cut across the line of the 'walls' suggested by the geophysical survey in a roughly north-south direction, later extended a further 5 m northward to examine the large anomaly towards the gate. The southern end of the trench terminated a few metres north of the turf line of the old boundary wall of Caisson Field (removed some time after the field was subdivided by the construction of the Limpley Stoke railway in 1910) which provided a useful reference point. It was at the extreme end of the trench that the original ground level was confirmed to be much as it is today, but from this point northward the surface was found to have been lowered by stripping off between 2 to 3 ft of subsoil and underlying natural clay. This had later been filled in with a mottled clay and levelled off with subsoil. Also encountered, crossing the trench, were traces of a recent cutting; possibly the result of a previous 'Caisson hunt'.

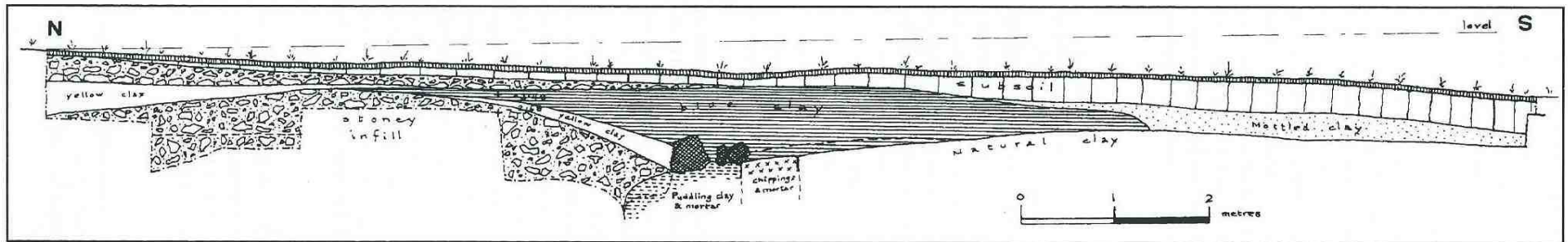
Working northward to the point where the 'walls' were expected, the lowered ground surface was found to be covered with a thick layer of dense blue clay (presumably canal puddling clay) containing bands of coal waste and large quantities of nails and other canal ironware. No walls were found and it was immediately apparent that it was the exceptionally high iron content of this clay which had given such a strong reading, suggestive of walls, during the magnetometer survey. Also found among the small finds in this layer was a George III half-penny clearly dated 1807. Half-pennies of this kind, with milled



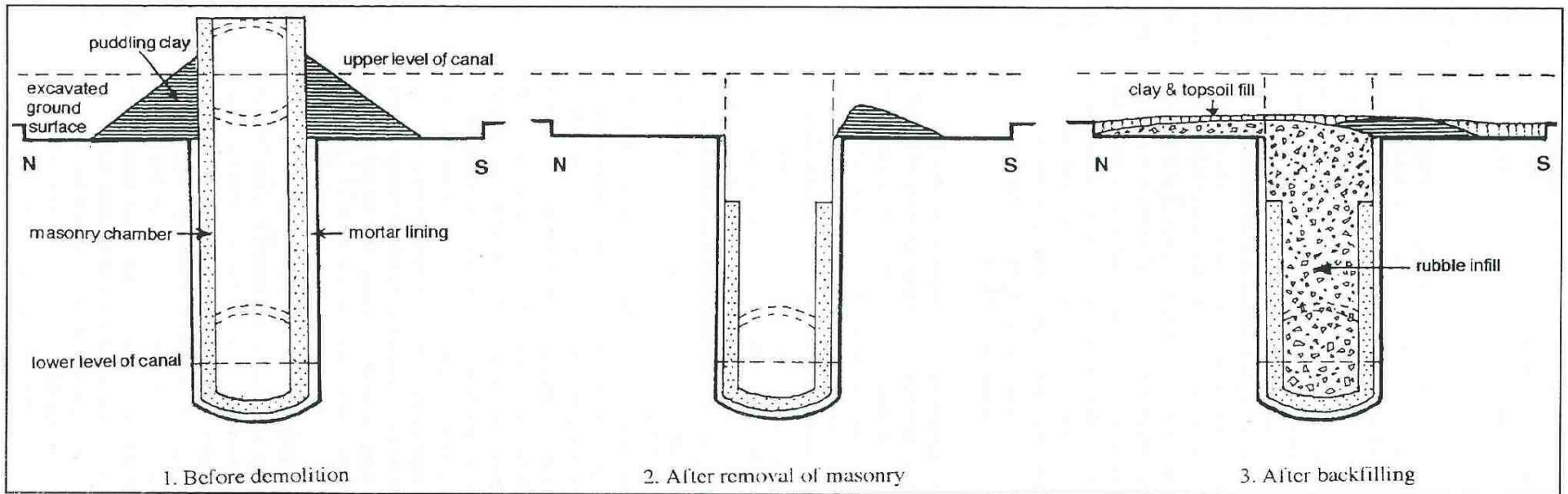
Detail of the Combe Hay lock flight showing the site of the Caisson, copied from the early map of the Coal Canal, 1804-1806. Drawing by Carole Haines. Reproduced by kind permission of the Somersetshire Coal Canal Society.



Printout of the geomagnetic data from the survey in Caisson Field. The two suspected walls are shown circled, together with the outlines of the excavated trench.



Archaeological section along the lower (east) side of the trench.



Suggested sequence of demolition and infill of the Caisson Lock.

edge, were only minted in the two years 1806 and 1807, and although somewhat corroded, this example showed little wear, suggesting that it was lost soon after the latter date.

Some 12 ft further on, approaching the northern end of the trench, the blue clay increased in thickness to just below turf level. Immediately below the clay at this point, showing through the earlier ground surface, a band of packed chippings and mortar about 2 ft in width and vertically edged was found crossing the trench on an east-west axis. Unfortunately this band was not detected until a late stage owing to a number of large unworked stones and boulders which lay on top of it, and a detailed examination was not possible in the time available. However, although quantities of blue clay - mixed with lumps of mortar - occurred for a further 4 ft, it became evident that the band of chippings actually marked the southern edge of a deep excavation containing a massive infill of rubble and stoney clay. The depth of this infill could not be ascertained, although it was followed downward a further 2 ft below the earlier ground surface to a maximum depth of 5 ft below present ground level.

At this extreme depth, the decision was taken to extend the trench northward to examine the extent of the infill, a rough calculation of the width of the Caisson being made to ensure that the trench was of sufficient length to intercept any remains of the opposite edge of the chamber (assuming that its southern edge existed in the vicinity of the band of chippings). It was found that the surface of the rubble infill, which included a thin layer of yellow clay levelled off with overspill from the blue puddling clay, quickly rose to turf level before falling off towards the field gate. Although the trench was taken down to 4 ft below the turf, the bottom of the infill was still not reached, nor was there any evidence of the northern edge of the chamber. At the end of the trench, some 6 yd from the gate, the surface of the infill had fallen to over 2 ft below ground level but evidently extended some way further northward, perhaps beyond the gate. It was presumably this rubble which produced the large anomaly on the two geophysical surveys, a feature which was initially ignored owing to the general observation that gateways tend to accumulate such disturbed material over time. It was not then realised that the gate and hedge had only been installed relatively recently, alter the old boundary wall of the Caisson field had been removed.

Conclusions

Although such a large (and apparently deep) backfilled excavation was to be expected on the site of the Caisson as indicated on the canal map, the only structural element found was the band of mortar and chippings at its southern edge. This however is a feature that might be expected in association with dismantled masonry (supporting the opinion that much of the stone lining of the upper part of the lock chamber had been removed), and would represent the bedding for the masonry walls of the chamber against the sides of the excavated lock pit. Cer-

tainly the amount of blue puddling clay lying outside it (extending about 12 ft from the side) would have been sufficient to provide the basis of the waterproof embankment (or 'angle of repose') needed to support the superstructure of the lock.

The presence of so much ironwork in the puddling clay still requires explanation, but the finding of the half-penny in this material suggests that the site was backfilled in 1807 or soon after - in agreement with the map evidence. The new map shows that the abandoned Caisson was apparently still open when the lock flight and pump were installed early in 1805, but had disappeared by the time of the next datable maps of the lock flight. c1809. The rubble infill was barren of human artifacts and was presumably construction material excavated from elsewhere along the canal.

Further work

After inspection by the Council Archaeologist, the following recommendations were made:

- i) Several similar trial trenches would be needed to identify the exact outlines of the Caisson structure, including an examination of the site of the exit tunnel on the far side of lock 5 as indicated on the canal map. Surface stripping would be more effectively carried out using plant machinery, and it was now evident that an increase in the depth of excavation was possible without damage to the site.
- ii) Although any deeper structures must remain inaccessible for the time being, they might still be traced by geophysical equipment with a greater range - such as ground radar.
- m) Although various levels for the trench were taken on this occasion, further readings will be required to establish the relationship between the Caisson Lock and the bed and water level of the upper canal basin.
- iv) Archaeological examination of other sites related to the Caisson will also eventually be necessary - an overall project which might well attract support funding from English Heritage or other interested bodies. This would include the route of the inclined plane tramway, the remains of the pumping station in Engine Wood and, more importantly perhaps, the eastern wall of the upper canal basin with its adjoining subterranean chamber. Although the basin was modified after the abandonment of the Caisson, it may yet provide useful information about the upper entrance to the lock.

On consultation with the parties concerned, it was agreed that it would again be worth approaching the owner of the Caisson House grounds with a view to continuing with another two-day excavation a year hence.

References

1. Buchanan. A.. 'Conibe Hay Caisson Lock -A BIAS Project Report'. BIAS Journal 2 (1969) 27-29.
2. Torrens. H.. 'The Somersetshire Coal Canal Caisson Lock'. BIAS Journal 8 (1975) 4-10.



View of the trench section (upper, west side) showing the layer of puddling clay overlaying the rubble infill, separated by a thin band of coal waste. The band of chippings and mortar was found crossing the bottom of the trench below the large stones to the left. The rubble infill continued on downward to the right.

Photo: Roger Halse.

The southern end of the trench at the early stages of the excavation. The lock flight is hidden among the trees in the background. Behind the bushes to the right is the workshop adjoining the upper basin of the canal.

Photo: Roger Halse.



View taken along the line of the Caisson, looking east. The northern end of the trench is visible in the foreground, the chestnut tree beyond. To the left of the tree lock 5 is just visible.

Photo: Mike Chapman.

