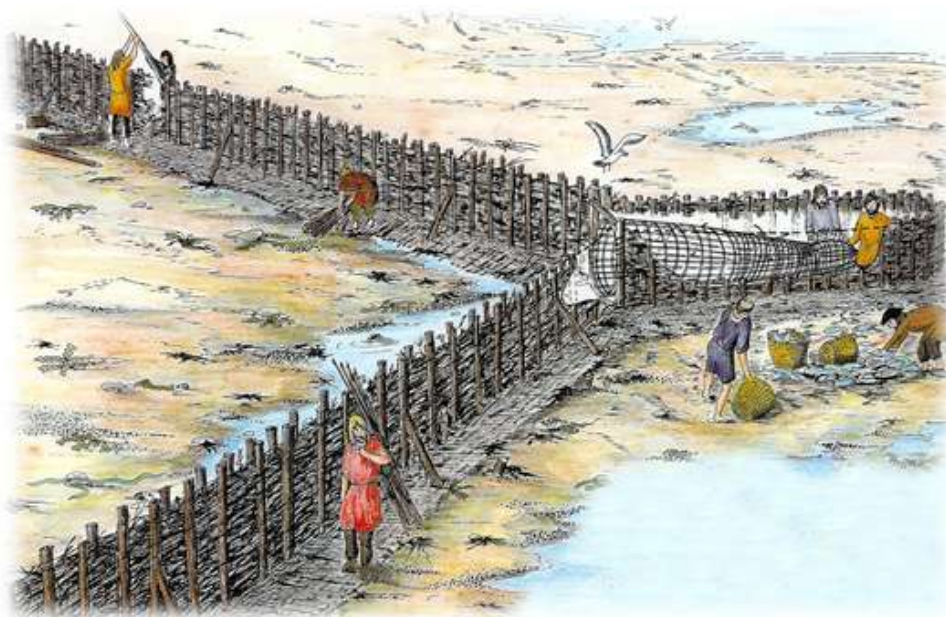


BLACKWATER ESTUARY FISH TRAPS
MONITORING SURVEY
ASSESSMENT & UPDATED PROJECT DESIGN
FOR ANALYSIS AND PUBLICATION



Essex County Council
FIELD ARCHAEOLOGY UNIT

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SUMMARY

This resource assessment and updated project design has been produced to request funding for the further analysis and publication of the results of the Blackwater Fishtraps Monitoring Project. This version of the document provides a revised tasklist, financial breakdown and timetable.

A series of field survey visits were made during the period 2007-08 to further record new exposures and assess the impact of ongoing erosion of estuarine silts at two specific known, and previously-surveyed, Saxon fishtrap sites. These visits established that significant erosion was indeed in progress, with substantial and hitherto unexposed parts of the Collins Creek and Pewet Island fishtrap structures actively being uncovered and other parts being damaged or destroyed altogether.

The recovered information adds to the understanding of these, and other, fishtraps in the Blackwater estuary and provides measurable data with which to assess the nature and rate of erosion taking place in this inter-tidal environment. Additionally, a number of methodological lessons have been learnt that are of benefit to the improved investigation and management of such monuments in the inter-tidal zone. It is furthermore suspected that there is significant potential in the consultation and use of non-archaeological data sources, such as Lidar.

It is proposed that the results of the fieldwork, along with consideration of the issues of erosion, research and management in/of the inter-tidal zone, are published as a paper in the county journal *Essex Archaeology and History*, with a digital research archive made accessible via the *Archaeological Data Service* website.

Grant funding is consequently sought for the further analysis and publication in *Essex Archaeology and History* in FY2011/12 (subject to receipt of external comment following submission to EAH) at a total cost of **£7910.63** (excl. contingencies and VAT).

1. 0 INTRODUCTION

1.1 Project Background

The Essex tidal estuaries are the site of a number of timber-built fish traps, their distribution being particularly dense in the Blackwater estuary where six sites have been identified through the work of local archaeologists and aerial reconnaissance. Coastal fish traps (also known as fish weirs) comprise artificial walls of wood (or stone) to which nets or a trap are attached with which to catch fish. These are typically located on gently shelving coastline or in a river estuary. The walls form a substantial enclosure, typically with a V- or L-shaped plan. The Essex examples are large and complex monuments, comprising numerous wooden posts in various alignments, along with wattle-work (sails and rods) and basketry. Their position close to low water means that they are vulnerable to both general erosion and damage by boats.

Previous studies have included very limited ground-based survey for C14 sampling (Strachan 1998), photographic survey and visits by local archaeologists Ron Hall and Kevin Bruce, aerial photographic reconnaissance (Strachan 1998 and Saunders *in press*) and detailed survey of the Collins Creek complex (Hall and Clarke 2000). Sonar survey has also been carried out by the University of Southampton (Lenham, 2000). In 2003, as an addition to the then ongoing Greater Thames Estuary (Essex Zone) Monitoring Survey (Heppell and Brown 2008) and contribution to the Planarch Interreg project, Essex County Council (ECC) funded re-visits to the Collins Creek complex (Heppell 2004). This survey demonstrated elements of the complex were being subject to erosion and other, previously unknown, elements were being exposed as sand and gravel banks have shifted and/or eroded.

As such a further monitoring survey on the fishtraps was proposed; extending the scope of the earlier monitoring survey both chronologically and geographically to a range of important structures significantly different in scale and topographic position to those previously monitored. It also served to take forward the research aims set out in *An Archaeological Research Framework for the Greater Thames Estuary* (Williams and Brown 1999).

Further monitoring survey was funded by English Heritage (Heppell et al 2006). The proposed fieldwork comprised three main elements:

- Monitoring visits to the Collins Creek Complex
- Monitoring visit to the Pewet Island traps
- Reconnaissance survey at Southey Creek (not subsequently carried out)

Field visits were carried out in 2006 and 2007. Further site visits had been considered for 2008, these were however delayed due to a combination of other commitments of the project team and lack of suitable tides / good weather conditions. The feasibility and desirability of carrying out additional visits in 2009 was to be appraised. Sadly, and unexpectedly, Ron Hall died in November 2008. Ron was a crucial member of the project team, for both facilitating access to the sites (only possible by boat) and his expertise on, and knowledge of, the River Blackwater. As almost all the fieldwork had already been completed it was decided, following informal discussions with the English Heritage project monitor, Dr Sarah May, to conclude the fieldwork stage and proceed with the design of an analysis and publication stage. This document therefore summarises and discusses the work done to date and presents an Updated Project Design for further analysis and publication.

1.2 ARCHAEOLOGICAL BACKGROUND & PREVIOUS WORK

1.2.1 General

Fishtraps comprise permanent stationary structures, artificial walls of stone and/or wood which channel fish into nets or traps. The traps are substantial structures, at their simplest being a V-shape, fish would usually be channelled into a trap on the point on the ebb tide. They are usually positioned at the end of a tidal channel or an expanse of mudflat. The surviving elements are generally the uprights of the walls of the trap (sometimes with partially intact wattlework) and other associated elements such as basketry and wattle trackways. A number of surviving examples are located around the Essex coast, with the majority being in the Blackwater Estuary (Fig.1).

The level of survival of the Blackwater monuments is impressive, hence the clear visibility of the monuments from the air during (rare) suitable ebbs. The surviving timber alignments recorded here are between 170m and >1600m in length. The level to which the upright posts survive above the present surface level varies; some barely protrude whereas others stand proud of the surface by some 0.5m. This variation partially reflects the current topography of the estuary and the thickness of the overlying silt deposits. Survival may, to some extent, also relate to historical topography; presumably when the traps (or sections thereof) fell into disrepair and disuse or were demolished the posts and associated panels would have been broken-off at what was, at the time, the surface level. It could also reflect seasonal variations.

The surviving timbers are generally well-preserved, with visible carpentry marks, but also with some evidence of burrowing, possibly by nematodes and /or teredos. Wattlework is also very well preserved when first exposed, but quickly degenerates thereafter.

Documentary sources, along with artefactual and environmental evidence from archaeological sites clearly attest to the importance of fish in the medieval period and earlier. Domesday refers to numerous 'fisheries', including holdings around the Blackwater. This term was, however, also used to describe creek fisheries and kiddles (structures involving nets), which are distinct from the large permanent fish traps. Even so, there would seem to be a correlation between the Domesday documented fisheries in the Blackwater (three at Mersea, two at Bradwell, one at Osea and one at Tollesbury) and some of the known fish traps at Mersea, Pewet and Sales Point, Collins Creek and The Nass.

1.2.2 Early discovery

The Essex fish traps were virtually unknown prior to the mid to late 20th century. In the 1970s the existence of the Sales Point fish trap was brought to the attention of Kevin Bruce, a local archaeologist, by Rodney Larnar. He had in turn been made aware of the site by Walter Linnet of Bradwell, a wildfowler, in the 1960s. In the 1970s a basic survey of the site was carried out, with subsequent recording in 1992. The Sales Point fish trap remained the only known feature of its type surviving in the county until the late 1980s when Ron Hall first identified timber alignments at Collins Creek, subsequently compiling a survey report. In 1992 the ECC Archaeology Section obtained funding for further survey and sampling of the Collins Creek alignments from English Heritage (Hall and Clarke 2000; ECC Archaeological Field Projects Service 1992).

In the 1990s the Essex aerial survey programme also targeted this site type by carrying out reconnaissance flights over the mud flats at low tides. The work in the Blackwater increased the total of known sites in the estuary to seven:

- Collins Creek Complex (EHER 13815)
- Sales Point (EHER 2055; SAM 29427)
- Pewet Island (EHER 9972; SAM 32405)
- South of Pewet Island (EHER 9971)
- The Nass (EHER 9974; SAM 32404)
- West Mersea (EHER 9973; SAM 32402)
- East Mersea (EHER 9970)

1.2.3 Previous Fieldwork

In the 1990s, field survey at Collins Creek concentrated on obtaining an accurate plan of the complex, and on gathering wood samples for species identification and scientific dating. The survey utilised aerial photographic reconnaissance combined with stop-go-GPS. The various alignments were spread out over some 2.1sq km of mud banks, defined by Thirslet Creek to the north and the main channel of the Blackwater to the south. The area was noted to be bisected into three 'islands' by Upper and Lower Collins Creeks, with the southern side defined by shell and gravel ridges (Hall and Clarke 2000, 127).

The full plan of the Collins Creek complex defined a linear (but fragmentary) alignment running roughly parallel with Mean Low Water (MLW), along the shell and gravel ridges on the south of the mud bank. Three shorter alignments ran northwest of this alignment, forming the typical V-shape. There were two further alignments further north which also appear to be V-shaped traps. Further alignments were identified but did not obviously form part of traps.

Wood samples collected from the east end of Collins Creek provided 7th-9th century dates. The Nass was also dated to the 7th-9th centuries, and Sales Point to the 7th-10th centuries. During the visit to Sales Point to collect timber samples for dating, a substantial deposit of fish bone most of which was apparently from large species was noted adjacent to the bag shaped 'pound' at the northeast end of the trap (Strachan 1998). These structures were therefore established to be Saxon rather than medieval (Strachan 1998; Hall and Clarke 2000). The construction and maintenance of such weirs must have required substantial resources; it has therefore been suggested that they may be associated with ecclesiastical estates and an early ecclesiastical connection is also potentially supported by documentary evidence (e.g. Strachan 1998).

In 1998 the RCHME commissioned a geophysical survey of the Blackwater fishtraps, carried out by the High Resolution Marine Seismology Group of Southampton University. The sidescan sonar data collected as part of this project illustrated that the extents and complexity of at least the Pewet Island fishtrap was greater than that visible in the intertidal zone (Lenham 2000).

As a consequence of this previous work, the national significance of the Blackwater fish traps was recognised in 2000 when four of the seven were entered on the Schedule of Ancient Monuments (see list above). The sites of three of these (Pewet, The Nass and Sales Point)

are now marked on the most recent Admiralty chart as 'Ancient Fish Weirs' (Chart No. 3741, 2003).

Re-visits to the Collins Creek complex were carried out in 2003, funded by ECC. The results of this work clearly illustrated the complexities of defining monuments within a dynamic coastal environment. The gravel and shell ridges, which although large are essentially mobile deposits, shift and thus different areas along the southern edge of the bank were found to be exposed at any given time – hence additional / different sections of the fish traps are variably exposed. To the north of the sand and gravel ridges, on the mud banks themselves, significant erosion was noted to have taken place. As an illustration of this, one of the permanent survey stations utilised in the early 1990s was re-located - having initially been flush with the surface, it was now found to stand proud by some 0.25m. The re-visits also clarified the layouts of some of the alignments, establishing connections between alignments which had previously been isolated and fragmentary (Heppell 2004). Loss of parts of formerly exposed fishtrap remains was also observed to have taken place as a consequence of erosion.

The Pewet Island trap is located on the opposite side of the main channel to Collins (Fig 1) but bears some similarities. Previous work, particularly the aerial photography, established main trap comprises two lines of posts running parallel to each other and to MLW, on a southwest – northeast alignment. The arm of the trap comprises two post alignments running southwards from the main alignment. The majority of the trap was located below MLW (Fig 2). Sidescan sonar survey over the main trap illustrated that it extended into the sub-tidal zone. Further upstream three further alignments were identified, at the mouth of St Lawrence Creek. Their orientation would suggest that they are part of the arms of a trap. These could form part of the a complex of traps, similar to that at Collins Creek or represent a separate single trap .

Prior to the current project Pewet Island trap had not been re-visited since the late 1990s and no ground based survey had taken place. The plans published in 1998 were derived from the aerial photographs. Obtaining accurate plans by this method was problematical due to issues of scale and control points; where small scale photographs can show location and sufficient control points whereas those with sufficient scale to show detail generally lacked control points. The final plots are therefore considered to be accurate to c.10m (Strachan 1998), the best available at the time without the complex stop-go GPS surveying applied at Collins Creek. The scheduled area was based on these plots (Fig 2).

The results of the sidescan sonar survey also identified possible timber alignments on Southey Spit, to the east of Northey Island. The spit is located on the point where the main channel of the Blackwater (which runs north around the island) and Southey Creek branch. This area has not been subject to reconnaissance survey nor ground survey. Although the type of structure is unconfirmed it may be a trap, the topography broadly similar to that of the Nass.

1.3 CURRENT FIELD SURVEY

The current Blackwater Fishtrap Monitoring survey was carried out in 2006-7, in accordance with a project design (Heppell, Brown and Hall 2005) approved by English Heritage, who also provided grant-funding for the work.

1.3.1 The sites

The project design set out a programme of monitoring of the changing exposure and survival of three of the known and previously studied fishtrap sites:

- Collins Creek
- Pewet Island
- Southey Creek

The further survey at Collins Creek aimed to provide an enhanced plan of the monument. Of particular interest were those timber alignments with no clear purpose or relation to some of the better-understood elements of this site, i.e. they did not appear to be an arm of a trap.

The monitoring survey at Pewet Island was carried out primarily to assess the condition of the monument, to plan new elements of the structure exposed and, depending on ground conditions, to obtain a more detailed plot using modern DGPS equipment.

As mentioned previously, the planned reconnaissance of the hitherto un-investigated possible fishtrap remains at Southey Creek was not carried out due to a combination of factors and events, though primarily because it was considered that the ebbs would be insufficient to expose any remains and that the weather conditions presented too great a risk. With the agreement of English Heritage, this component of the project was abandoned. The following description (Section 2) and assessment (Section 3) of the fieldwork results therefore pertains only to the Collins Creek and Pewet Island sites.

1.3.2 Monitoring methodology

Given the location of the Collins Creek and Pewet Island sites, close to low water, and in some cases almost entirely sub-tidal, the opportunities for field survey were very limited. The timetabling of visits was based on the predicted ebb tides. These can, however, be effected by numerous factors such as weather conditions, barometric pressure, wind direction, etc. Sites were accessed by dory from a main workboat, piloted by Ron Hall (who also assisted on site). On commencing field survey an assessment was made as to the likely ebbs and health and safety issues. A decision was then made as to where the most effective survey could take place.

As time on site was very limited (and somewhat variable depending on the state of the tides) at least two trips were generally made to each site, one to carry out detailed site photography and another to plan the site by DGPS. Eight days of field survey were carried out (of ten scheduled in the original project design) representing paired visits to each site carried out in 2006 and 2007. All data was collected digitally (photos and survey data), supported by hand-written notes. This data was collated and incorporated into a GIS project when downloaded for provisional analysis to take place. The application of digital technology enabled data to be both collected and analysed in less time than the earlier surveys. Provisional analysis also involved the incorporation of the 1990s datasets (Collins Creek survey and NMP plots) into the GIS.

2.0 RESULTS

The following summarises the results of the 2006 and 2007 field surveys at Pewet Island and Collins Creek. Their significance and value, along with an assessment of the results against the project aims, is considered in Section 3.0.

2.1 PEWET ISLAND

The Pewet Island fish trap is located on the flats to the west of Pewet Island, off Bradwell Waterside (Fig.1). Prior to this work the structure had been plotted as part of the aerial photographic survey carried out in the 1990s. The plots show rows of posts, running roughly parallel to low water (south-west to north-east) coming to a point at the north-east end. Part of the other arm of what is assumed to be a V-shaped trap run roughly south from the point, again comprising a number of rows of posts. Kevin Bruce, a local archaeologist, obtained numerous photographs of the site during the lowest tides of the 1990s, when these sections of the trap were exposed, but no detailed ground based survey had taken place.

The ebbs were less exceptional during the 2006-7 surveys at Pewet, so none of the previously observed timber alignments, described above, were exposed. However a c.150m length of a southern arm to the trap was exposed, comprising multiple alignments of posts (Fig. 3; Plate 1). Significantly, none of these had been previously observed during the visits in the 1990s or the aerial plots and hence the majority lay outside the scheduled area (Fig. 2). Comparison with photographs from the early 1990s and the aerial photographic plots would suggest that these had previously been covered by estuarine silts/clays at this date that has subsequently eroded away. The composite plan of the site, compiled from the aerial photograph plots and the 2006-7 monitoring data (Fig. 3), still has obvious gaps. This is partially due to the fact that the ebb-tides in 2006-7 were not as low as those in the late 1990s and hence an area between the main alignment and the arm was not exposed. The two sets of plans (deriving from the aerial photograph plots and ground survey data) do not overlap and projecting the alignments to link the two is problematic, particularly given the differing level of locational accuracy of the two surveys. Despite this, it would seem reasonable to assume that they are parts of the same monument.

A total of seven timber alignments of the southern arm of the trap were identified and planned during the 2006-7 monitoring survey (Fig. 4). These alignments cross and interconnect with each other, which would suggest a number of phases of trap or else sections of repair and rebuilding (perhaps taking place seasonally). For the purposes of analysis each separate section of timbers was assigned a number. Given the absence of

stratigraphic relationships, the relationship between different sections has been largely deduced using physical characteristics such as projected alignments, type/size of posts, spacing between posts and degree of survival.

Alignments 1, 2 and 5 exhibit similar characteristics, with relatively closely spaced uprights and sections where the sails and rods of *in situ* wattling were identifiable. The upright posts were 0.10-0.15 in diameter. In contrast, the posts making-up alignment 3 were more substantial, at 0.12-0.20m in diameter, and more widely spaced. They also stood proud of the foreshore to a greater height, up to 0.5m. An occasional revetment post was also noted along this section, to the east. Alignment 4 was identified at the landward end of the trap arm, where 1 and 3 merge and the two alignments become indistinguishable. Comparison of the 2006 and 2007 data clearly demonstrates that in the year between survey visits overlying deposits were eroded from the southern end of the trap exposing more timbers (Table 1).

At the landward end of the trap arm, west of alignment 4, a long section (27m) of wattle panelling, 0.45 -0.5m wide was observed in 2006. At this time the panelling was partially masked by loose silts but appeared to be largely continuous. The panelling was provisionally identified as a collapsed section of the wall of the trap. By the time of the 2007 monitoring (Plate 2), the panelling had evidently been subject to erosion, with a c.6m length lost at the seaward end and the remainder surviving as fragmentary sections of panelling. To the south of this two additional panels, 1.5m and 2m in length were exposed between 2006 and 2007. As the panels were more exposed, there being less overlying silt and weed than the previous year, it was possible to identify cut ends on both end of the sails, suggesting that 0.45-0.5m was the total width. These were originally thought to be elements of the upright part of the trap which had fallen flat. However, on later visits, when the seaward end of the panels had been subject to erosion, occasional upright staked which would appear to be associated with, but not part of, the panels, were noted. This would suggest that, rather than being displaced vertical panels of the trap itself, the panels were in fact *in situ* and perhaps designed to be a trackway/walkway alongside, facilitating access to the trap for maintenance and collection of the catch at low tide.

No.	Same as	Length exposed in 2006	Length exposed in 2007	Composite length (2006 – 07 combined)	Comments
1	-	93m	97m	97m	Additional 4m exposed at the southern end of the alignment between 2006 and 2007
2	5	108m	123m	123m	At landward end continues as 5. No additional timbers exposed by erosion, additional length was underwater in 2006
3	-	113m	113m	113m	No change
4	-	33m	33m	33m	Merging of alignments 3 & 2; could not be distinguished. No change
5	2	13m	30m	30m	Probable continuation of 2. Additional 17m exposed at the southern end of the alignment between 2006 and 2007
6	-	5m	5m	-	Short alignment – parallel with 1 & 2. No change
7	-	N/A	2m	-	Short fragment of an alignment, not exposed in 2006

Table 1: Recorded timber alignments (see Fig. 4 for locations)

2.2 COLLINS CREEK

Collins Creek is the name used to distinguish a complex of fish traps and various timber alignments which are situated on a bank on the north side of the Blackwater (Fig.1). The site lies on extensive flats, and even when dry is effectively separate 'islands' bisected by Upper and Lower Collins Creek. It is not possible to survey both sides of the creeks in a single ebb, given the size of the area and the time constraints.

As previously outlined, extensive survey of the site was carried out in the 1990s utilising aerial reconnaissance, stop-go GPS, and hand-drawn detailed planning. The compiled plan showed the complex to comprise a long alignment running parallel with MLW (mean low water), with arms running off it to the north-west, forming the V-shaped traps. In addition, isolated alignments were present which could not be readily associated with the main sections of the traps. Further alignments were also recorded in 2003 during visits made to Collins Creek as part of the Greater Thames Estuary (Essex Zone) Monitoring Survey and Planarch Interreg projects. The 2003 survey was able to plot the point of the trap, although the presence/absence of basketry in this area was not confirmed as it remained under water. In addition, sections of the southern alignment of the trap were plotted, some of which correlate to the aerial photographic data.

The main alignment of this complex lies close to a series of gravel and shingle ridges that define the edge of the mud-banks (Plates 3 and 4). It is thought that the ridges have been shifting over the time between surveys, resulting in a dynamic pattern of exposure and concealment of different elements of the site. It had been hoped to plot the edges of the bank as part of the current monitoring survey to track these changes, but this proved impractical given the time constraints imposed by the tides. During the 2006-7 fieldwork the tides never reached the lows achieved in the 1990s, but a reasonable amount of the complex was exposed. The field visits focussed on the western part of the complex, where one of the most distinct V-shapes was apparent (Fig. 5). Elements of the complex visible in the 1990s, when aerial reconnaissance was carried out, but which were not identified in 2003, were again observed in 2006-7. Additional alignments which appear contiguous with those plotted from aerial photography have been identified on the ground. The gathered data also illustrates that rather than being one or two alignments of posts this southern line comprised up to four, roughly parallel. Additional, previously unexposed, sections of this long alignment of the trap were also recorded.

To the north of the sand and gravel ridges, very rapid survey in 2007 recorded an additional alignment of posts which were barely visible above the present surface level. This alignment does not appear to have been previously plotted but may line up with a short section of track which was recorded in the 1990s. A further two alignments, visible in the 1990s, were also determined to be still extant. The revisits to the Collins Creek complex have allowed a more complete composite plan to be compiled, a process illustrated by Fig. 6. It has also been demonstrated that active erosion is taking place at this location and that this process not only results in the destruction of part of the monuments but also exposure of different elements.

3.0 RESOURCE ASSESSMENT

The following section provides a basic quantification of the field record of the monitoring visits and a consideration of their significance or value and potential for further analysis and publication.

3.1 FIELD RECORD

The physical location of the fishtraps, particularly the very limited time available on site means that the field record generated is mainly digital, comprising DGPS survey data and photographs, supported by field notes.

The digital record comprises:

- 4 x .job files (raw survey data)
- survey data converted to AutoCAD dxf files and ESRI shapefiles
- 158 colour digital photos (high resolution); comprising a mixture of establishing shots, working shots and details of individual timbers
- Site notes; text descriptions of sites for each visit

As discussed in Section 1.3.2 (above) the survey data has been utilised to create composite site plans (some of which have been utilised in this UPD) and to support provisional analysis. They were also utilised in an interim report prepared following the 2007 fieldwork (Heppell 2007).

3.2 ASSESSMENT OF RESULTS

The monitoring survey aimed to address a series of research objectives which were stated in the original Project Design (Heppell et al 2006). The following section assesses the results of the survey against these. Revised research objectives for the analysis and publication phase of this project are identified and discussed in Section 4.1.

3.2.1 Achievement of project objectives

The project design set out the following research objectives for fieldwork:

RO 1: Provide enhanced/ updated plans of the monuments

RO 3: Identify new features

The monitoring survey has been able to provide both new and more detailed data that, when combined with the data generated by previous work, has culminated in the production of

enhanced plans of the Collins Creek and Pewet Island fishtraps. New exposure, largely due to erosion of overlying estuarine silts rather than exceptionally low tides, has revealed further parts of known alignments, allowed identification of new alignments and facilitated further appreciation of detail of complexity and of the function of wattlework (i.e. both as fishtrap walls and as associated trackways). Pewet Island, with its 130m of new alignments exposed and recorded, is a particularly dramatic example.

RO 2: Assist in providing a sound basis for management and research

RO 4: Identify areas of loss

The identification of both additional extents and areas of loss of both fishtrap sites, together with an increased appreciation about the survival and degradation of the structures makes a significant contribution to the baseline knowledge of these and other similar sites. The collected data demonstrates the variable, but significant, speed and extent of estuarine environment changes and their impact upon the fishtrap remains – both in the short and medium term (the latter in conjunction with the previously collected data). It is particularly notable that the scheduled area of the Pewet Island trap, as assigned in 2000, no longer fully-encompasses the known and surviving elements of the structure. The rate of ongoing exposure and loss of these structures can be quantified, demonstrated and appreciated. This increased knowledge and understanding of the complexity and extent of these sites, and of the factors that effect them, can undoubtedly contribute to informed decision-making with regard to the historic environment of the Blackwater estuary.

The survey has also provided insights into the practicalities of working in this complex and dynamic inter-tidal environment which will assist in assessing the feasibility and determining the design of further field survey projects – where undertaken on these sites, on others in the Blackwater, or elsewhere. It would therefore be desirable to disseminate an account of the project methodology and discussion of its appropriateness, as well as that of project results.

3.2.2 Assessment of potential (for analysis and dissemination of results)

The regional and national significance of the remains of the Blackwater fishtraps has been recognised since the 1990s, hence the acknowledgement of the need for further research in both the East of England and Greater Thames regional research frameworks, and the inclusion of several examples on the Schedule of Ancient monuments. Their national importance derives from a number of factors; the relative rarity of surviving fishtraps (the remains of around 500 are thought to survive around the British Isles), their generally good state of preservation. They also represent examples of a broadly contemporaneous group within the Blackwater estuary and so have potential to enhance understanding of the whole.

It is noted that, partially due to their inaccessibility, the Blackwater fishtraps are not as well known as, for example, those in the Severn.

Analysis of the data obtained through the recent monitoring, along with the archival material from earlier works, has the potential to illustrate the impacts of coastal change on historic monuments in the intertidal zone. The survey data results can be used to provide an indication of the severity and speed with which impacts take place and, importantly, to demonstrate the complex and dynamic nature of this environment and the effectiveness of monitoring as an archaeological technique in the inter-tidal zone.

The existing management regime comprises monitoring (e.g. this survey) and the protection of some of the extant monuments through scheduling. The examples protected in this way are marked on charts, hence hopefully minimising impacts from boat keels – but this is on the basis of their previously identified extents. The improved identification of the extents of these monuments should contribute to their better management, enabling areas of protection to be enlarged (where appropriate) and to inform the management of such activities as dredging and river traffic in order to understand and minimise their impacts upon these elements of the historic environment resource of the estuary.

4.0 UPDATED PROJECT DESIGN

The following presents an Updated Project Design for a proposed programme of further analytical work leading to dissemination. The results and further potential of the fishtrap monitoring survey have been assessed (Section 3), and the proposed additional work therefore identifies the key research objectives and the tasks required to address them. This project design also addresses issues of management, programming and cost, and follows MoRPHE guidance (English Heritage 2006).

4.1 RESEARCH AIMS AND OBJECTIVES

The Blackwater Fishtraps Monitoring project was originally conceived and designed to compliment previous projects around the Essex coast, particularly other monitoring survey the results of which have recently been published in the *Journal of Wetland Archaeology* (Heppell and Brown 2008). It will also serve to take forward the research aims set out in *An Archaeological Research Framework for the Greater Thames Estuary* (Williams and Brown 1999).

4.1.1 Project Aims

The primary aim of the updated project is to drive further research and analysis leading to the dissemination of results by means of publication in *Essex Archaeology and History*, in order to provide updated information on the sites.

In terms of English Heritage's own aims, as stated in its *Research Strategy 2005-2010* (2005) and detailed in its SHAPE programme (2008) the primary driver of the proposed analysis and publication are the following corporate objectives and their constituent programmes / sub-programmes:

1A: Ensure that our research addresses the most urgent and urgent needs of the historic environment

Research Programme A1: What's out there? Defining, characterising and analysing the historic environment

- Understanding Place: Analysis of specific historic assets and locales
- Understanding the impact of past climate change

Research Programme A2: Spotting the Gaps; Analysing poorly understood landscapes areas and monuments

- New Frontiers; Mapping our Marine Heritage

Corporate Objective 3B: Ensure that the condition of the most significant parts of the historic environment is recorded and monitored to enable their better protection

Research Programme D1: Heritage at Risk; Quantifying and analysing the condition of the historic environment

- Heritage at risk: monitoring surveys

Research Programme D4: Rescue! Threat led last resort analysis

- Heritage at Risk: Recording historic sites, buildings and monuments under imminent threat outside the planning process

The analysis and publication of the monitoring survey results will also take forward regional research objectives relating to intertidal archaeology as set out in the *Greater Thames Research Framework* (Williams and Brown 1999, 31) and objectives flagged up by ongoing review and revision of this document (Heppell, in prep.). The project contributes to the following specific areas of identified regional and local research:

- Monitoring and recording of known sites and structures
- Monitoring the effect of erosion on individual sites
- Increasing understanding of remains associated with fishing, saltworking, etc., and their function in relation to the intertidal zone

4.1.2 Project objectives

The extent to which the fieldwork results have addressed and met the original project objectives (RO1-4) is explored in Section 3.2.1). Assessment of project results to date (Section 3) has illustrated that the extant site data is of sufficient quality, significance and value to produce a narrative report revising the knowledge and understanding of these fishtrap sites and updating the previous publications on them. It is however considered that some additional desk-based research would provide 'added value', providing greater historical context and linking the work to wider research themes as discussed above. Furthermore, discussion of results as they apply to historic environment management in the intertidal zone is identified as an additional output.

It is considered that a publication for submission to *Essex Archaeology and History* would be appropriate (both previous papers on the Blackwater fishtraps have been published in this journal).

In order to advance the analysis and dissemination phase of this project, the following Revised Research Objectives (RRO1-6) have been identified as a consequence of assessment of aims and potential. These are underpinned by a number of Specific Objectives (SO1- 10), which add detail and present the main research questions to be pursued.

RRO1: To study the nature and extent of the Collins Creek and Pewet Island fishtrap remains

SO1: To improve understanding of the form, function and development of the fishtrap structures through their analysis

SO2: To produce composite plans of the fishtrap sites, incorporating and assimilating data from earlier surveys

RRO 2: To research the availability and usefulness of non-archaeological datasets

SO3: Explore the contribution of data sources such as LiDAR to the understanding of the fishtraps and their place within the wider context of the Blackwater estuary

SO4: Using baseline information available consider the potential of the data sources in site prospection / monitoring / investigation

RRO 3: To place the Blackwater fishtraps in their regional / national context

SO5: To identify and study similar monuments around the British coast and compare/contrast these with the Collins Creek and Pewet Island examples

RRO 4: To consider coastline change in relation to the Blackwater fishtraps; now and into the future

SO6: To study what their location tells us about the Saxon period estuary/coastline. Does their subsequent disuse relate to change in the estuarine/costal environment?

SO7: To identify and assess the causes and effects of erosion/damage on the survival of the fishtrap structures

RRO 5: To disseminate project results

SO8: To produce an academic publication incorporating the results of SO1-7.

SO9: To disseminate the results appropriately to a wider audience – inc. local government officers, water folk, Blackwater users, public, etc.

SO10: To create an accessible archive for the purposes of future research

Given the limited popular dissemination which has been carried out to date, it is considered that it would be appropriate to take this forward. Opportunities will be taken to deliver presentations to a wide audience at various county, regional and possibly national fora.

3.2 BUSINESS CASE

As described previously in this document, the Collins Creek and Pewet Island fishtraps are regionally and nationally important sites which are located in a dynamic, and at times adverse, inter-tidal environment. Although information about both sets of fish traps has been published previously, the assessment of the results has demonstrated that further analysis and publication of the monitoring survey results will enable fuller plans and a more-developed understanding of these monuments to be disseminated, ensuring that there is an appropriate and sound evidence-base which can be utilised to inform future research and strategic management.

Research

It is likely that there is additional comparative fish trap data, which was not available at the time of previous publication of the Blackwater sites; for example those identified during recent RCZAS in North Kent and Suffolk (e.g. Holbrook Bay, Sutton) and Norfolk (e.g. Brancaster), along the Thames foreshore (e.g. Putney, Chelsea, Barnelms, Isleworth). Further afield, what may be comparable monuments have been located around the Isle of Wight (Quarr Beach), Portsmouth and Langstone Harbours.

A number of complimentary publications are also published or in preparation, for example *Rapid Coastal Zone Management and beyond*; *Research and Management of the Essex Coast* (Heppell and Brown 2009) and publication of the results of the excavations at Cudmore Grove, Mersea Island (Heppell *et al* , in press). The publication of the results of the fishtraps monitoring survey will compliment these studies.

Management

Management of the coastal and marine historic environment has come to the fore in recent years; resulting from an increased understanding of the likely threat posed by coastal change, the pressures of coastal squeeze, commercial and leisure exploitation, and changes in approach to coastal management. Initiatives such as SMPs, ICZM and coastal protection are now commonplace activities being carried out or commissioned by Historic Environment Management organisations. In order to address these challenges there is a need to continue developing more effective means of working in the intertidal zone, ranging from desk-based/remote surveys to intrusive works.

The management of the coastal zone is complex, involving numerous organisations, landowners and administrators. Each of these bodies is likely to have data relating to their interests in the coast. These, non-archaeological, datasets are likely contain data which could contribute to historic environment studies / management. As extensive GIS based data is available on the Blackwater fishtraps It is likely that consideration of the availability and use of non-archaeological datasets for studying these monuments and their landscapes will significantly inform ongoing development of research and management methodologies. This could also include the effective use of limited resources.

The preliminary analysis of the results of the monitoring survey, which have been discussed in the resource assessment (above), has demonstrated the threats from erosion that these monuments face as the coastline around them changes. These threats are likely to continue to expose and destroy elements of the monuments. Developing strategies to gain as much information as reasonably practicable is imperative. The time available to carry this out, even without the erosive threats, is limited. The monuments are almost sub-tidal and the days where fieldwork can take place will become fewer and fewer as a result of climate change resulting in sea level rise and increased storminess in the north sea basin. In view of these threats, and due to the perceived importance of the Blackwater fish trap sites, the promotion of intertidal archaeology is a key component of the *Greater Thames Estuary Archaeological Research Framework* and the policies of the ECC Historic Environment Branch.

4.3 PROJECT SCOPE

As indicated in the preceding resource assessment, much of the basic analysis has already been undertaken to assess and appreciate the value and potential of the primary archive. Further work will therefore be of a limited and focused nature.

It is proposed that the publication will be focussed on the two monitored fishtraps, within the wider geographical context of the Blackwater estuary. Comparisons will be drawn with other examples of similar monuments around the country. The focus will be on the physical remains but reference will be made to studies that are considering the origins of these monuments (e.g. possible links to monastic sites) and the possible reasons for their fall into disuse.

Much of the site narrative and interpretation has been undertaken when preparing the various interim reports and the production of the publication report will largely comprise the integration of additional analysis with the previously published data and in relation to wider local, regional and national parallels, and a consideration of the wider methodological context. Implications for the effective management of fishtrap sites, and of the intertidal historic environment in general, will also be considered.

The results and conclusions of this analytical phase of work will be disseminated primarily in the form of an article in the county journal *Essex Archaeology & History*. Further dissemination to a wider audience will be achieved through talks at appropriate local and regional seminars and conferences.

The archive for the Collins Creek work carried out in the 1990s has not been deposited at the present time. It is considered that it would be appropriate to integrate this archive with that of the monitoring survey prior to deposition at Colchester Museum and with ADS. However, as the location of parts of the archive are currently unclear it is considered that it would be most appropriate to consider this as a separate piece of work.

4.4 INTERFACES

Within Essex, there are clear interfaces with the Greater Thames Research Framework Review, which is now complete (Greater Thames Archaeological Steering Committee 2010), publication of the results of the intertidal investigations at Cudmore Grove, East Mersea (Heppell *et al* in press) and the recently published paper in the Journal of Wetland Archaeology which considers the results of other monitoring survey (Heppell and Brown 2009).

The study of the fishtraps and consideration of their management issues will contribute to a wider understanding of such monuments that can contribute to coastal zone studies around the British coastline, for example further stages of work in North Kent and Suffolk.

Academic ties will be established with the Severn Estuary Research Committee, particularly Dr Steve Rippon, who has published extensively on the coastal wetlands.

The River Blackwater and its historic environment are key elements of tourism in the Maldon District, within which the majority of the traps lay. The analysis and dissemination of results has the potential to stimulate interest. Links will be established with the Harbour Commissioners and the District Council. There may also be potential links with local businesses, for example the Thames Sailing Barges / river charters.

4.5 PROJECT TEAM STRUCTURE

The project will be run by Essex County Council Field Archaeology Unit (FAU), whose staff forms the core project team. The project will be managed by Adrian Scruby and the Lead Participant will be Ellen Heppell. No external participants have been identified, though some may be approached / consulted on a less-formal basis as the project progresses.

All identified project partners are hereafter referred to by their initials.

Core project team

Name (and organisation)	Initial	Role
Ellen Heppell	EMH	Lead Participant: analysis, research & text prep
Andy Lewsey (FAU)	AL	Digital graphics (plans, etc.)
Adrian Scruby (FAU)	AS	Project manager
Mark Atkinson (FAU)	MA	Project executive

4.6 COMMUNICATIONS

The project participants are ECC FAU staff, based in the FAU office in Braintree, and so communication between them will generally be verbal or by e-mail. All internal participants will be issued with this Project Design document, once approved, at the start of the project. Project meetings will be held as appropriate and each participant briefed prior to commencing each task assigned to them. As lead participant, EMH will be responsible for these briefings and for general liaison throughout the duration of allocated tasks. EMH will report to AS on progress with more formal project meetings held as required, particularly if ongoing project review identifies problematic issues and the need for decision-making.

Overall management of the project will be the responsibility of AS, who will normally be the point of contact for liaison with English Heritage. The Project Executive will be the FAU unit manager, MA, who will liaise primarily with AS, but will also receive project updates via highlight reports. MA will also participate in project meetings and key decision-making when required.

4.7 PROJECT REVIEW

There will be an ongoing process of review as EMH will verbally report to AS weekly on progress, flagging-up any potential problems or overruns and working collaboratively to proactively resolve any such issues. The risk log (Appendix 3) will be reviewed and updated as appropriate and an issues log maintained, by AS, throughout the life of the project.

AS and/or MA will in turn report to English Heritage via quarterly monitoring meetings and supply the EH monitoring officer (Dr Sarah May) with highlight reports after the completion of each project stage. Occasional project meetings may be held which include other project personnel, as required. Review points will take place at key points in the project programme (see table below), with short highlight reports issued by EMH which summarises progress, assesses ongoing potential for achieving the project aims and objectives, and identifies issues or problems. Formal project team meetings at review points will only take place if significant issues which require changes to the project have been identified. The highlight report will also be submitted to the Project Executive (MA) who will, where necessary, decide upon / ratify any changes, issues and resolutions brought to his attention.

Timetable for review points

Review point	When	Reason for review	Date of review
1	On project initiation	Ensure all Stage 1-3 participants briefed, tasks understood/lined-up	August 2011
2	Final synopsis preparation	Review results of stages 1-3 and finalise format and content of publication text	October 2011
3	First Draft completion	Discuss, identify and rectify problems and deficiencies	November 2011
4	On completion of project	Review successes and failures and facilitate end-of-project report	By March 2012 (subject to external factors)

4.8 HEALTH AND SAFETY

The health, safety and welfare policy of Essex County Council's Waste, Recycling and Environment Branch will be followed throughout the project. The project will be essentially office-based, health and safety risks will be controlled by the adherence to the workplace policies and procedures in place at each premise.

4.9 METHODS STATEMENT

4.9.1 Analysis

Following project set-up, the first part of the analysis work will involve the preparation of composite plans of the Collins Creek and Pewet Island complexes. These will incorporate the results of the earlier work. These composite plans will be developed in a GIS so they can be utilised for further spatial analysis. The outputs from this stage will comprise revised plans, ESRI shapefiles and supporting data catalogue.

This data will be used to support analysis and to write a draft narrative text. This will, at this stage, provide an updated detailed description of each of these complex structures and improve / develop interpretations.

Research into other comparable sites, discovered or analysed since the earlier Blackwater study and publication will also be undertaken. Possible examples can be found in north Kent, around the Isle of Wight and in the Severn, along with a possible sub-tidal example at Canvey.

Research will be carried out into what non-archaeological data sources (particularly LiDAR) may be available and how they may contribute to future research. It is likely that bodies such as the Environment Agency have data that may be useful and available at low / no cost. As the data on the fishtraps is in a format that is suitable for use in a GIS, it presents the ideal opportunity to test the practicalities and effectiveness of the non-archaeological data. Assessment of the availability and cost of non-archaeological data and its usefulness will be made.

Following this stage of work the results will be reviewed and the publication synopsis amended for final approval/acceptance by the EAH editor. Thereafter, a publication text will be prepared along with appropriate illustration in the form of maps, plans and photographs.

4.9.2 Dissemination

The original Project Design proposed articles for popular publication in *Essex Past and Present* (ECC free newspaper supplement) and *Blackwater Matters/Junior Blackwater Matters* (a free quarterly magazine circulated by the Blackwater Project). In addition talks were to be prepared for *Aspects of the Estuary* (a series of talks arranged annually by the Blackwater Project). However, in the intervening period, production of *Essex Past and Present* has been ended and the Blackwater Project closed.

Dissemination will now be primarily achieved by means of academic publication in the county journal, *Essex Archaeology and History*. A preliminary publication synopsis is presented in Appendix 1. This proposal has been presented to the journal editor and has received in principle acceptance. In addition it is proposed that a digital research archive created through the course of this study (composite plans / shapefiles / data catalogue / report) be collated for deposition with ADS.

An OASIS record will be completed for the project and digital copies of the assessment and UPD uploaded. Summaries for each of the fishtrap sites will be submitted to the Essex HER to facilitate the update of database information, itself accessible via the *Unlocking Essex Past and Heritage Gateway* websites.

Prior to the appearance of the publication report, signposting of the project and its eventual product will be undertaken. Appropriate opportunities will be taken to deliver presentations to a wider audience at various county and regional forums (e.g. talks to local societies, Essex Archaeological & Historical Congress, etc.).

4.9.3 Archiving

As discussed above it is considered that it would be appropriate to integrate this archive with that of the earlier work at Collins Creek prior to final deposition. As the location of parts of the archive is currently unclear it is considered that it would be most appropriate to consider this as a separate piece of work. As such, the archiving proposed for this stage of work is limited to the collation of a digital archive and its deposited with ADS, so that at least part of the amassed data is available for a wider audience. ADS has agreed in principal to this and provided an estimated cost, which has been incorporated into the financial breakdown.

4.9.4 Closure

Once the study has been completed, the report accepted for publication, and archival material deposited with ADS formal closure of the project will be carried out. This will include

notice to all project participants informing them of its conclusion and the issue of an end-of-project report to English Heritage.

4.10 STAGES, PRODUCTS AND TASKS

4.10.1 Stages and products

The project comprises a total of seven stages of work, each resulting in an outcome or product. The various execution stages and their products are identified below, while product descriptions are detailed in Appendix 2. The programming of these stages is presented in Gantt chart format as Appendix 4.

Execution Stages

Stage No	Stage description	Product	Assigned to	Timetabled completion
1	Project initiation	Project participants primed & briefed	EMH	August 2011
2	Composite Plans	Composite plans Shapefiles Data catalogue (P1)	EMH	September 2011
3	Research & analysis	Research Revised Publication Synopsis (P2)	EMH	October 2011
4	Publication report writing / illustration	Completed first draft (P3)	EMH, APL,	November 2011
5	Digital archive collation	Accessible archive (P4)	EMH	November 2011
6	Internal editing & submission for EAH peer review	Final draft report (P5)	EMH, AS	December 2011
7	Project closure	Accessible archive & research dataset End-of-project report (P6)	EMH, AS	By March 2012 (subject to receipt of comments from EAH)

Key: P1-6 = Products (see Appendix 2)

4.10.2 Task list by stage

The following presents the component tasks to be undertaken in fulfilment of each of the identified execution stages of the project. This task breakdown, as presented in the December 2009 UPD, has been amended at the request of English Heritage.

The programming of these tasks is presented in Gantt chart format as Appendix 4. Post EAH submission Tasks 19-23 are, of necessity, nominal in their programming – primarily being dependent on the EAH editing programme.

Costs are presented by day rate (exclusive of overheads). A full financial breakdown can be found in Section 4.13.

Task No	Task description	Staff	No			
Stage 1: Project Initiation						
1	Project Start Meeting	All				
2	Assemble/check field data / archive	EMH	1			
Stage 2: Composite Plan Production						
3	Collate data	EMH	1			
4	Data processing / analysis	EMH	1			
5	Create shapefiles / data catalogue	EMH	1			
Stage 3: Research						
6	National Parallels and comparisons	EMH	1			
7	Documentary and cartographic research	EMH	1			
8	Research/analysis of non-archaeol datasets	EMH	1			
9	Preparation and submission of revised synopsis (EAH)	EMH	1			
10	Task removed - review of synopsis					
Stage 4; Publication Report Production						
11	Draft text production	EMH	1			
12	Illustration (site plans etc)	APL	1			
Stage 5: Digital Archive Collation						
13	Collate material for digital archive	EMH	1			
14	ADS liaison & deposition	EMH	1			
Stage 6: Internal Editing & Submission to EAH						
15	Internal Edit	AS	1			
16	Text revisions	EMH	1			
17	Illustration revisions	APL	1			
18	Submission to EAH	EMH	1			
19	Text revisions following EAH referee comments	EMH	1			
20	Illustration revisions following EAH referee comments	APL	1			
21	Checking and Correction of page proofs	EMH	1			

Continued below...

Stage 7: Project Closure						
22	Task removed - Project Review Meeting					
23	End-of-Project Report production / project closure	EMH	1			
Management and Administration						
24	Project Management	EMH	1			
24	Project Management	AS	1			
25	Project Management	MA	1			

4.11 OWNERSHIP

The intellectual property rights for written text and graphics will belong to ECC FAU. The contributions of all consultees will be appropriately acknowledged in the publication report. The role of English Heritage will be acknowledged in all outputs.

4.12 RISK LOG

ECC FAU as an organisation, and the principal project participant (Ellen Heppell), have undertaken a number of analysis and publication programmes for sites of a similar nature and complexity (e.g. Heppell and Brown 2008). As such, there is an awareness of the potential risks associated in carrying-out a project of this type. A total of 3 significant risks have been identified and are presented in the risk log presented as Appendix 3.

The identified risks will be monitored during the project and the risk log updated with changing or new risks as and when they arise. EMH and AS will be responsible for the review, update of the risk log and for taking appropriate action during the course of project review meetings.

4.13 BUDGET

It is calculated that the overall project will cost **£7910.63**, not including EAH publication and print costs, ADS deposition fee or conventional museum archive deposition charges. The component costs are summarised as follows:

Item	FY2011-12

Contingency costs totalling **£2,100.00** are additionally identified in the risk log (Appendix 3). These sums will not be used without the express permission of English Heritage, through discussion with the project monitor and the Commissions team.

Estimated project duration will be approximately five months, on the basis of the main contributor, Ellen Heppell, working an average of two days per week – the remainder of his time being committed to other commercial and grant-funded work. This will all be undertaken within FY 2011/12, with the possible exception of any amendments required following submission of the completed publication report to the EAH editor.

It is proposed that staged payments should take place after the completion of Task 18 (Submission to EAH) and Task 23 (Project Closure) with management and administration costs (tasks 24 and 25) split between the two:

Payment No.	Stage and Task	Date	Amount

The majority of the project costs comprise ECC staff time, rates for which are calculated on the basis of:

$$\frac{\text{Annual salary + NI + superannuation}}{\text{No of working days per year (200)}}$$

Overheads of 25% have been applied to ECC staff costs and 10% on external costs.

Project Financial Breakdown:

STAFF COSTS

Name	Position	No	Unit Cost Days	Ext. Totals
Ellen M Heppell	Project Officer	1		
AS and/or MA	Project Manager	1		
Andrew Lewsey	CAD Illustrator	1		
Meeting (in house)		1		

Total Staff Cost

NON-STAFF COSTS

Transport		1		
Consumables		1		

Total Non-staff Cost

OVERHEADS

ECC Overheads @ 25%
External overheads @10%

COST

INFLATION

Inflation @ 2.5% Inflation Figure Removed

TOTAL COST

Other Project Costs

ADS - Digital Storage Deposition Fee £1,000

BIBLIOGRAPHY

- Brown, N. & Glazebrook, J. (eds) 2000 *Research and Archaeology: a framework for the Eastern Counties, 2. Research agenda and strategy*, E. Anglian Arch. Occ. Pap. **8**
- Brown, N., Murphy, P., Ayers, B., Bryant, S. and Malim, T. 2000 'Research Themes' in Brown, N. and Glazebrook, J. (eds) *Research and Archaeology: A Framework for the Eastern Counties 2. Research agenda and strategy* East Anglian Archaeology Occasional Paper 8, 44-48
- English Heritage 2005 *Discovering the Past, Shaping the future: Research Strategy 2005-2010*
- English Heritage 2006 *Management of Research projects in the Historic Environment: the MoRPHE Project Managers' Guide*
- English Heritage 2008 *SHAPE 2008: a strategic framework for historic environment activities & programmes in English Heritage*
- Hall, R. and Clarke, C.P. 2000 'A Saxon inter-tidal fish weir at Collins Creek in the Blackwater Estuary' *Essex Archaeology and History* **31** 125-147
- Heppell, E. 2004 *Greater Thames Estuary, Essex Zone. Monitoring Survey. Assessment Report*. ECC Limited Circulation Report
- Heppell, E. , Brown, N. and Hall, R. 2006 *Blackwater Estuary Fish Traps Monitoring Survey. Project Design Version 2* ECC Limited Circulation Report
- Heppell, E. and Brown N. 2008 'Rapid Coastal Zone Survey and beyond; research and management of the Essex coast, UK' *Journal of Wetland Archaeology* **8** 24-50
- Saunders, H. *In Press* *The Essex Mapping Project* East Ang Arch Monograph
- Lenham, J 2000. *High resolution seismology, archaeology and submerged landscapes - a interdisciplinary study*. University of Southampton Faculty of Science School of Ocean and Earth Sciences PhD Thesis
- Lenham, J.W. , Dix, J.K., Strachan, D. and Bull, J.M. 2000 *Inter-disciplinary investigation of Saxon Inter-tidal Fish Weirs in the Blackwater Estuary, Essex*. Unpublished Report
- Strachan, D. 1998 'Inter-tidal stationary fishing structures in Essex: some C14 dates' *Essex Archaeology and History* **29** 274-284
- Williams, J. and Brown, N. (eds.) 1999 *An Archaeological Research Framework for the Greater Thames Estuary*

Appendix 1: PRELIMINARY PUBLICATION SYNOPSIS

'Saxon fishtraps in the Blackwater Estuary, Essex: monitoring survey at Collins Creek and Pewet Island 2007-2008'

by Ellen Heppell

1. Introduction

It is proposed that the results of recent fieldwork carried out at fishtraps in the Blackwater estuary, along with consideration of the issues of erosion, research and management in/of the inter-tidal zone, are published as a paper in the county journal *Essex Archaeology and History*, with a digital research archive made accessible via the *Archaeological Data Service* website. The paper is proposed to be an estimated 5000 words including c.10 figures and four plates.

2. Summary of Results

A series of field survey visits were made during the period 2007-08 to record new exposures and assess the impact of ongoing erosion of estuarine silts at two specific known, and previously-surveyed, Saxon fishtrap sites. These visits established that significant erosion was indeed in progress, with substantial and hitherto unexposed parts of the Collins Creek and Pewet Island fishtrap structures actively being uncovered and other parts being damaged or destroyed altogether.

The recovered information adds to the understanding of these, and other, fishtraps in the Blackwater estuary and provides measurable data with which to assess the nature and rate of erosion taking place in this inter-tidal environment. Additionally, a number of methodological lessons have been learnt that are of benefit to the improved investigation and management of such monuments in the inter-tidal zone. It is furthermore suspected that there is significant potential in the consultation and use of non-archaeological data sources, such as Lidar.

3. Aims and Objectives

The main research objectives of the proposed works are summarised below:

- *To study the nature and extent of the Collins Creek and Pewet Island fishtrap remains; to improve and understanding of their form, function and development through analysis of the results of both the recent and earlier surveys*
- *To research the availability and usefulness of non-archaeological datasets such as LiDAR to the understanding of the monuments and site prospection/ monitoring / investigation*
- *To place the Blackwater fishtraps in their regional / national context through the study of similar monuments*
- *To consider coastline change in relation to the Blackwater fishtraps; now and into the future*
- *To disseminate project results*

4. Proposed Report Contents

'Saxon fishtraps in the Blackwater Estuary, Essex: monitoring survey at Collins Creek and Pewet Island 2007-2008' (working title)

Summary

Introduction (inc. topography, archaeol background, previous work)

Monitoring Survey Methodology

Results:

Collins Creek

Pewet Island

The Nass (summary only)

Discussion:

Significance & value

Erosion and exposure

Monitoring/ evaluation techniques (used and future)

Coastal change

Conclusion

Acknowledgements

Bibliography

Appendix 2: PRODUCT DESCRIPTIONS

These products descriptions (P1 to P6) specify the identified project outputs.

P1. Composite Plans

Purpose of the product: To enhance the extant plans to support further analysis

Composition: Site plans of the fishtrap complexes

Derived from: Field survey data / GIS data

Format & presentation: Digital site plans (plus shapefiles and data catalogue)

Allocated to: EMH

Quality criteria & method: Internal review and feedback

Person/group responsible for quality assurance: AS, EMH

Person/group responsible for approval: AS

P2. Revised Publication Synopsis

Purpose of the product: To update the publication synopsis following additional research

Composition: Publication synopsis

Derived from: Composite plans and additional analysis and research

Format & presentation: Document (MS Word)

Allocated to: EMH

Quality criteria & method: Internal review and feedback

Person/group responsible for quality assurance: AS, EMH

Person/group responsible for approval: AS (and subsequent EAH editor acceptance)

P3. First Draft

Purpose of the product: To produce collated copy for editing and discussion

Composition: Publication draft (text, illustrations)

Derived from: Above products

Format & presentation: Text, figures, plates (MS word, tiff, etc)

Allocated to: EMH, APL

Quality criteria & method: Internal review and feedback

Person/group responsible for quality assurance: AS, EMH

Person/group responsible for approval: AS

P4. Digital Archive

Purpose of the product: To collate a digital archive for the monitoring survey for deposition with ADS, to facilitate access to site and research data by future researchers

Composition: Digital data

Derived from: Field survey data, digital mapping, other digital data

Format & presentation: text documents, maps/plans (incl. shapefiles and data catalogue), photos – all in appropriate digital format as per ADS guidelines

Allocated to: EMH

Quality criteria & method: Internal review and feedback

Person/group responsible for quality assurance: AS, EMH (content and formats as per ADS guidelines)

Person/group responsible for approval: AS

P5. Publication Report

Purpose of the product: Dissemination of monitoring survey results through publication

Composition: article in Essex Archaeology & History journal

Derived from: Publication draft (Product 3) following internal edit

Format & presentation: Collated, edited and checked publication text, figures and plates

Allocated to: EMH

Quality criteria & method: Internal review and feedback (to EAH format)

Person/group responsible for quality assurance: AS, EMH

Person/group responsible for approval: AS, MA

P6. End-of-project report

Purpose of the product: To conclude and critically assess the effectiveness of the study

Composition: Analysis of lessons learnt. Recommendations for future methodologies and avenues of study. Identification of problems. Successes. Topics for future study

Derived from: Issues log

Format & presentation: End-of-project report (MS Word document)

Allocated to: EMH, AS

Quality criteria & method: Critical review by key project members

Person/group responsible for quality assurance: AS

Person/group responsible for approval: MA

Appendix 3: RISK LOG

No	Description	Risk Type	Probability	Impact	Countermeasures	time/cost implication	Owner
1	EMH or APL unable to maintain project schedule due to other work commitments	Low	Medium	High	ECC FAU to employ extra member of staff to take on their other work commitments	None	EMH / APL
2	Draft publication text needs unexpected major overhaul after EAH editing / peer review	Low	Low	Medium	None. Will require extra time by main contributors (EMH, APL) and possibly project manager to remedy.	4 days EMH + 2 days APL + 2 days AS = c.£1420 extra cost	EMH / APL
3	Non-archaeological sources of data are identified that significantly contribute to project	Medium	Low	Medium	New data assessed. Decisions made to use only most pertinent. Others referenced for future access/research	4 days EMH = c.£680 extra cost	EMH