

BLACKWATER ESTUARY FISH TRAPS

MONITORING SURVEY

PROJECT DESIGN

VERSION 2

(Supersedes Version 1 dated September 2005)

Prepared by
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and R. Hall



Essex County Council
HISTORIC ENVIRONMENT BRANCH

March 2006

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Version Number: 2
Date of Issue: March 2006
File ref: 867fishtraps_mon_pd_final2
ECC FAU Proj Ref: 867 (2005-6)
English Heritage Proj Ref: 4638

Reasons for revision: Response to EH compiled comments:
Revised ROs / additional information on UPD
Additional section re sampling
Archive deposition information

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BLACKWATER ESTUARY FISH TRAPS

MONITORING SURVEY

1.0 INTRODUCTION

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. These fish traps are large, often very large, and complex monuments, comprising numerous wooden posts in various alignments, along with wattlework 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 Ingle *forthcoming*) 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 and contribution to the Planarch Interreg project, Essex County Council (ECC) funded re-visits to the Collins Creek complex (Heppell 2004).

The following project design sets out proposals to carry out further work on the Blackwater Fish Traps. The proposed project will be split into three main elements

- Monitoring visits to the Collins Creek Complex
- Monitoring visit to the Pewet Island traps
- Reconnaissance survey at Southey Creek

The proposed work will complement previous projects around the Essex coast, particularly the recently completed monitoring survey (Heppell 2004); extending its scope both chronologically, and geographically to a range of important structures significantly different in scale and topographic position to those monitored in the earlier survey. 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)

2.0 BACKGROUND

“One of the most obvious of coastal activities, fishing, is also one of the most elusive to document...” (Ingle forthcoming)

Documentary sources, along with artefactual and environmental evidence from archaeological sites clearly attest to the importance of fish in the medieval period. Domesday refers to numerous ‘fisheries’, including holdings around the Blackwater, but what type of fishery is not specified. On the Foulness/Maplin Sands in the early 15th century there were ‘... 57 weirs, 18 kiddles, 10 fisheries *cum hamis at cordis* [with lines]’. Fish weirs comprise permanent stationary structures, artificial walls of stone and/or wood which channel fish into nets or traps. These differ slightly from ‘kiddles’ where the uprights support a net. The weirs are substantial structures, at their simplest being a ‘V’ shape. The timber alignments recorded in Essex are between 170m and >1600m in length. 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 (Strachan 1998).

The majority of the extant examples of fish weirs around the Essex coast have been found in the Blackwater estuary (Fig 1). In the 1970s the existence of the Sales Point fish trap was brought to the attention of Kevin Bruce, a local archaeologist, by Rodney Lerner. He had in turn been made aware of the site by Walter Linnet of Bradwell, a wildfowler, in the 1960s. At this time 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).

Survey at Collins Creek concentrated on obtaining an accurate plan of the complex (Fig 2), obtaining samples for species identification and scientific dating. Survey utilised aerial photographic reconnaissance combined with stop-go-GPS. The various alignments were spread out in an area of some 3km by 0.7km, located on an area of intertidal mud banks. This mud bank is defined by Thirslet Creek to the north and the main channel of the Blackwater to the south, it is bisected into three ‘islands’ by Upper and Lower Collins Creeks. The southern side of the bank is defined by shell and gravel ridges (Hall and Clarke 2000, 127).

The full plan of the complex identified a linear (but fragmentary) alignment running roughly parallel with MLW along the southern side of the bank. Three shorter alignments run north west of this

alignment, forming the typical V shape. There are 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. Dendrochronology proved to be unsuitable but radio-carbon dated the elements of the structures sampled to the 7th-10th centuries, Saxon rather than medieval (Strachan 1998, Hall and Clarke 2000).

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 brought the total of known sites in the estuary to seven:

- Collins Creek
- Sales Point
- Pewet Island
- South of Pewet Island
- The Nass
- West Mersea
- East Mersea

Further sampling at the east end of Collins Creek provided 7th-9th century dates. The Nass was dated to the 7th-9th centuries, and Sales Point 7th – 10th centuries. During the visit to Sales point to collect timber samples for dating a substantial deposit of fish bone most apparently from large species was noted adjacent to the bag shaped 'pound' at the northeast end of the trap (Strachan 1998).

In 1998 RCHME commissioned a geophysical survey 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).

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 (underlined on list above, SAM Nos 32405, 32404, 29427 and 32402). The sites of three of these (Pewet, The Nass and Sales Point) are marked on the most recent Admiralty chart as 'Ancient Fish Wiers' (No 3741, 2003).

In 2003 revisits to the Collins Creek complex were carried out, funded by ECC. This work clearly illustrated the complexities of defining monuments within a dynamic coastal environment. The gravel and shell bank which had defined the southern edge of the mudbank had shifted. This had exposed new elements of the traps. Erosion had also taken place within the bank. One of the

permanent survey stations utilised in the early 1990s was re-located. This had initially been flush with the surface but now stood proud by some 0.25m. The re-visits also clarified the layouts of some of the alignments, establishing V terminals where sections had been 'floating' (Heppell 2004).

3.0 REASONS AND CIRCUMSTANCES

The Blackwater fish traps are nationally important monuments, they are however located in an area where they are vulnerable to natural erosive processes. The complex shifting depositional environment within the estuary also means that elements of the monuments are masked at any given time. Monitoring survey will serve to elucidate the layout of the monuments, identify threats, and consider rates and types of loss.

At Collins Creek the brief re-visits have already illustrated that new elements have been exposed. The comparison of the data from the three surveys (aerial photographic, 1993/4 GPs and 2003 GPs) has however to be approached with caution due to the differing levels of accuracy. It is considered that further survey at Collins Creek would provide an enhanced plan of the monument. Of particular interest are those timber alignments which have no clear purpose, i.e. they do not appear to be an arm of a trap. The availability of comparable datasets will also allow considerations of the nature and rates of erosion to be considered.

The Pewet Island trap is located on the opposite side of the main channel to Collins, but bears some similarities. The main trap comprises two parallel lines of posts running parallel to MLW. Two arms run of across the flats from the main alignments. Further south three further alignments have been identified, at the mouth of St Lawrence Creek. These could form part of the same complex or represent a separate feature. Sidescan sonar survey over the main trap illustrated that it extended into the sub-tidal zone.

The Pewet Island trap has not been re-visited since the late 1990s and no ground based survey has 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. The final plots are considered to be accurate to c 10m (Strachan 1998), the best available without complex surveying as at Collins Creek.

Monitoring survey at Pewet Island will be carried out primarily to assess the condition of the monument. There may also be new elements of the structure exposed which can also be planned. Depending on ground conditions it may also be possible to obtain a more detailed plot, using modern DGPS equipment.

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. Although the type of structure is unconfirmed it may be a trap, the topography broadly similar to that of the Nass. Survey at the lowest tide would primarily be utilised to confirm if such a structure is present.

The monitoring survey will take forward the framework objectives relating to intertidal archaeology as set out in the Greater Thames research framework (Williams and Brown 1999, 31) particularly the specific areas of research

- Monitoring and recording of known sites and structures
- Monitoring the effect of erosion on individual sites

4.0 AIMS AND OBJECTIVES

It is intended that the three strands of work outlined above will contribute to the following objectives:

RO 1: Provide enhanced/ updated plans of the monuments

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

RO 3: Identify new features (contributes to RO 2)

RO 4: Identify areas of loss (contributes to RO 2)

These will be taken forward by:

A1: Re-visits to Collins Creek (RO1-4)

A2: Visit to Pewet Island Trap (RO 1, 2; potentially 3-4)

A3 Visit to Southey Spit (potentially RO 2 and 3)

5.0 METHODS STATEMENT

There are a number of practical considerations when considering fieldwork on the Blackwater fish traps which act as constraints. These can be summarised as follows:

Health and Safety

The fish traps are located within the intertidal zone within the Blackwater Estuary, there are thus a number of identifiable risks which need to be considered when working in this zone. These include becoming lost or trapped on the flats, becoming trapped in soft foreshore muds and exposure. Unexploded ordnance is also known to be a potential issue. Access is only possible by boat which presents additional potential risks. The preparation of a detailed risk assessment is therefore a costed task in this project design. In general Health and Safety considerations will always take

priority during the survey. Prior to and during field survey sites are individually assessed. During this assessment, additional risks not covered by the *Code of Practice* are identified and the appropriate action is taken. A copy of any such Risk Assessment is kept on site.

The project will follow Essex County Council Environmental Services Directorate's statement on health and safety at work and will adhere to the latest health and safety legislation. Essex County Council has employer's liability insurance, and third party liability insurance in respect of any incident on site involving County Council staff. The Field Archaeology Unit has an extensive *Code of Practice* which covers both fieldwork and office based work to ensure that risks are adequately controlled. The policies outlined in this document will be adhered to.

Access

The fishtraps would, at the time of construction, been located around the low water mark. As a result of sea level rise they are now close to the lowest tides, and indeed some elements are sub-tidal. They are therefore only exposed at the very lowest tides (below 0.5 Admiralty Chart Datum) which occur infrequently. The opportunities for ground survey are further limited by the need for these low tides to coincide with daylight hours.

Reference to predicted tides has identified 13 days in July, August and September 2006 where work on the fish traps should be feasible. Assuming that there are favourable conditions (weather patterns having a significant effect on the tidal range) it is possible to work safely for around 2 -3 hours on site.

At Collins Creek the channels which bisect the bank, effectively splitting it into three islands, cannot be crossed on foot. Survey of each island therefore needs separate tidal windows.

The methodology outlined below takes into account these limitations. The on-site tasks have been set out in order of priority.

Collins Creek

The re-visits to Collins Creek will take place in August 2006. A preliminary visit will be made to each of the islands to identify any new features and record them using the DGPS. Further visits will concentrate on detailed planning where DGPS is inappropriate, for example wattlework. Should time be available re-planning of the complex with the DGPS will take place.

In addition to the timber alignments the edges of the gravel banks will take place, this will allow comparison with extant datasets such as the ECC vertical APs and historic mapping. The survey

points set out in the 1990s will where possible be re-located and the exposed height measured in order to provide an indication of vertical erosion in the area.

Pewet Island

The survey of the Pewet Island fishtrap will initially establish the presence or absence of features identified in previous studies. If these features are present, and ground survey is considered safe, exposed alignments will be planned by DGPS. This data will be broadly comparable with the AP plots and possibly the sonar survey data. It can therefore be used to consider rates of exposure and loss.

Southey Spit

The sidescan sonar survey in the Blackwater identified what may be timber alignments in the vicinity of Southey Pit (Hall *pers comm*). The proposed visit to this area will initially aim to establish if any timber alignments are exposed at low tide. Should they be visible, and it is considered safe to do so, any visible features will be planned.

Sampling

During this phase of fieldwork any deposits of fishbones (as found at Sales Point in the 90s) will be sampled and collected with a view to analysis and reconstruction of the fish populations being exploited which may help to place the traps within a socio-economic context.

Assessment

Upon the completion of the field survey an assessment report will be prepared for issued to English Heritage and inclusion in the Essex Historic Environment Record. Articles will also be prepared for popular publication in *Essex Past and Present* (newspaper supplement) and *Blackwater Matters/Junior Blackwater Matters* (a free quarterly magazine circulated in the Blackwater area). It is also considered that a shorter note should be prepared for publication in *Essex Archaeology and History* to provide updated information on the sites. Both previous papers on the fish traps have been published in this journal.

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. In addition to the articles outlined above talks will be prepared for *Aspects of the Estuary* (a series of talks arranged annually by the Blackwater Project) and the Essex Archaeological Symposium (annual symposium organised by the Essex Congress).

Following assessment a UPD will be prepared as a publication proposal, in line with EH guidelines. The UPD will address the Research Objectives outlined in section 4.0. These include using the

results to establish a sound basis for management and research; which will consider issues such as dating, fish populations and woodland management.

Archiving

An OASIS record will be completed for the project and digital copies of the assessment and UPD submitted to this body. The digital archive will be submitted to ADS.

Proposals for the deposition of the paper archive will be addressed in the UPD. The archive for the Collins Creek work carried out in the 1980s has not been deposited at the present time. It is considered that it would be appropriate to integrate this archive with that of the proposed project prior to deposition at Colchester Museum.

6.0 STAFFING, PROGRAMMING AND RESOURCES

The project team will comprise suitable experienced ECC staff. The project will be managed by Ellen Heppell. A project assistant from the ECC FAU team will be assigned to the project as required.

Ron Hall, the author of the previous work on Collins Creek and an experienced boatman with considerable knowledge of the Blackwater estuary and its tides, will be involved in the project as a specialist. This includes vital boat based transport to the sites, assistance in the survey and a contribution to the reports.

It is proposed that the project be carried out in the 2006-7 financial year. Project set-up tasks will take place in May/June. Fieldwork will take place within appropriate tidal windows identified in July, August and September. Assessment and reporting will take place in the following months. It is estimated that the project would be completed by the end of December 2006. A project timetable is included as Appendix 3.

ECC staff rates are calculated on the basis of:

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

Overheads of 25% have been applied to ECC staff costs. As the project falls in the next FY a spinal increment in salary costs has been included. The additional total also takes into account estimated inflation at 2.5% (as per EH requirements).

As a number of the tidal windows lie on weekends an allowance has been included for overtime in line with ECC policy. This is calculated at time and a half.

Non staff costs include transport (to and from embarkation point and boat fuel costs) and general consumables. Due to the restrictions of working within the tides, particularly when working both tides, travel to and from home may prove to be impractical. An allowance for accommodation closer to the embarkation points has also been included.

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APPENDIX 1: TASK LIST

Date: 06-Sep-05
FAU ref. 867- 2005/6
EH Ref 4638

<u>Task No</u>	<u>Description</u>	<u>Person</u>
1	Project Management	EMH
	Project Administration	FvK
	FAU Management	MA
2	Survey Set-Up	EMH
	(incl Risk Assessment)	RH
		MA
		APL
3	Field Survey	EMH
		ANO
		RH
4	Assessment Report	EMH
		RH
		NB
5	Popular Articles/ Talks	EMH
		RH
6	UPD	EMH
		RH
		NB

APPENDIX 2: PRESENTATION OF FINANCIAL INFORMATION

Date: 06-Sep-05
FAU ref. 867-2005/6
EH Ref 4638

Financial Year 2006-7

ECC STAFF

Description		Person	Unit Cost	Days	Cost
Ellen M. Heppell	EMH	Project Officer			
	EMH	Project Officer			
Frances van Keulen	FvK	Administration			
Mark Atkinson	MA	FAU Manager			
Nigel Brown	NB	HEM Manager			
Andrew P Lewsey	APL	CAD Officer			
To be assigned		Project Assistant			
		Project Assistant			

EXTERNAL STAFF

Ron Hall	RH	External Specialist			
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NON STAFF COSTS

Transport (car hire and milage)

General consumables

Accomodation and expenses
(overnights)

Boat Fuel

Expenses (eg mooring fees)

Report Production

TOTAL PROJECT COST

** Costs exclude VAT

APPENDIX 3: PROJECT TIMETABLE

		2006					
		Person	Dependencies	May	June	July	August
1	Project Management Project Administration FAU Management	EMH FvK MA	Ongoing Ongoing Ongoing				
2	Survey Set-Up (incl Risk Assessment)	EMH RH MA APL					
3	Field Survey	EMH ANO RH	Completion of 2				

		2006					
		Person	Dependencies	September	October	November	December
3	Field Survey (cont.)	EMH ANO RH					
4	Assessment	EMH RH NB	Completion of 3				
5	Popular Articles/Talks	EMH RH	Completion of 3				
6	UPD	EMH RH NB					

Task will take place as appropriate in the identified windows

2006						
Task Summary	Person	Dependencies	May	June	July	August
1 Project Management	EMH	Ongoing				
Project Administration	FvK	Ongoing				
FAU Management	MA	Ongoing				
2 Survey Set-Up (incl Risk Assessment)	EMH RH MA APL		█	█		
3 Field Survey	EMH ANO RH	Completion of 2			█	█

2006						
Task Summary	Person	Dependencies	September	October	November	December
3 Field Survey	EMH ANO RH		█			
4 Assessment Report	EMH RH NB	Completion of 3		█	█	
5 Popular Articles/ Talks	EMH RH	Completion of 3		█	█	█
6 UPD	EMH RH NB					█

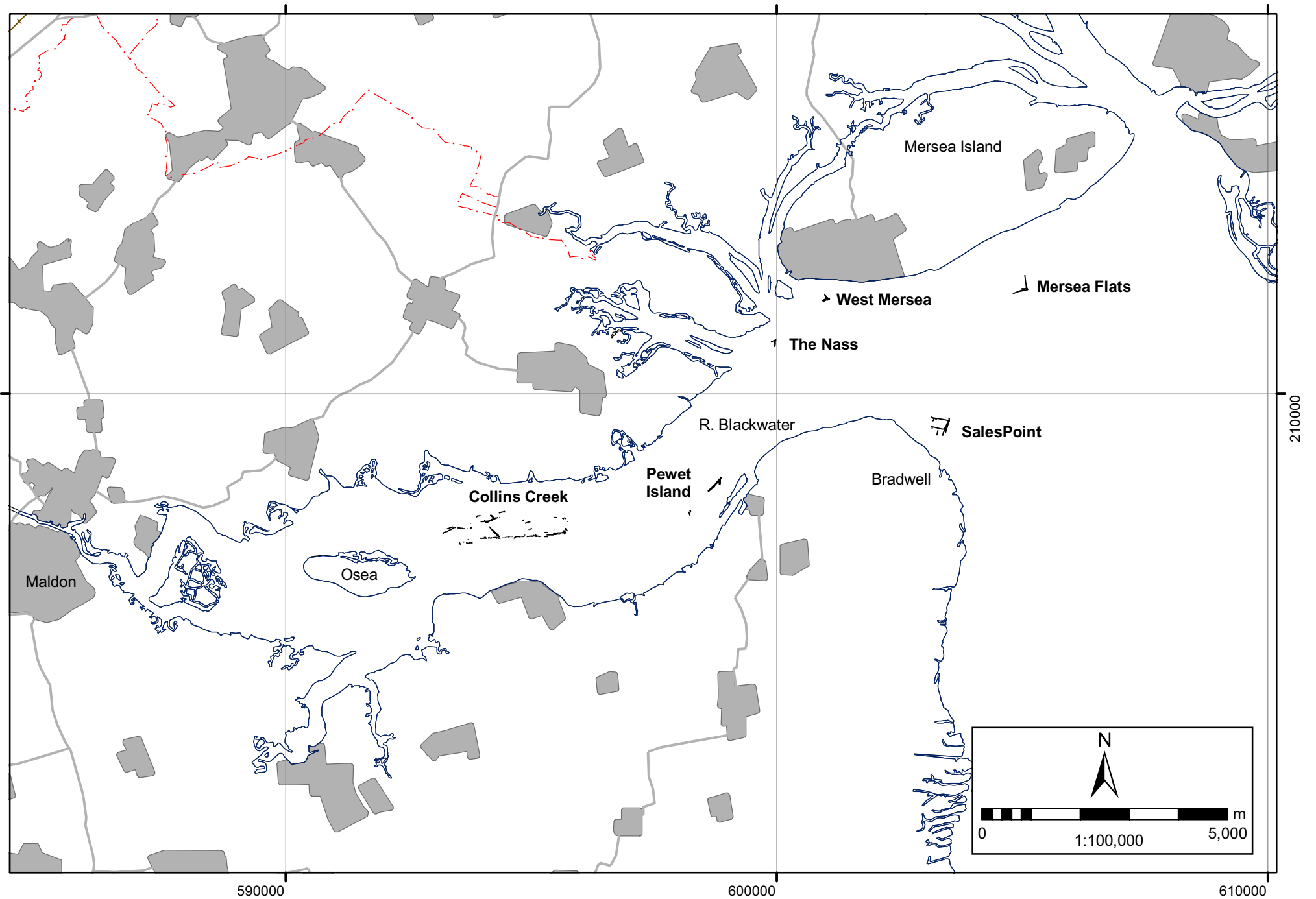


Fig 1 Location of known fish-traps in the Blackwater Estuary

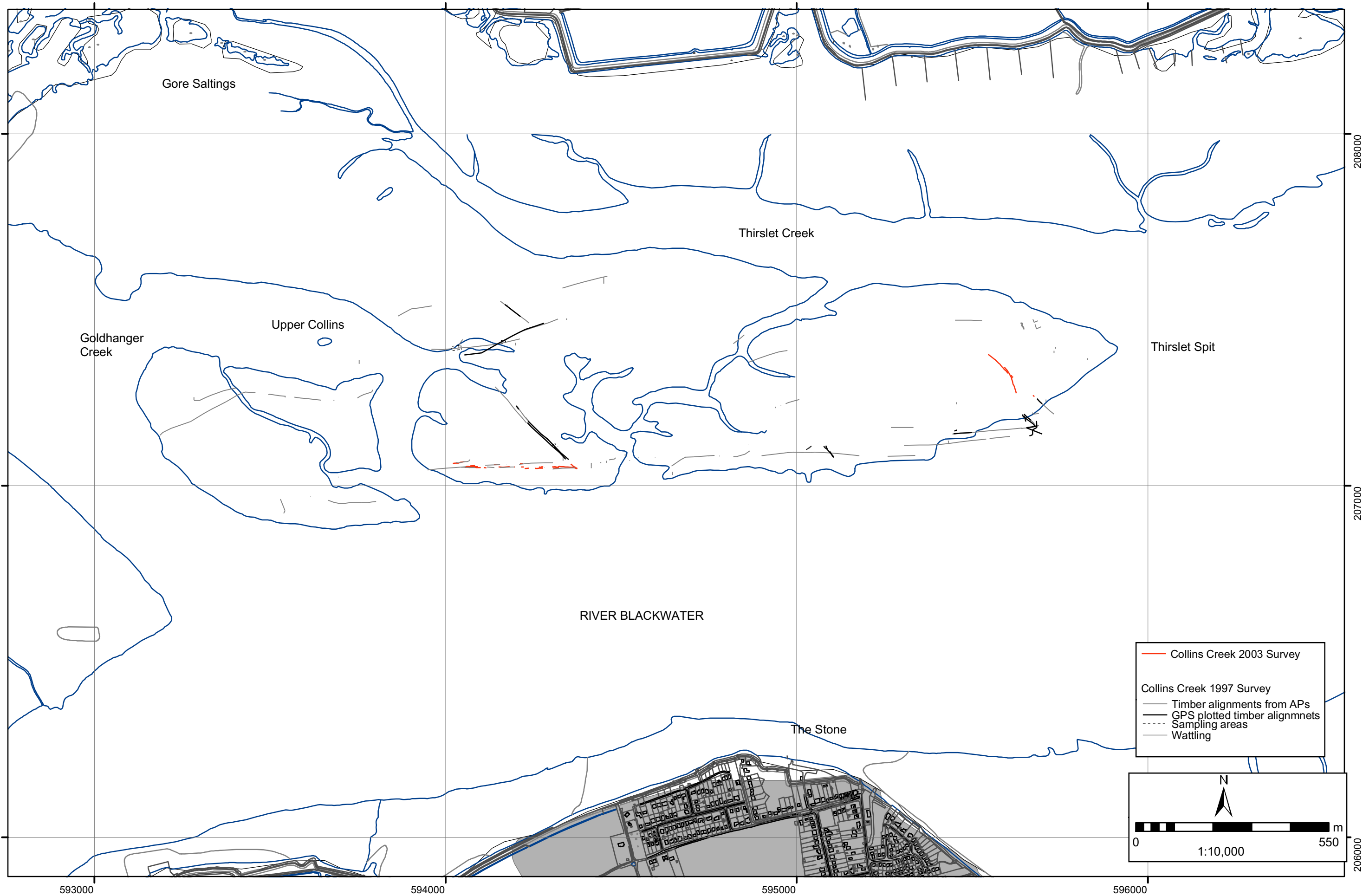


Fig 2 The Collins Creek fish-trap complex; showing AP plot, 1997 and 2003 survey data

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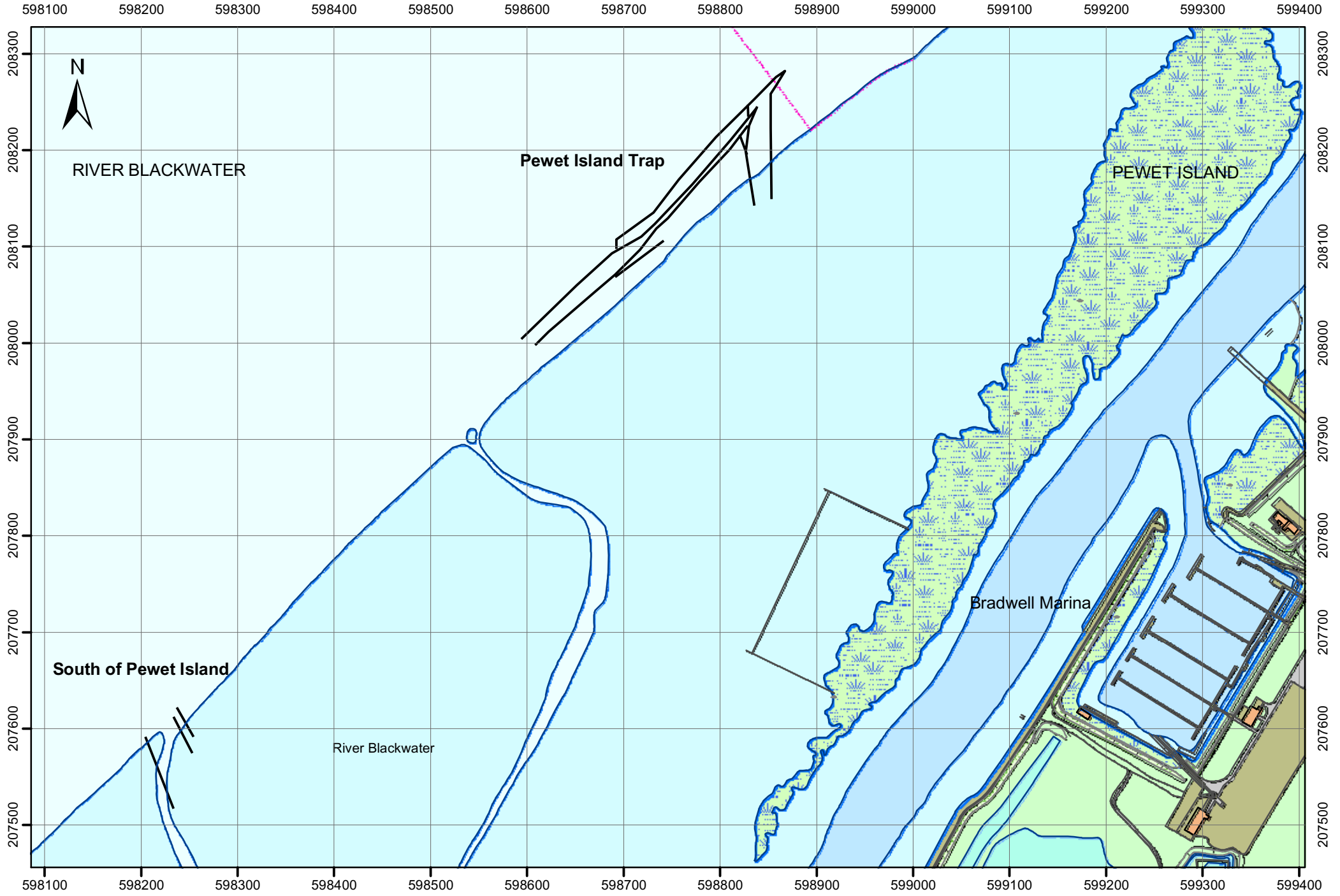


Fig 3 Pewet Island Fish Traps

