

# CHAPTER 1

## The North East Rapid Coastal Zone Assessment (NERCZA)

### 1.1 Introduction

The design of this project is based on the methodology outlined in version 4 of *A Brief for Rapid Coastal Zone Assessment Surveys* (English Heritage 2005). This methodology arose and developed from the earlier English Heritage document entitled *England's coastal heritage: A statement on the management of coastal archaeology* (English Heritage & RCHME 1996). The area covered by the NERCZA project is the strip of land with a width from the lowest astronomical tide (LAT) to 1km in-land from mean high water springs (MHWS) and running from the Anglo-Scottish border in the north to Whitby in the south. The project has been undertaken as a joint venture involving partners from Archaeological Research Services Ltd, Northumberland County Council, Tyne and Wear Specialist Conservation Team, Durham County Council Cultural Services Team, Tees Archaeology, North York Moors National Park Authority, North Yorkshire County Council, the Northumberland Coast Area of Outstanding Natural Beauty and the Durham Heritage Coast. Archaeological Research Services Ltd has acted as the lead partner.

The NE Coast has long been the subject of archaeological research, particularly in relation to prehistory but more recently in relation to most periods, up to and including World War II coastal defences. Nationally important archaeological remains have been identified along this stretch of coast and the area has been identified as an area of high archaeological potential (English Heritage and RCHME, 1996, 10).

This project is a desk-based study. Its aim has been to undertake detailed desk based research, including the collation and synthesis of all existing archaeological data relating to the study area. This has included the acquisition of HER and NMR data together with data from published research projects and grey literature arising from development funded projects. This has been combined with a programme of aerial photographic transcription and analysis of all the existing aerial photographic coverage to the standards of the English Heritage's National Mapping Programme (NMP). A large amount of data has been obtained from the various sources and the systematic collation of these data into a single body has produced a valuable resource for improved management of the coastal historic environment as well as for research, education and public enjoyment.

The project has brought the following benefits:

- 1 SMR/HER enhancement.
- 2 NMR enhancement.
- 3 Assistance in the provision of an improved curatorial response to strategic coastal planning and development issues.
- 4 Facilitation of a more detailed and comprehensive analysis of areas of archaeological importance under threat from natural and human processes.
- 5 Production of data which will be integrated into Defra's Shoreline and Estuary Management Programme which will assist in the protection and/or mitigation of damage to historic

- assets.
- 6 Improvement of information available to researchers.
  - 7 Provision of information to underpin public understanding and enjoyment of the coastal heritage.

## 1.2 Reasons for and Circumstances of the project

Since the last period of glaciation the sea level on the NE coast has risen by 30m as a result of melting of the ice. A recent estimate suggests that for parts of Northumberland during the Mesolithic period the coast would have been several hundred metres further offshore. However, Agar (1954) claimed that the shoreline at Saltburn in Cleveland would have been 3 miles further east than at present at *circa* 10,000 cal BC. It is clear from all the evidence that the present day coast would have been relatively high land during the early prehistoric period overlooking a low coastal plain. Evidence for this can be seen in the raised beaches in the north of the area and also in the peat beds and submerged forests which can be seen at Druridge Bay and Cresswell in Northumberland, and at Seaton Carew near Hartlepool. The discoveries of Neolithic material within these inter-tidal deposits suggest that there has been a significant rise in sea level since that period.

The North East Coast is subject to ongoing processes of erosion of two principal types:

- *Natural processes:* The east coast is subject to the combined erosion of the sea, wind and rain cutting into the cliffs of clay, limestone, shale and sandstone. The wind also causes the protective sand dunes to drift, or for 'blow outs' to occur, revealing and exposing archaeological sites to further erosion. Elsewhere, there are areas of accretion where eroded material is re-deposited at different locations along the coastline which can also mask archaeological sites.
- *Human processes:* Natural processes of erosion are only part of the threat to archaeology in the NE coast. Anthropogenic threats include footpaths and recreational activities in the sand dunes, the dumping of colliery waste, the building of sea defences, jetties and piers, pipeline construction, wind farms, mineral extraction and construction and development in the form of housing, caravan parks and recreational facilities.

In the past a range of views have been expressed about the rate of coastal erosion. Posford Duviver (1993) undertook a study of historic shoreline positions in Durham and calculated that there has been a rise in sea level of 2.5m in the last 4750 years, and that there has been an average cliff regression of 0.08m per annum. However, the Baptie Group believed the erosion rates to be higher and calculated that the coastline has receded by 380m since *c.* 2750 cal BC (Baptie Group 1995). Wherever research is undertaken, whilst there may be differences of opinion as to the extent, it is clear that there is significant ongoing erosion of the present day coastline though this is uneven due to variations in geology along the coast. The results of the NERCZA project are reviewed within the context of Defra's *Shoreline Management Plans* which also provide the most up-to-date assessments of rates of erosion while Ian Shennan and Natasha Barlow of the Department of Geography at Durham University have summarised their research into past sea levels (Chapter 3).

*Archaeology under threat:* The active processes of erosion highlighted above are constantly damaging and destroying archaeological sites. Shifting dunes have exposed, and in some cases destroyed, Bronze Age funerary monuments. At Low Hauxley, a programme of rescue excavations demonstrated that otherwise intact burial cairns were suffering ongoing erosion (Drury *et. al.* 1995), a situation confirmed by the further exposure of human remains and cists as the dunes continue to erode. The unstable nature of the dunes has also damaged WWII coastal defences, such as the pillboxes at Druridge Bay, Northumberland (SCAN 1995). Coastal erosion was responsible for the loss of a Roman signal station at Huntscliff, Saltburn, Cleveland (Spratt 1979). The recent excavation of the Mesolithic settlement at Howick on the Northumberland coast, which had been severely damaged by the effects of coastal slippage (Waddington *et. al.* 2003), is another striking example. Anthropogenic damage, such as footpath erosion, has been identified at Lindisfarne Castle (O’Sullivan and Young 1995). In Cleveland, once extensive evidence of medieval saltworking on the south side of the Tees has now been completely masked by industrial development. Industrialisation around the major estuaries of the Tyne, Wear and Tees will inevitably have masked, if not destroyed, many archaeological sites.

### 1.3 Previous Work and the Archaeological Resource

The NE coast has long been recognised as an area exceptionally rich in archaeological remains of all periods. From the advent of archaeological interest, the area has produced nationally important prehistoric sites through the discovery and collection of flint assemblages uncovered by erosion. Francis Buckley, who was at the vanguard of Mesolithic research in the early C20, developed his theories, in part, upon flint sites discovered on the Northumberland coast (Buckley 1922a, 1922b & 1925). Nationally important sites were discovered at Filpoke Beacon (Coupland 1948) and Crimdon Dene (Raistrick & Westoll 1933) on the County Durham Coast. Most of these sites contained lithic assemblages typical of the later Mesolithic, Neolithic and Bronze Age periods (Raistrick 1933) although Weyman (1984) has identified an assemblage from Hart, County Durham, that probably belongs to the early Mesolithic (10500–8000 cal BC.). The discovery of flint scatters along the coast has continued to the present day, although additional information such as radiocarbon dates has generally been lacking. However, the recent discovery of an *in-situ* Mesolithic hut at Howick has indicated the potential of such coastal sites, even when exposed by erosion (Waddington 2007) and has produced 33 radiocarbon dates.

From an early date there was also recognition of the importance of submerged forests and peat beds which had been identified in the inter-tidal zone off the NE coast. C.T Trechmann, who had been involved at the outset of archaeological investigation on the NE coast (Trechmann 1905, 1912), reported on flints collected from the submerged forest at Hartlepool and undertook further work on these deposits (Trechmann 1936; 1946). Artefacts and animal bones dating from the early Mesolithic, late Mesolithic and Neolithic periods have been collected from this forest bed. Significant discoveries from the peat beds include the discovery of a skeleton of Neolithic date (Tooley 1975), and a hurdle panel radiocarbon dated to c.3700 cal BC was discovered in 1984. Further work undertaken by Cleveland Archaeology Section in 1990 uncovered a line of wooden stakes in association with a small pile of domestic waste, worked flints and a cut piece of antler which may indicate the presence of a settlement. Additional investigations of the submerged forest were

undertaken by Tees Archaeology in 1995 and 2002 as part of work on the sea defences (Waughman *et. al.* 2005).

Similar remains of peat beds have been discovered preserved beneath sand dunes in Northumberland at Howick, Druridge Bay and Low Hauxley. The area at Low Hauxley has been the subject of several archaeological investigations due to the exposure of Bronze Age cairns and cists by erosion and movement of the dunes which formerly covered them. Bonsall identified a Bronze Age cairn overlying deposits of Mesolithic date. Further excavations were undertaken by Tyne and Wear Museum Service in 1992 and Lancaster University Archaeology Unit in 1995, confirmed the excellent state of preservation of the Bronze Age cemetery and extended the known area of Mesolithic activity (Drury *et. al.* 1995), as well as obtaining dates for the buried land surfaces.

Bronze Age funerary remains in the form of cists and cairns have been identified at many sites along the North East Coast. A recent excavation of a Bronze Age cemetery at Howick on the Northumberland coast revealed five stone lined cists (Waddington *et. al.* 2005). Evidence for Neolithic monuments is more enigmatic, though the Street House long cairn (Vyner 1984) and a possible causewayed enclosure at South Shields (Hodgson 2001) suggest some Neolithic monuments still remain.

Within the area of study there have been several long term multi-period investigations of localised areas of the landscape. On Holy Island, a detailed programme of surveying, surface collection and excavation has investigated important evidence for early Christian and medieval activity and has identified artefact scatters at Ness End of Mesolithic, Neolithic and Bronze Age date (O'Sullivan & Young 1995). In county Durham, a programme of fieldwalking revealed concentrations of prehistoric flint in the coastal region (Haselgrove *et. al.* 1988; Haselgrove and Healey 1992). A long term multi period programme of excavation has also been undertaken at Bamburgh Castle under the aegis of the Bamburgh Research Project. A further long term programme of excavation has taken place at South Shields Roman fort at the mouth of the Tyne which has revealed evidence for Iron Age and Neolithic structures beneath the Roman fort (Hodgson 1994, 2001).

Although Iron Age sites are known within the study area, relatively few of these sites have been excavated. Sites which remain unexcavated are the defended settlement at Howick Camp, Spindlestone Heughs and Craster Heugh, all in Northumberland. Iron Age remains have been discovered, in the study area as a result of the excavation of later sites as at South Shields (Hodgson 1994), and below Tynemouth Priory (Jobey 1967). Jobey also investigated numerous rectilinear enclosures in the area which were found to have long periods of occupation spanning the late Iron Age through to the Romano-British period such as those at Burradon on the coastal plain in Northumberland (Jobey 1970), and Murton High Crag near Berwick (Jobey and Jobey 1987). Furthermore, an Iron Age settlement was discovered at Catcote three miles south of Hartlepool. Excavations by Durham University in 1963 remain largely unpublished. However, further excavations by Tees Archaeology in conjunction with Durham University are currently being undertaken.

As has been mentioned above, extensive archaeological excavations have been undertaken at South Shields Roman fort on the south side of the mouth of the Tyne (Bidwell & Speak 1994). Domestic settlements of the Roman period are rare within the study area but a

midden site indicating the presence of domestic activity was excavated at Seaton Carew in the 19<sup>th</sup> Century (Middleton 1885, Swain 1986) and the Catcote site mentioned above also dates to the Roman period (Spratt 1979:20). Further to the south, the presence of a series of Roman signal stations or fortlets of the later C4 have long been known (Hornsby & Stanton 1912; Hornsby & Laverick 1932).

Work has been undertaken on the development of ports and harbours on the NE coast from the Medieval period to the present day (Daniels 2002). Examples in the study area which date from the Medieval period are Hartlepool, Berwick-upon-Tweed, Alnmouth, Beadnell and Whitby. In addition to the fishing industry, the NE coast displays evidence of many other industries, such as shipping in the form of wrecks which can be seen in the intertidal zone and are still being exposed by erosion. Excavation of one of these wrecks at Seaton Carew by Tees Archaeology revealed a wooden sailing collier brig dating from the late C19/C19.

Extensive remains of the coal industry, which developed from the 19<sup>th</sup> Century in the NE and had a dramatic impact on the coast, are to be found particularly in County Durham with large collieries at Easington, Whitburn and Seaham. Evidence of the alum industry, which began in the 17<sup>th</sup> Century, can be seen further south at Loftus, Kettlewell and Boulby (Miller 2002). The remains of the Kettlewell alum works have recently been recorded by the Aerial Survey and Investigation team at York. Extensive networks of rutways, deliberately carved into the rock on the beaches to guide carts carrying quarried material to ships at low tide, have been identified and their recording by the Nautical Archaeological Society (NAS) North-East has recently begun.

This project is similar to two pieces of earlier work undertaken in the study area. The first was a programme of work which aimed to produce a strategy for coastal archaeology in Northumberland (*SCAN* 1995). The research considered the conservation and management of archaeological remains on the coast of Northumberland, especially those exposed to processes of erosion. The second was a project undertaken by Archaeological Services of the University of Durham and was an assessment of the archaeological resource along a section of the Durham coastline as part of the *Turning the Tide* project (Carne 1998).

An extensive database of military installations along the coastline has been collated by the *Defence of Britain Project (DoB)*, the findings of which are now presented online via the Archaeology Data Service. There are, in addition, several projects which have run concurrently with the NERCZA, the *Scarborough to Hartlepool Seascapes Project* being undertaken by Cornwall Historic Environment Service and funded by the Aggregate Levy Sustainability Fund and the *Coastal Saltpetre Project* being undertaken by Cranstone Consultants which is investigating the evidence for historic saltpetre along the NE coast.

## 1.4 Aims and objectives

This project is a desk based study that has aimed to collate and synthesise existing data from a variety of sources, and to undertake NMP standard transcription and analysis of aerial photographs of the study area, the Aerial Photograph Transcription Exercise (APTE). The

data obtained are an invaluable resource for a number of purposes.

- They provide heritage information which can be fed directly into Defra's Shoreline and Estuary Management programme at the levels of plans, strategies and schemes, thereby helping to ensure appropriate protection, or mitigation of damage, to historic assets.
- They provide enhancement to the HERs and NMR records of coastal heritage assets, to a nationally agreed common minimum data standard utilising Monument Inventory Data Standard (MIDAS) and INSCRIPTION wordlists, in order to permit an improved curatorial response to strategic coastal planning or management initiatives at a national and regional level.
- They provide an increased factual base for the initial curatorial response to individual applications for commercial developments or schemes, in advance of more detailed evaluation and mitigation related to Environmental Impact Assessments and/or planning applications.
- They provide an assessment of the likely archaeological potential and vulnerability of all stretches of the coast.

The following objectives have been met in order to fulfil these aims:

1. The production of a detailed GIS of all known archaeological sites within the study area to be fed into Defra's Shoreline and Estuary Management programme, the NMR and the various HERs of the various project partners.
2. The production of air photo mapping and interpretation to English Heritage's (NMP) standards for the whole study area.
3. The enhancement of the various HERs within the study area and the NMR by providing a comprehensive GIS which will include new data acquired through the APTE.
4. An analysis, interpretation and overview of the database by examining key themes such as those identified within the NE Regional Research Framework (NERRF), the Yorkshire Regional Framework (YRF) and other factors such as temporal, geological and spatial variation.
5. The development of archaeological research frameworks and agendas in relation to the NE coast that key in with the NE Regional Research Framework (NERRF) and the Yorkshire Research Framework (YRF).
6. The production of an assessment of the degree and nature of threat to the archaeological resource on the NE coast and produce data that will allow for the creation of management policies and mitigation.
7. An overview of coastal change from the Late Upper Palaeolithic through to modern

times.

8. The production of data that are compatible with the needs of other coastal managers, parallel coastal surveys, industry and researchers.
9. An increase in the understanding of the archaeology of the NE coast amongst the public and the research community.
10. The production of data and information to underpin the second phase of this project and support any related initiatives funded through the Heritage Lottery Fund.

In addition to this printed report, the principal output is a comprehensive GIS of all identified archaeological features within the study area. Curators and other interested parties have been provided with the project results in a GIS format together with hard and digital copies of the various reports. It is envisaged that the data obtained will be added to the databases of the various HERs within the project area.

## 1.5 Report structure

In addition to this introduction, the topics dealt with in the remaining nine chapters of this report are as follows:

- Chapter 2 provides an outline of the main methodological components of the project; that is, the structure of the GIS data base, the aerial photograph transcription exercise (APTE) and the archaeological analysis.
- Chapter 3 is a summary of research carried out by members of the Department of Geography at Durham University into sea level change over the past 10,000 years. This chapter also includes a brief account of the geology of the coastal zone.
- In Chapter 4 the archaeology of the whole NE Region is reviewed in order to provide a context for the results of the NERCZA project.
- Chapter 5 provides general descriptions of the principal types of archaeological site encountered in the coastal zone, divided into those sites which are part of the terrestrial landscape but happen to be on the coast and those sites that are specifically part of the coastal/maritime landscape.
- Chapters 6 - 9 examine, in detail, the archaeology of the coastal zone block by block, Chapter 6 dealing with Blocks 1a-1d (Whitby to Blackhall Rocks), Chapter 7 with Blocks 3a-3b (Blackhall Rocks to South Beach, Blyth), Chapter 8 with Block 2 (South Beach, Blyth to Low Newton by the Sea) and Chapter with 9 Block 4 (Low Newton by the Sea to Marshall Meadows Point). Each chapter begins with an account of the characteristic soils and landuse patterns encountered within the Block and is followed by a discussion of the coastal erosion that is taking place, using either SMP data. The archaeological data are then reviewed, dealing first with those relating to terrestrial landscapes and second with coastal/maritime features. Within each landscape type a broadly chronological framework is followed:

Early Prehistory  
The Mesolithic Period  
The Neolithic Period  
The Bronze Age  
The Iron Age and Romano-British Periods  
The Early Medieval Period  
The Medieval Period  
The Early post-Medieval Period  
The Industrial Period

Within the context of coastal/maritime landscapes features of military coastal defence from the C16 to C20 are given specific treatment.

- In Chapter 10 sets out suggestions for further developing the research agenda.
- The final chapter is followed by the references and an appendix which provides a concordance of HER/NMR numbers and SMP management areas/units.

The results of the Aerial Photograph Transcription Exercise, with users' notes, have been supplied to the HERs on disk along with both hard copy and electronic versions of this report.

(Copyright statement: Copyright of the NERCZA results of the project will reside with English Heritage. Licence to use the NMP data is extended to all the project partners for ongoing and future research and investigations.)