



New Forest Rapid Coastal Zone Assessment

Phase I: Desk-based Assessment

Main Report



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NEW FOREST RAPID COASTAL ZONE ASSESSMENT

PHASE 1: MAIN REPORT

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Executive Summary

Wessex Archaeology was commissioned by the New Forest National Park to undertake a Phase 1 Desk-based Assessment for a New Forest Rapid Coastal Zone Assessment. This is part of a wider programme of Rapid Coastal Zone Assessment and as such contributes to the developing national picture of the coastal historic environment being developed through English Heritage. The Phase 1 project is a desk-based stage to inform Phases 2 (inter-tidal and near shore zones) and Phase 3 (outreach/dissemination).

The Study Area for the project measures approximately 381.66 km² in area, and encompasses the whole New Forest Coast - defined in the west by the county boundary between Hampshire and Dorset, and in the east by the boundary with Southampton City. Data collation and review comprised: the collation and appraisal of historic environment data; and the acquisition of SMP and coastal change information. Archaeological records were collated from the following sources:

- National Monuments Record (NMR) data for the Study Area.
- County Sites and Monuments Record (Hampshire Archaeological and Historic Buildings Record (HAHBR)).
- The Isle of Wight Historic Environment Record (HER).
- New Forest National Park records and electronic versions of historic maps, including digitised early OS editions.
- Lists of Scheduled Ancient Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens, and Historic Battlefields.
- Wreck and obstruction data from the United Kingdom Hydrographic Office (UKHO) (via SeaZone tiles ordered for the project by NFNPA).
- Information on 'wreck' declared to the Receiver of Wreck.
- The Portable Antiquities Scheme database.

Modern and historic mapping, secondary sources and the results of other archaeological studies were also considered, and the results of SMP and coastal change, and aerial photographic studies were incorporated into the assessment.

On the basis of the collated datasets the record for the Study Area was enhanced using Microsoft Excel and ArcMap. This included adding and amending Monument, Event and Source records consistent with MIDAS and drawing upon INSCRIPTION wordlists. Synthesis and Assessment was conducted as follows:

- Thematic Synthesis of Coastal Historic Environment
- Assessment of Enhanced Record
- Integration of AP Mapping Results
- Phase 2 Scoping

Data was presented as: an overview of past coastal change; a chronological overview of the coastal historic environment; and offshore archaeology. The latter category was split into submerged prehistoric landscapes, and wrecks and aircraft crash sites. Sites were assessed in terms of their vulnerability and suggestions for Phase 2 survey were presented.

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List of Abbreviations:

DBA Desk Based Assessment
DEFRA Department for Environment, Food and Rural Affairs
HAHBR Hampshire Archaeological and Historic Buildings Record
HER Historic Environment Record
HCC Hampshire County Council
SMP Shoreline Management Plan
MCZa Marine Conservation Zones
NFNPA New Forest National Park Authority
NMR National Monuments Record
RCZA Rapid Coastal Zone Assessment
UKHO United Kingdom Hydrographic Office
WA Wessex Archaeology

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1. INTRODUCTION

1.1. DOCUMENT PARAMETERS

- 1.1.1. This document has been prepared in accordance with a project design submitted to New Forest National Park Authority (NFNPA), which in turn was in response to a tender brief (*New Forest Rapid Coastal Zone Assessment Phase 1 Project Design June 2009*) for a Stage 1 Rapid Coastal Zone Assessment (RCZA).
- 1.1.2. The Main Report provides an overview of the methodology and results of this RCZA phase. Detailed results are presented as a series of appendices (**Appendix A-E**) for each separate Coastal Stretch, based on Shoreline Management Plans for the Solent area, and a gazetteer of the results.
- 1.1.3. The legislative background for the historic environment is presented in Chapter 2, and is followed by detail on the methodology (Chapter 3). The vulnerability of archaeological sites are explored within Chapter 4, which leads onto identification of potential areas and sites that would warrant further investigation as part of Phase 2 of the RCZA (Chapter 5).

1.2. PROJECT BACKGROUND

- 1.2.1. In July 2009 Wessex Archaeology (WA) was commissioned by the New Forest National Park to undertake a Phase 1 Desk Based Assessment (DBA) for a New Forest RCZA. This is part of a wider programme of RCZA and as such contributes to the developing national picture of the coastal historic environment being developed through English Heritage and reflecting the recommendations of England's Coastal Heritage (Fulford et al. 1997). The Phase 1 project is a desk-based stage to inform further Phases 2 (inter-tidal and near shore zones) and 3 (outreach/dissemination).
- 1.2.2. The need for RCZAs is driven by the Shoreline and Estuary Management Programme promoted by DEFRA and under the strategic overview of the Environment Agency. The overall programme has three tiers: Plans; Strategies and Schemes. RCZAs are directed in the first instance at providing enhanced records and are assessments that will inform Plans (i.e. SMPs). The enhancement will, both through SMPs and directly through the availability of better historic environment data, also inform strategies for specific lengths of coast, and individual schemes (engineered interventions).

1.3. AIMS AND OBJECTIVES

- 1.3.1. The broad aim of this project is to enable the NFNPA, the New Forest District Council (NFDC) and Hampshire County Council (HCC) to provide improved curatorial responses to strategic coastal planning and management initiatives.
- 1.3.2. The objectives of the project are to:

- Provide enhanced archaeological records for coastal heritage assets.
- Provide a factual basis for curatorial responses to development proposals and other schemes at the coast.
- Provide data that is compatible with the needs to a wide range of stakeholders, including other coastal managers, industry, researchers, the public, and schools and education groups.
- Provide an overview of past coastal change from the Late Upper Palaeolithic to the present.
- Assess the overall degree and nature of threat to coastal historic assets, with regard to models of future coastal change, Shoreline Management Plans, and other coastal pressures.
- Provide a broad assessment of the likely archaeological potential, importance and vulnerability of all stretches of the New Forest coast.
- Identify areas or sites where historic assets may be at high risk of damage or destruction.
- Provide a sound basis for developing management priorities, including identification of areas or sites meriting: further survey or evaluation; positive management action; and/or statutory protection.
- Provide a sound basis for establishing future research priorities for the coast.
- Enhance public understanding and enjoyment of the coastal heritage of the New Forest.

2. LEGISLATION AND PLANNING

2.1. NATIONAL PLANNING GUIDANCE AND LEGISLATION

Scheduled Monuments

- 2.1.1. The initial legislation concerning protection for archaeological and historical sites recognised as being of national importance is provided by the *Ancient Monuments and Archaeological Areas Act 1979* (as amended). Under the terms of this Act the most important (known) sites and monuments in England have been designated 'Scheduled Monuments'. The Act also makes provision for the investigation, preservation and recording of sites of archaeological and historical significance and for the regulation of all operations and activities that may affect them or their settings.
- 2.1.2. Any developments that might impact Scheduled Monuments or their settings would normally be subject to the granting of Scheduled Monument Consent by the Department of Culture, Media and Sport.

Planning Policy Guidance (PPG 16)

- 2.1.3. Guidance on the importance, management and safeguarding of the archaeological resource within the planning process is provided by *Planning Policy Guidance Note 16: Archaeology and Planning* (PPG 16) issued by the Department of the Environment in November 1990. This sets out the Secretary of State's policy on archaeological remains on land, and provided recommendations many of which have been integrated into local development plans. The underlying principle of this guidance is that archaeological resources are non-renewable, stating that:

'Where nationally important archaeological remains, whether scheduled or not, are affected by proposed development there should be a presumption in favour of their physical preservation [para. 8].'

- 2.1.4. PPG 16 requires that consideration be given early, before formal planning applications are made, to the question of whether archaeological remains are known to exist on a site where development is planned and the implications for the development proposal. Paragraph 19 of PPG16 states:

'In their own interests...prospective developers should in all cases include as part of the research into the development of a site...an initial assessment of whether the site is known or likely to contain archaeological remains'.

Paragraph 22 adds:

'Local Planning Authorities can expect developers to provided the results of such assessments...as part of their application for sites where there is good reason to believe there are remains of archaeological importance'.

- 2.1.5. Decisions by planning authorities on whether to preserve archaeological remains *in situ*, in the face of proposed development, have to be taken on merit, taking account of development plan policies and all other material considerations - including the importance of the remains - and weighing these against the need for development.

Listed Buildings

- 2.1.6. Protection for historically important buildings is principally based upon the *Planning (Listed Buildings and Conservation Areas) Act 1990*. Guidance on the approach of the planning authorities to development and historic buildings is provided by *Planning Policy Guidance Note 15: Planning and the Historic Environment* (PPG15), issued by the Department of the Environment in September 1994. Paragraph 2.16 of PPG15 states:

'Sections 16 and 66 of the Act [(Planning (Listed Buildings and Conservation Areas) Act 1990)], require authorities considering applications for planning permission or listed building consent for works which affect a listed building to have special regard to certain matters, including the desirability of preserving the setting of the building'.

- 2.1.7. Listed Buildings are classified into three different grades:

- Grade I: Buildings of exceptional interest
- Grade II*: Particularly important buildings of special national interest
- Grade II: Buildings of special interest which warrant every effort being made to preserve them

Planning Policy Guidance: Coastal Planning (PPG 20)

- 2.1.8. Planning Policy Guidance: Coastal Planning (PPG 20) notes that 'the coastal zone has a rich heritage both above and below low water mark, which includes buildings and areas of architectural or historic interest, industrial archaeology, scheduled and other ancient monuments and other archaeological sites (Para. 2.8).' PPG 20 also makes specific references to sites of archaeological and built heritage interest in the information required by local planning authorities in addressing coastal planning (Para. 4.6).

2.2. REGIONAL AND LOCAL PLANNING POLICY: HAMPSHIRE

- 2.2.1. The *Hampshire County Structure Plan* (adopted 2000) was consulted for development control information regarding the historic environment within the Hampshire Study Area. The document sets out the planning strategy up to 2011. It recognises that archaeological sites and monuments and their settings are a finite

and non-renewable resource and that the historic built heritage is a significant environmental, cultural and educational resource.

2.2.2. Policy relating to the treatment of Archaeology and the Built Heritage within the planning process are as follows.

2.2.3. Policy **E14** states:

'Where nationally important archaeological sites and monuments, whether scheduled or not, and their settings are affected by a proposed development, there will be a presumption in favour of their physical preservation in situ. The need for the preservation of unscheduled sites of more local importance will be considered on merit. Where preservation is not possible then, before planning permission is granted, it should be demonstrated that appropriate arrangements have been made for a programme of excavation and recording prior to development taking place.'

Local Planning Guidance

2.2.4. The *New Forest District Local Plan* (adopted November 1999) sets out detailed policies and specifications for development and land-use. It derives its policy directly from the Structure Plan (see above). The following policies are derived from Section C2 History and Archaeology (District Wide Policies).

2.2.5. Policy **DW-E23** states:

'Development will not be permitted which has an adverse effect on nationally important archaeological sites, buildings, ancient monuments or features, whether scheduled or not, or their settings. Where it is unavoidable that a development affects the site of archaeological value, the scheme shall normally be designed to minimise physical destruction. If this is not possible or feasible, development will not be permitted until satisfactory provision has been made for a programme of archaeological investigation and recording prior to the commencement of works.'

2.2.6. Where the presence and subsequent 'importance' of archaeological remains is not known the plan states the following:

2.2.7. Policy **DW-E24**:

'If there is evidence that archaeological remains exist on a site whose extent and importance are unknown, the district Council will require developers to arrange for an archaeological field assessment to be carried out before the planning application can be determined including...trial trenching where necessary. Wherever possible such remains shall be preserved in situ.'

2.2.8. The criteria for its inclusion in this category are set out in the Survey and summarised below:

'Areas considered to include other important archaeological remains, whose location, character and importance are inferred from observation, research and interpretation. Those remains are likely to merit preservation in situ. Where preservation is not justified appropriate archaeological recording will be required.'

'Areas of High Archaeological Importance may:

- Contain well preserved archaeological deposits which may not be of national importance, but which are of importance to the understanding of the origins and development of the town;
- Be areas where the destruction, without archaeological record, of well preserved archaeological deposits means that the last surviving elements have an increased value for the understanding of the origins and development of the town;
- Be areas which are thought to have High Archaeological Importance due to their proximity to other, recognised, plan elements even though there is little direct evidence to indicate high importance.

It is possible that areas of High Archaeological Importance may through further archaeological or documentary work, be shown to include Nationally Important Remains.'

Conservation Areas and Listed Buildings

- 2.2.9. Guidance on the identification and protection of historic buildings, conservation areas, historic parks and gardens and other elements of the historic environment is provided by National Planning Policy Guidance Note 15: Planning and the Historic Environment (PPG 15) issued by the Department of the Environment in September 1994.
- 2.2.10. This statutory legislation and protection is incorporated into the policies of both the County Structure Plan and the District Local Plan.
- 2.2.11. Conservation Areas are designated by the local planning authority. This designation affects works as part of the planning process to monitor and control the nature and extent of new development within such areas.
- 2.2.12. The *Hampshire County Structure Plan* (adopted 2000) advises local authorities with the following policy concerning development within historic towns and villages:
- 2.2.13. Policy **E16** states:
- 'Development in accordance with other policies [in this Plan] will be permitted in and adjacent to historic towns and villages provided that it is compatible with the character of the area and its setting and will not cause demonstrable harm to interests of acknowledged importance. Particular attention will be paid to:*
- a) the scale, mass and design of new buildings or structures;*
 - b) infrastructure and servicing requirements;*
 - c) traffic generation and pollution;*
 - d) movement and access within the historic core of settlements;*
 - e) the character and appearance of listed buildings and their settings and conservation areas which shall be conserved or enhanced; and*
 - f) open spaces and views into and out of historic areas.'*
- 2.2.14. The *New Forest District Local Plan* (adopted November 1999) places high priority on the retention, restoration, maintenance and continued use of listed buildings, and

the protection on their settings. Section C2 History and Archaeology (District Wide Policies) contains the following:

Policy DW-E16

'Development which adversely affects the setting of a listed building will not be permitted.'

Coastal Management Plan

2.2.15. *The New Forest District Coastal Management Plan adopted February 2004 runs parallel with the New Forest Local Plan. It aims to draw together a wide range of environmental, economic, recreational and coastal protection issues. The following policies are derived from section B4 of the New Forest District Coastal Management Plan.*

2.2.16. Policy **B4I** states:

'The District Council will encourage the conservation and protection of historic and archaeological sites and buildings on the District's coastline, and encourage protection of sites offshore.'

2.2.17. Policy **B4II** states:

'The District Council will take into account the presence of archaeological sites in the design and implementation of coastal defences, and will seek to avoid damage to them.'

2.2.18. Policy **B4III** states:

'The District Council will encourage further research into the archaeology of the coast on and offshore.'

2.2.19. Policy **B4IV** states:

'The District Council will encourage projects to exploit the educational potential of historic and archaeological sites and buildings where this not conflict with other objectives.'

Higher Level Stewardship

2.2.20. Environmental Stewardship is an agri-environment scheme run by Natural England that provides funding to farmers and other land managers in England who deliver effective environmental management on their land. Primary objectives of the scheme include:

- protect the historic environment and natural resources
- promote public access and understanding of the countryside

2.2.21. Higher Level Stewardship (HLS) applies to land involving more complex management where managers need advice and support.

2.2.22. Within the NFRCZA Study Area Coastal Stretches B, C and D fall within the HLS New Forest Target Area, a priority for HLS management. Applications within the target area must include at least one from a list of land management activities which include:

- Positive management of visible and below ground archaeological and historic features that are assessed as a priority in the region such as barrows, boundaries and water meadows where they are at risk from agricultural activity or the growth of trees and scrub
- Protect, maintain and restore historic landscapes and their features, such as parkland where they are assessed as a priority in the region through the proactive maintenance or restoration of structures or features that make a major contribution to the design intentions or feel of the parkland or provide for their biodiversity and amenity value
- Maintain or restore historic buildings that are assessed as a priority in the region

2.2.23. Coastal Stretches A and E fall outside this target area. Applications for HLS funding outside this target area must contribute to at least one from a number of 'themes' including:

- Theme 5: Reducing risk to nationally designated assets identified by the Heritage at Risk Survey.
- Theme 6: Securing positive management of prioritised historic buildings
- Theme 7: Reducing the damage caused to undesignated below-ground archaeological sites by cultivation and protecting and enhancing visible undesignated historic environment features.

2.3. MARITIME LEGISLATION AND POLICY GUIDANCE

Protection of Wrecks Act (1973)

2.3.1. The marine Study Areas lie within UK territorial waters, in which the Protection of Wrecks Act (1973) may be applied. Under the 1973 Act, wrecks and wreckage of historical, archaeological or artistic importance can be protected by way of designation. It is an offence to carry out certain activities in a defined area surrounding a wreck that has been designated unless a license for those activities has been obtained from the Government. Generally, the relevant Secretary of State must consult appropriate advisors prior to designation, though it is also possible to designate a wreck in an emergency without first seeking advice.

2.3.2. In England, the Protection of Wrecks Act (1973) is administered by the Department for Culture, Media and Sport. Specialist advice is sought from the Advisory Committee on Historic Wreck Sites and a team of professional diving archaeologists employed on contract. Licenses can be obtained to carry out survey, excavation and other activities that would be otherwise prohibited.

Merchant Shipping Act (1995)

2.3.3. Within the context of the Merchant Shipping Act (1995) 'wreck' refers to flotsam, jetsam, derelict and lagan found in or on the shores of the sea or any tidal water. It includes a ship, aircraft or hovercraft, parts of these, their cargo or equipment. It may be of antique or archaeological value such as gold coins, or a yacht or dingy abandoned at sea, or items such as drums of chemicals or crates of foodstuffs.

2.3.4. The ownership of underwater finds that turn out to be 'wreck' is decided according to procedures set out in the Merchant Shipping Act (1995). Finders should assume at the onset that all recovered wreck has an owner. Ownership of wreck lies in the original owner or their successor, unless they fail to make a claim to the Receiver of Wreck within one year of notification. Ownership of unclaimed wreck from within

territorial waters lies in the Crown or in a person to whom rights of wreck have been granted; unclaimed wreck from beyond territorial waters is returned to the salvor.

- 2.3.5. The Receiver of Wreck has a duty to ensure that finders who report their finds as required receive an appropriate salvage payment. In the case of material considered being of historic or archaeological importance, a suitable museum is asked to buy the material at the current valuation and the finder receives the net proceeds of the sale as a salvage payment. If the right to, or the amount of, salvage cannot be agreed, either between owner and finder or between competing salvors, the Receiver of Wreck will hold the wreck until the matter is settled, either through amicable agreement or by court judgement.

Protection of Military Remains Act (1986)

- 2.3.6. Under the Protection of Military Remains Act (1986), all aircraft that have crashed in military service are protected, and the Ministry of Defence has powers to protect vessels that were in military service when they were wrecked. The Ministry of Defence can designate named vessels as 'protected places' even if the position of the wreck is not known. In addition, the Ministry of Defence can designate 'controlled sites' around wrecks whose position is known. In the case of 'protected places', the vessel must have been lost after 4th August 1914, whereas in the case of a wreck protected as a 'controlled site' no more than 200 years must have elapsed since loss.

- 2.3.7. In neither case is it necessary to demonstrate the presence of human remains. Diving is not prohibited at a 'protected place' but it is an offence to tamper with, damage, move or remove sensitive remains. However, diving, salvage and excavation are all prohibited on 'controlled sites', though licences for restricted activities can be sought from the Ministry of Defence. Additionally, it is an offence carry out unauthorised excavations for the purpose of discovering whether any place in UK waters comprises any remains of an aircraft or vessel which has crashed, sunk or been stranded while in military service.

- 2.3.8. In most cases, records of aircraft lost on military service do not indicate their place of loss as this was often unknown. Any aircraft that have crashed while in military service are automatically protected by the Protection of Military Remains Act (1986).

England's Coastal Heritage

- 2.3.9. *England's Coastal Heritage: a statement on the management of coastal archaeology* was published in 1996 by English Heritage and the Royal Commission on the Historical Monuments of England (RCHME). The statement set out a number of principles for managing coastal archaeology:

- The coastal zone of England includes a finite, irreplaceable, and, in many cases, highly fragile archaeological resource which by virtue of its value, variety, and vulnerability justifies a presumption in favour of the physical preservation *in situ* of the most important sites, buildings, and remains;
- Although archaeological remains situated within inter-tidal and sub-tidal areas may be less visible and accessible than remains on dry land, this does not affect their relative importance and they should be managed in accordance with the principles which apply to terrestrial archaeological remains;
- As historic landscapes can extend seamlessly from dry land, through the inter-tidal zone, and into sub-tidal areas, effective management of the coastal archaeological resource cannot be achieved without due consideration of marine as well as terrestrial archaeological remains.

- Where economic development in the coastal zone is likely to impact on important archaeological remains, decisions should be taken with regard to the best available information and the precautionary approach should be adopted wherever possible.
- Although it remains government policy not to extend the Town and Country Planning system to the territorial sea, the principles set out in PPG16: Archaeology and Planning should be applied to the treatment of sub-tidal archaeological remains in order to secure best practice.

2.3.10. The statement also included a number of detailed recommendations, which include the following:

Development control and environmental assessment	Coastal archaeological interests should be adequately reflected in structure and local plans, and consistently and comprehensively included in Environmental Assessment procedures for coastal and marine developments (including harbour works, mineral extraction, oil and gas related projects, capital dredging projects, cable projects, and waste water treatment and disposal) and other activities requiring sectoral consent.
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2.3.11. England's Coastal Heritage recognises the Solent as an area of High Archaeological Potential.

Marine and Coastal Access Act 2009

2.3.12. The Marine and Coastal Access Bill received Royal Assent on 12 November 2009. It's purpose is to:

'ensure clean healthy, safe, productive and biologically diverse oceans and seas, by putting in place better systems for delivering sustainable development of marine and coastal environment'.

2.3.13. The Department for Environment, Food and Rural Affairs (DEFRA) website (<http://www.defra.gov.uk/environment/marine/legislation/mcaa/key-areas.htm>) states that the Act:

'creates a strategic marine planning system that clarifies our marine objectives and priorities for the future, and directs decision makers and users towards more efficient, sustainable use and protection of our marine resources'.

2.3.14. Under the terms of the Act the government will set up a Marine Management Organisation guided by a Marine Policy Statement containing the Government's long term strategic policies for marine management. These policies include provision for the creation of protected Marine Conservation Zones (MCZs) and introduce a new right of recreational access around England's coastline.

2.3.15. Improved coastal access will have both negative and positive impacts on our coastal heritage. However, while increased footfall may heighten the vulnerability of the archaeological resource, the overall effect will be positive in terms of greater public awareness of the coastal and marine historic environment and increased reporting.

2.3.16. Moreover, while management of the MCZs will lie with Natural England the government acknowledges that that integrated delivery of its marine objectives requires a sound evidence base of environmental and socio-economic data, including the provision for archaeological assessments of the MCZs. Hence, data

from projects such as RCZAs and Historic Seascape Characterisation (HSC) will feed into an overall increased understanding of the historic coast around the UK.

2.4. SHORELINE MANAGEMENT PLANS

2.4.1. Shoreline Management Plans relevant to the Study Area are:

- Hurst Spit to Durlston Head (DEFRA sub-cell 5f): Poole & Christchurch Bays Coastal Group
- North Solent (Selsey Bill to Hurst Spit) (DEFRA sub-cell 5a, %b and 5c): North Solent SMP (New Forest District Council)

2.4.2. Relevant policy and management units are (from west to east):

- Poole & Christchurch Bays Shoreline Management Plan (from Chewton Bunny)

Mgmt Unit	Area	SMP1 Policy
CBY3	Chewton Bunny to start of defence (i.e. undefended length)	Retreat the existing line / long term selectively hold the existing line
CBY4	Start of defence to Barton Golf Course	Hold the existing line
CBY5	Barton Golf Course to Hordle Cliff	Do nothing (observe and monitor) / long term selective retreat the existing line
CBY6	Hordle Cliff to Hurst Spit	Hold the existing line
CBY7	Hurst Spit	Hold the existing line

- North Solent Shoreline Management Plan (Western Solent)

Mgmt Unit	Area	Current sedimentation trend	SMP1 Policy
CBY7	Hurst Beach to Hurst Spit Castle Point	Eroding	Hold the line / Beach Management Plan
LYM1	Hurst Spit Castle Point to Hurst Spit North Point	Accreting	Do nothing / Beach Management Plan
LYM2	Hurst Spit North Point to Saltgrass Lane	Eroding	Do nothing
LYM3	Saltgrass Lane to Lymington Yacht Haven	Eroding	Hold the line
LYM4	Lymington River	Eroding	Hold the line
LYM5	Elmers Court to Pitts Deep	Eroding	Retreat the line
LYM6	Pitts Deep to Warren Beach Cottage	Eroding	Hold the line
LYM7	Warren Beach Cottage to Gull Island	Eroding	Do nothing
LYM8	Gull Island to Beaulieu River	Eroding	Hold the line
LYM9	Inchmery to Lepe	Eroding	Hold the line
LYM10	Lepe to Stone Point	Eroding	Hold the line
LYM11	Stone Point to Bourne Gap	Eroding	Hold the line
LYM12	Bourne Gap to Hillhead	Eroding	Hold the line
LYM13	Hillhead to Calshot Spit	Eroding	Hold the line
LYM14	Calshot Spit to Calshot Spit (jetty)	Eroding	Hold the line

- North Solent Shoreline Management Plan (Southampton Water and Rivers Test, Itchen & Hamble)

Mgmt Unit	Area	Current sedimentation trend	SMP1 Policy
FAW1	Calshot Spit (jetty) to Lee of Calshot Spit	Eroding	Hold the line
FAW2	Lee of Calshot Spit to Fawley Power Station	Eroding	Hold the line
FAW3	Fawley Power Station	Eroding	Hold the line
FAW4	Fawley Power Station to Fawley Oil Refinery	Eroding	Hold the line
FAW5	Fawley Oil Refinery	Eroding	Hold the line
FAW6	Fawley Oil Refinery to Hythe Sailing Club	Eroding	Retreat the line
FAW7	Hythe Sailing Club to Hythe Marina	Eroding	Hold the line
TEST1	Hythe Marina to Marchwood Military Port	Eroding	Hold the line
TEST2	Marchwood Military Port to Cracknore Hard	Eroding	Hold the line
TEST3	Cracknore Hard to Royal Navy Armaments Depot	Eroding	Hold the line
TEST4	Royal Navy Armaments Depot to Eling Creek	Eroding	Do nothing
TEST5	Eling Creek to Redbridge	Eroding	Hold the line

3. METHODOLOGY

3.1. STUDY AREA

- 3.1.1. The Study Area is approximately 381.66 km² in area and encompasses the whole New Forest Coast defined in the west by the county boundary between Hampshire and Dorset and in the east by the boundary with Southampton City (**Figure 1**). The Study Area parameters are broadly as follows:

Boundary	Definition
Western Boundary (coastal)	County boundary between Hampshire and Dorset (Chewton Bunny, nr. Highcliffe)
Western Boundary (marine)	Line trending south south-west across Christchurch Bay
Eastern Boundary (coastal)	Boundary of Southampton City (Redbridge, Totton)
Eastern Boundary (marine)	Western boundary of Southampton Approach Channel, cut north-south at Old Castle Point, East Cowes.
Landward Boundary	1.5km buffer from high water, including all land below +10m OD contour
Seaward Boundary	6 nautical mile limit, but excluding Isle of Wight above high water (MHS).

- 3.1.2. The Study Area was divided into five stretches to facilitate data management and reporting:

- Coastal Stretch A: Chewton Bunny to Milford-on-Sea (approximately 8 km in length (HW)).
- Coastal Stretch B: Milford-on-Sea to Elmer's Court (approximately 10 km in length (HW)).

- Coastal Stretch C: Elmer's Court to Salternshill (approximately 9.5 km in length (HW)).
- Coastal Stretch D: Salternshill to Calshot Spit (approximately 10 km in length (HW)).
- Coastal Stretch E: Calshot Spit to Redbridge (approximately 18.5 km in length (HW)).

3.1.3. Each coastal stretch is discussed in detail in **Appendix A-E**.

3.1.4. The New Forest RCZA considered all archaeological periods from the Palaeolithic (700,000 BP) to 1945 AD. Coastal historic assets created after 1945 were included where NFNPA had highlighted their special interest.

3.2. DATA COLLATION AND REVIEW

3.2.1. Data Collation and Review (Stage 1) comprised two sub-stages:

- Collation and appraisal of historic environment data.
- Acquisition of SMP and coastal change information.

Collate and Appraise Historic Environment Data

Archaeological Records

3.2.2. Archaeological records were collated from the following sources:

- National Monuments Record (NMR) data for the Study Area.
- County Sites and Monuments Record (Hampshire Archaeological and Historic Buildings Record (HAHBR)).
- The Isle of Wight Historic Environment Record (HER).
- New Forest National Park records and electronic versions of historic maps, including digitised early OS editions.
- Lists of Scheduled Ancient Monuments, Listed Buildings, Conservation Areas, Registered Parks and Gardens, and Historic Battlefields.
- Wreck and obstruction data from the United Kingdom Hydrographic Office (UKHO) (via SeaZone tiles ordered for the project by NFNPA).
- Information on 'wreck' declared to the Receiver of Wreck.
- The Portable Antiquities Scheme database.

Modern and Historic Mapping

3.2.3. Modern and historic mapping was supplied by NFNPA and uploaded to the project GIS including:

- OS MasterMap
- First to fourth edition 6" OS mapping
- Digital Historic Tithe and Enclosure maps and charts held by the National Archive and County Record Office (subject to digitisation by Southampton University GeoData Unit).

3.2.4. Additional geo-referenced maps and charts held at WA from previous projects in the region were also added to the project GIS and holdings of historic charts and maps in the UKHO archive, the National and County Record Offices, the Southampton City Record Office, The New Forest Centre and other regional collections were reviewed to identify any further significant historic mapping. Items identified from the review were obtained, scanned, geo-referenced and added to the project GIS, as

was modern topography and bathymetry derived from the Ordnance Survey and UKHO data.

Secondary Sources

- 3.2.5. Published books and articles relating to the history, archaeology, palaeo-geography and development of the New Forest and south coast were collated from WA's own library, university libraries and from record offices and local studies libraries in the region. Unpublished material from the WA library, the HER and other sources, such as clients and authors, was also consulted.

Other Sources of Archaeological and Historical Data

- 3.2.6. Relevant datasets from former projects in the Study Area and held at WA were consulted including:
- Hampshire Salterns project (2002).
 - ALSF Artefacts from the Sea.
 - ALSF England's Shipping.
 - ALSF Air Crash Sites at Sea.
 - Finds reported through the BMAPA/English Heritage Protocol.
 - WA's mapping of sites protected under the Protection of Military Remains Act 1986.
 - Mapped data from the EH peat database.
- 3.2.7. Data relating to military sites (including *Defence of Britain* and MPP defence-related studies) has already been incorporated into the NMR as part of the *Landscapes of War* project. It was anticipated that information about military sites would be obtained as part of the NMR data. Checks were made via *PastScape* and the *Defence of Britain* database maintained by the Archaeological Data Service. In addition relevant information from *Defence Areas - a national study of Second World War anti-invasion landscapes in England* (Foot 2005) was also incorporated.
- 3.2.8. Information relating to SSSIs cited for Quaternary geological / geomorphological features within the Study Area was obtained via MAGIC and Natural England's online resources. Information relating to Regionally Important Geological and Geomorphological Sites (RIGS) containing geological features relevant to the RCZA will be sought from the Hampshire RIGS Group.
- 3.2.9. As part of this assessment, Cornwall Historic Environment Service (CHES) undertook an aerial photographic transcription and mapping element of the New Forest as part of the National Mapping Programme (NMP). The results of this NMP exercise were made available to WA in December 2009 for integration into the RCZA Phase 1 report.
- 3.2.10. Other potential sources of relevant data, including museums, record offices and local studies libraries, societies, organisations and individuals were approached for information about relevant holdings. Visits were made where appropriate to obtain copies of relevant information.
- #### **Acquire SMP and Coastal Change Information**
- 3.2.11. Information on coastal threats, namely development pressures, present and future coastal erosion and flood risk was collated from a variety of sources. These included existing and forthcoming Shoreline Managements Plans, and the Channel Coast Observatory's Solent Dynamic Coast Project and salt marsh mapping programme for Hampshire.

- 3.2.12. The draft North Solent Shoreline Management Plan (SMP2) was made available for consultation in February 2010. Although the draft report was not released in time for consideration here, WA was provided with GIS layers indicating policy and management units and coastal erosion lines for this project. Similar GIS layers pertaining to the draft Poole and Christchurch Bays Shoreline Management Plan were made available to WA. These layers were used to divide the coastline of the Study Area into 17 coastal stretches and to provide information on the character and degree of threat to each coastal stretch.

Integration of AP Mapping Results

- 3.2.13. The results of the aerial photographic transcription and mapping of the New Forest, undertaken by CHES as part of the NMP, were made available to WA in December 2009. The data was provided in AutoCAD dxf format and was incorporated into the project GIS. On the basis of the dxf files and the results from the AP transcription the monument records created or amended by this project were updated to include a cross-reference to the corresponding unique identifiers.
- 3.2.14. Where the AP transcription resulted in the identification of a monument not recorded in the monument database, a new monument record was added and cross-referred to the AP transcription as its source.
- 3.2.15. An area on the western edge of the Study Area was not included in the CHES aerial transcription (NMP). Transcription of this area is currently ongoing and will be incorporated into the project in due course. This extends from Chewton Bunny at the western edge of the Study Area to Sturt Pond (**Figure 2**). This area covers the Coastal Stretch A, discussed in **Appendix A**.

3.3. DATA ENHANCEMENT

- 3.3.1. Data Enhancement and Mapping (Stage 2) comprises two sub-stages, namely:
- Record Enhancement
 - Development of Overview of Past Coastal Change

Record Enhancement

- 3.3.2. On the basis of the datasets collated in Stage 1, including historic mapping, secondary and other sources, the record for the Study Area was enhanced using Microsoft Excel and ArcMap. This included adding and amending Monument, Event and Source records consistent with MIDAS and drawing upon INSCRIPTION wordlists. Recording practices were consistent with practices documented by the HER and NMR and, where conflict arose, followed Hants HAHBR.
- 3.3.3. The first stage of the data enhancement following the data collation was an intensive period of cross-referencing of sources. Duplicate records were consolidated into a single record. All records created, reviewed, added to or amended in the course of the RCZA were tagged to enable the preparation of summary information on the enhancement process and to facilitate review by NFNPA/NMR staff.
- 3.3.4. For maritime sites, the record enhancement focused upon Monuments that have known or reported vestiges on the shore or seabed. Monuments recorded in the NMR that are known only as reported losses (also known as Casualties) will not be added as individual records to the record enhanced by the project.

- 3.3.5. The enhanced information was entered into a database which contained information on the form and type of the historic environment resource, its status, period and a brief description. This enhanced data was then loaded into the GIS which enabled spatial queries of the database linked to themes such as period and type of monuments.

Development of Overview of Past Coastal Change

- 3.3.6. The overview of past coastal change from the Late Upper Palaeolithic to the present drew upon the enhanced record with respect to the distribution of sites/finds from key archaeological periods and from secondary sources collated in Stage 1, including the EH Intertidal and Coastal Peat Database. This encompassed both the post-Devensian inundation of the English Channel to its natural topographical limits in the Iron Age/Roman period, and subsequent human modification and reclamation of coastal land through to the present, including natural responses. Past erosion of cliff lines was also taken into account.
- 3.3.7. The overview also drew upon WA's extensive investigations of matters relating to sea-level change on the south coast through numerous projects in Southampton Water and many offshore locations from the palaeo-Solent round to Poole Harbour and Christchurch Bay. Specific use was made of WA's current work on the South Coast Marine Aggregates Regional Environmental Assessment and associated Regional Environmental Characterisation. Reference was also made to, among others, work led by Dix, Gupta, Long, Bates and Bates, and Mills and Corcoran in the Solent, palaeo-Arun, Hampshire coast and Eastern English Channel.
- 3.3.8. Mappable data from the above sources was incorporated within the project GIS including map layers relating to flood plains, flood zones, erosion and accretion zones along the coast. By comparing between the datasets analysis on the archaeological potential and possible risk to coastal change could be assessed. It was also possible to use this information to assess future research priorities.

3.4. SYNTHESIS AND ASSESSMENT

- 3.4.1. Synthesis and Assessment (Stage 3) comprises four sub-stages, as follows:

- Thematic Synthesis of Coastal Historic Environment
- Assessment of Enhanced Record
- Integration of AP Mapping Results
- Phase 2 Scoping

Thematic Synthesis of Coastal Historic Environment

- 3.4.2. A synthesis of the enhanced record in the form of a narrative account of the principal chronological, functional and/or geographical themes evident in the datasets was undertaken. These were related to each of the five identified Coastal Stretches.
- 3.4.3. Chronology based database queries were undertaken using the standard WA period list. Periods assigned represent *terminus post quem* i.e. the earliest date assigned to a record was used to assign the period value.
- 3.4.4. The thematic database queries were undertaken using the English Heritage NMR Monument Types thesaurus top terms, grouped according to the themes specified in the project design as most relevant for the New Forest region:
- Transport and communications

- Coastal trade and industry
 - Warfare, defences and military installations
- 3.4.5. These themes also take account of research priorities set out in the South West Archaeological Research Framework (SWARF) (Somerset County Council, 2007) and the Solent-Thames Archaeological Research Framework, drafts of which are available online (Oxford Archaeology/ Buckinghamshire County Council).
- 3.4.6. SWARF outlines 64 research aims for the South West with regard to:
- Methodology
 - Science
 - Settlement
 - Production and Trade
 - Social Relations
- 3.4.7. The three themes selected for the NFRCA demonstrate how coastal and marine data throughout the New Forest can contribute to wider research frameworks. In particular, these themes relate to specific SWARF research aims including:
- Transport and Communications:
 - Research Aim 37: Increase our knowledge of maritime archaeological sites
 - Research Aim 46: Assess the information for Roman ports.
 - Research Aim 48: Widen our understanding of Post-Medieval and Modern transport and communications.
 - Coastal Trade and Industry
 - Research Aim 38: Widen our understanding of mineral acquisition and processing.
 - Research Aim 44: Develop an understanding and identification of Early Medieval technologies.
 - Research Aim 45: Broaden our understanding of Post-Medieval to Modern technology and production.
 - Research Aim 47: Assess the archaeological potential for studying Medieval economy, trade, technology and production.
 - Warfare, defences and military installations
 - Research Aim 62: Examine the evidence for Early Medieval defence and conflict sites across the region.
 - Research Aim 63: Deepen our understanding of Medieval defence and conflict sites.
 - Research Aim 64: Improve our understanding of the less-researched areas of Post-Medieval to Modern defence and warfare.
- 3.4.8. The draft Solent-Thames Archaeological Research Framework outlines specific research aims according to period although a final, cohesive agenda is yet to be published. However, examination of the discussion documents reveals key research aims with regard to the three themes selected for this report, particularly with regard to the Roman period and later.
- 3.4.9. A key issue which arose during the thematic querying was that maritime shipwrecks could be classed within both the transport and communication theme and the coastal trade and industry theme. A decision was made to simplify searches by including all shipwrecks within transport and communications.

3.4.10. The thematic synthesis was supplemented by documentary and other sources collated in Stage 1. Query-based maps of the enhanced record were also used to develop the narrative. A series of maps based upon these queries are provided for each appendix.

Assessment of Enhanced Record

3.4.11. The assessment of the enhanced record involved a series of further sub-stages, focusing on:

- Overall degree and nature of threat to coastal historic assets
- Likely archaeological potential, importance and vulnerability
- Areas and sites where historic assets may be at high risk of damage or destruction
- Management priorities
- Future research priorities

3.4.12. The enhanced record was reviewed in order to assess the overall degree and nature of threat to coastal historic assets, with regard to models of future coastal change, Shoreline Management Plans, and other coastal pressures. From this review a statement on overall threat was made for specific reference to the localities of possible prioritisation identified by local authority curators.

3.4.13. This element was achieved by reviewing the enhanced record through the project GIS in conjunction with mapped data relating to Policy Unit policies from SMP1 and SMP2 (where available), indicative erosion and flooding zones (based on advice from EA and local authorities in Stage 1), Topographical Difference Models from CCO.

3.4.14. The assessment took into account existing designations, statutory and non-statutory, national and local, whilst acknowledging that such designations do not comprehensively indicate archaeological importance. A narrative overview of the degree and nature of threat to coastal historic assets in the New Forest was prepared for each Coastal Stretch (**Appendix A-E**).

3.4.15. The archaeological potential for each Coastal Stretch was assessed on the basis of the enhanced record, the thematic synthesis and the overview of past coastal change. The intention is to indicate the degree to which as-yet unknown historic assets are present, including their likely character.

3.4.16. The assessment of vulnerability was based on the overview of degree and nature of threat, the enhanced record in respect of known assets, the assessment of potential and the assessment of importance. The assessment of vulnerability gauged the susceptibility of known and potential historic assets to the degree and nature of threats active on the relevant stretch of coastline.

3.4.17. This synthesis and assessment of data was consequently able to inform the identification of priority sites warranting fieldwork in Phase 2 of the RCZA. In addition, the assessment of the enhanced dataset identified gaps in the archaeological record for the Study Area and helped to identify key research questions for consideration with regard to Phase 2 and future work. Account was also taken of relevant research frameworks including:

- Maritime and Marine Historic Environment Research Framework (Centre for Maritime Archaeology, University of Southampton)
- Solent Thames Research Framework (Oxford Archaeology)

- South West Archaeological Research Framework (Somerset County Council)

Phase 2 Scoping

- 3.4.18. Recommendations for Phase 2 were made on the basis of the synthesis and assessment of the enhanced data as outlined above. Areas or sites meriting further survey or evaluation were also selected with regard to practical and logistical information, such as tidal times and access that will have a bearing on the conduct of field survey in Phase 2.
- 3.4.19. As part of this scoping stage, initial enquiries regarding ownership and leases of coastal land that may constrain access or require permission were undertaken and provided to NFNPA. Where possible, the resulting information about coastal land and foreshore ownership, leases and any other controls have been recorded in the project GIS and noted in the relevant appendices for each Coastal Stretch.
- 3.4.20. Areas and sites have been highlighted for field survey (**Figure 4**), and have been noted and mapped in the project GIS with a short account of the rationale for their prioritisation within each appendix.

4. OVERVIEW OF PAST COASTAL CHANGE

4.1. INTRODUCTION

- 4.1.1. Modern coastal morphology is the result of not only accretion and erosion caused by marine systems, but also fluvial action and sub-aerial erosion. These factors have resulted in a dynamic yet punctuated system which makes past coastlines difficult to reconstruct. Climatic changes during the Pleistocene led to repeated cycles of transgression and regression. As the ice sheets over Europe changed, so did the coastal morphology. This was due to both eustatic changes in sea level and uplift caused by changing pressure on the continental shelf.
- 4.1.2. This section is primarily a review of the current literature regarding changes in coastal morphology along the south coast of England. Further work was done to illustrate trends in sea level change using a modern bathymetry and topography to model the south of England. Although this model does not incorporate changes due to deposition and erosion it does allow for a rough representation of the effects of sea level change on coastal morphology. For ease of interpretation this was done using a colour scheme based on that used by the UKHO to represent dry land, the intertidal zone and different water depths.
- 4.1.3. This section ends with a brief summary of the WA report (49211.02: 2002) of Hampshire's historic coastline. This study was a detailed assessment of coastal change between 1843 and 2000, with some additional material covering the period from 1781 to 1842.

4.2. SEA-LEVEL CHANGE TO THE IRON AGE.

- 4.2.1. Within the New Forest RCZA Study Area, the principal issue regarding changing coastal morphology is the route of the Solent. Prior to breaching of the Chalk ridge between the Isle of Wight and Purbeck after the last (Ipswichian) interglacial, the Solent flowed eastwards to the north of the Isle of Wight and turned sharply south to its east, debouching onto the Northern Palaeovalley. The actual course of the Solent river fluctuated and shifted during various glacial and interglacial periods but it formed a major estuary over many millennia. The Solent and the south flowing

watercourses of the Hampshire Basin are flanked by varying numbers of gravel terraces, successively laid down during periods of high sea level stand and left in a typical 'staircase' flight by the subsequent downcutting of the rivers when sea levels fell and failed subsequently to attain previous heights (e.g., Bridgland 1994; 2001; Allen and Gibbard 1993; Westaway *et al.* 2006). When the Isle of Wight-Purbeck ridge was breached in the early Devensian, the Solent's headwaters were divided. This resulted in diverting a major part of its drainage and energy to the west of the Island.

- 4.2.2. During Early Pleistocene high sea level stands (Cromerian complex: OIS 13), before the main Channel ridge was breached and during which the Slindon Raised Beach deposits were laid down, the Solent river ran southwards to the east of the Isle of Wight and the eastern part of the Channel presented an embayed estuarine coastline with probable coastal cliffs extending south in the Portsdown area and east of Arundel (Bates and Briant 2009). This basic configuration seems to have persisted through the Hoxnian interglacial (OIS 11), with the Channel open for at least part of this time, and probably into OIS 9 or 7 (Aldingbourne Raised Beach deposits). The eastern Channel continued to be dominated on its northern side by the Solent estuary though the coastline became more open (presumably partly as a result of increased flow in the Northern Palaeovalley following breaching of the Dover Straits), as indicated by the much greater lateral extent of the Brighton–Norton cliff line. The course of the Solent itself was not static, migrating further east as climatic temperature dropped. The changing configuration of estuary and open coast would have influenced patterns of coastal erosion during transgressions and following stabilisation of high sea level stands, leading to truncation of deposits, over-riding, and mixing (Bates and Briant 2009).
- 4.2.3. At roughly 500,000 BP (OIS13) sea-level would have been about 40m below current levels (**Figure 3.i**). Falling sea levels in the later part of OIS 13 exposed former beach deposits that cut into the base of the chalk cliff forming the southern edge of the Upper Chalk escarpment of what is now West Sussex. These sand and silt deposits, the Slindon Beach Formation, lie at an average height of 40m aOD. As it is unlikely that sea levels were ever significantly higher than the present day during the Middle Pleistocene, it is considered most probable that this beach was subject to subsequent tectonic uplift (see, for instance, Roberts and Parfitt 1999, 29). The deposits 'exhibit the features of a classic nearshore, subtidal, and intertidal sand and intertidal sand deposits' (*ibid.*, 150). The chalk cliff now lies some 12km inland and would have been more than 10m in height.
- 4.2.4. With a sea level at 40m below current MSL, large parts of the current marine zone would have been dry land. This would probably have resulted in a wide coastal plain and some form of intertidal or seasonally flooded marshland with occasional lagoons to the south of the extant Chalk ridge between the Isle of Wight and Purbeck.
- 4.2.5. Following the Anglian glaciation (c.500,000 to 400,000 BP) the Hoxnian interglacial (OIS 11) would have seen sea level rise to about 10m below current MSL (**Figure 3.ii**). Although the coastal plain of the northern channel area would have been considerably larger than at present, the affect on the coastline around the New Forest would have been far less. The plain probably did not extend much beyond a west-east line level with the southern edge of the Isle of Wight, with the Solent estuary and much of the Sussex coast fronted by a wide intertidal zone giving way quite rapidly to comparatively deep water.
- 4.2.6. The Wolstonian stage, lasting from c. 380,000 BP to c. 130,000 (OIS 10-6) saw alternating periods of warm and cold with fluctuating sea levels and climatic

conditions. A major glacial phase centred around 150,000 BP was followed by the very rapid climatic amelioration of the Ipswichian phase (OIS 15e). During this warming period sea level rose to nearly 10 m above MSL.

- 4.2.7. By the Devensian sea level had once again dropped to about 15m below current MSL (120,000 BP, OIS 10-6) (**Figure 3.iii**). With a sea level similar to that of the Hoxnian interglacial, the landscape of the Study Area during the Middle Palaeolithic may have been very similar to what it had been 300,000 years earlier. Throughout the Devensian the trend was for sea levels to drop, although there were periodic fluctuations. Sea level reached its lowest point of about 110m below current MSL during the Upper Palaeolithic, roughly 12,000 BP. At this point the entire RCZA study zone would have been above the inter-tidal zone, as would much of the area to the south on the continental shelf.
- 4.2.8. Following the Devensian sea level began to rise, reaching 30m below current MSL by the Mesolithic (Holocene/Flandrian developments, 10,000-5000 cal BC) (**Figure 3.iv**). To begin with, net erosion of lower river valleys can be demonstrated but as climatic temperature and sea levels rose, this gave way to net accretion and the deposition of inorganic silts, muds and sands which filled valleys and cloaked large areas of the current intertidal zone (Mottershead 1976; Scaife and Burrin 1983; Burrin and Scaife 1984; Allen and Gardiner 2000, 200-1). Although the rate slowed, sea level continued to rise through the Neolithic and Bronze Age. By the Later Iron Age sea level approached its current level and the harbour margins and possibly other coastal areas such as that around Lymington seem to have been utilised largely for salt production and fishing with most settlement evidence confined to higher and drier land.

4.3. HAMPSHIRE HISTORIC COASTLINE

- 4.3.1. The current Hampshire coastline consists of a range of environments including sheltered harbours, exposed cliffs and salt marshes. In the historic period, the coastal morphology has been affected by not only natural processes but also human influences. This usually takes the form of developments associated with settlement and industrial activity, particularly around sheltered harbours and river valleys.
- 4.3.2. Within the RCZA Study Area much of this development is associated with land reclamation. This is focused primarily just to the north of Hythe, and to a limited extent around Calshot, Keyhaven and Lymington. Land reclamation has been a gradual process which has taken place over a long period of time. In some areas this has taken place to create new farmland, although study of historic maps (WA49211.02; 2002) suggests that within the RCZA this would probably have occurred before 1843. In other areas it is more likely to be a by-product of dredging shipping lanes. From 1943 to 2000 large-scale reclamation took place in Hythe and Dibden Bay. Reclamation during the construction of the Prince Charles Container Port in Southampton shifted the high water mark 700 metres seawards into the channel of the River Test, reclaiming roughly 1,050,500 square metres of land.
- 4.3.3. With the exception of Coastal Stretch A (Chewton Bunny to Milford-on-Sea), the area of coast located within the Study Area is largely located in an area sheltered by the Isle of Wight. The net effect is therefore generally one of accretion rather than erosion. This is particularly the case along the stretch of the Southampton Water between Hythe and Fawley, and also along the Beaulieu River and at its entrance. The only area to show significant erosion since 1843 is in Christchurch Bay to the west of the Hurst Castle spit. At Christchurch Bay the 2002 WA Digital Mapping study (WA49211.02; 2002) reports that for over 5 kilometres of coastline the

landward shift in high water is up to 85 metres, with the largest shift of 45 metres occurring between the 1893 and 1912. This study also demonstrates that in Christchurch Bay there are many areas of accretion, rather than erosion

- 4.3.4. The WA Digital Mapping study reveals that Hurst Castle spit has undergone considerable movement. Although the head of the spit appears to have only moved slightly, the neck of the spit at Hurst Beach has consistently shifted in a north-east direction on all the maps used (WA49211.02; 2002). This shift has been as much as 170 metres in the period between the 1893 and 2000 OS map. Movement of over 190 metres in a north-east direction occurs between the recorded high water on the 2000 OS and that recorded by Mackenzie (c.1781). Comparison of the historic mapping with the modern OS demonstrates that the shoreline on the lee side remains relatively stable. However the mobility of the southern shoreline was demonstrated as recent as 1989 when the spit was breached during a storm and sections were moved up to 80 metres (HWTMA 1994: 15).
- 4.3.5. Unlike Hurst Castle spit there appears to have been a minimal shift in the position of the recorded high water at Calshot spit. This may be as a result of bunding of the shoreline and the positioning of groynes seen from 1891-1912. In contrast there has been a considerable shift in the position of the recorded low water mark. The net result of this shift is a decrease in the inter-tidal zone. The period from 1919-1943 does not follow this trend, but rather shows a massive landward movement (over 500 metres) of LWMOT, before a considerable seaward shift (over 400 metres) on the modern OS.

5. OVERVIEW OF COASTAL HISTORIC ENVIRONMENT

5.1. LOWER, MIDDLE AND EARLY UPPER PALAEOLITHIC (500,000 –22,000 BP)

- 5.1.1. The Palaeolithic saw the emergence of the first tool using humans. During the Lower, Middle and Early Upper Palaeolithic occupation warm interglacials allowed for some human habitation in Hampshire and the Isle of Wight. In general, Lower and Middle Palaeolithic populations were hunter gatherers who relied on natural resources for their food supply. River valleys and coastal locations represent areas rich in natural sources of food, and as such were favoured areas of activity during these periods.
- 5.1.2. Changes in sea level during this period meant that at times during the Lower, Middle and Early Upper Palaeolithic elements of the (now submerged) Solent were formerly dry land areas close to both rivers and, at times the sea, and were therefore likely to have been attractive activity areas for hominid populations.
- 5.1.3. There have been a significant number of Palaeolithic artefacts found in the Solent, an assemblage that is arguably second only in importance to those found in the Thames (Bridgland 2001: 15). The most important concentrations of Palaeolithic find-spots on the Hampshire side of the Solent are in the Southampton and Bournemouth areas, where they largely coincide with old quarries or building sites (Bridgland 2001: 16). The area between Southampton and Warsash contains the greatest concentration of finds while one of the richest Palaeolithic sites in southern England lies across the Solent on the north east coast of the Isle of Wight. At Priory Bay over a thousand Palaeolithic flint artefacts have been collected from the eroding cliffs, including over 300 handaxes

- 5.1.4. The data collated for this RCZA includes records of Palaeolithic date in coastal stretches A, B, D and E (see **Appendix A, B, D and E**). The records comprise isolated findspots of tools including handaxes, flint knives and flakes and other unspecified worked implements. This testifies to human presence within the Study Area during the Lower, Middle and Early Upper Palaeolithic. However, Most of the Solent finds are secondary context lithic assemblages found within fluvial gravels that have been moved during the interglacials. They are thought to derive from river beaches, old land surfaces and even earlier reworked terrace deposits (Wymer 1999: 21).
- 5.1.5. Recent work has indicated that deposits at Stone Point, a Site of Special Scientific Interest (SSSI) date to the Ipswichian interglacial (Briant et. al. 2009). Interglacial deposits are very rare in the Solent. The Stone Point deposits comprise estuarine silts interbedded with peats exposed in the foreshore at Lepe Country Park, found between two gravel bodies. Analysis of palaeoenvironmental data from the deposits, together with OSL dating, has indicated that the sequence was deposited during the Ipswichian interglacial. This indicates that there may be far more potential for examining the Palaeolithic in the Solent region than relying on derived artefacts and the future potential of such studies may be very high.

5.2. LATE UPPER PALAEOLITHIC AND MESOLITHIC (C. 13,500 BP – 4,000 BC)

- 5.2.1. As the ice sheets retreated at the end of the last ice age (18,000 BP) people gradually began to migrate north through Europe, following watercourses where resources were most abundant. Between 13,500 BP and 10,000 BP Britain was re-colonised by Late Upper Palaeolithic populations moving westward across the 'land-bridge' that linked Britain to mainland Europe.
- 5.2.2. As the climate ameliorated the human population adapted to the extent that the Mesolithic culture dominated in Britain between 10,000 BP and 4,000 BC. Both the Later Upper Palaeolithic and Mesolithic cultures were hunter gatherers whose known tool sets mostly comprise stone (typically flint) and bone objects (other items made of biodegradable organic materials such as wood are occasionally found, although this is far from common).
- 5.2.3. This population increase was accompanied by a steady rise in the sea level and the separation of Britain from the continent at approximately 5,000 BC. This process also affected the Solent region such that by approximately 6,550 BC the 'land bridge' to the Isle of Wight started to disappear. By the end of the Mesolithic the islands of Britain and the Isle of Wight were completely cut off and sea levels were just a few metres lower than today (Momber 2000: 89).
- 5.2.4. The RCZA data contains no records of Late Upper Palaeolithic date within the Study Area although findspots classed as 'Prehistoric' may date to this period. In general, evidence for Late Upper Palaeolithic human populations in Hampshire and the Isle of Wight is very scarce. Hinton and Hughes (1996) have suggested that this is because most of the favoured activity areas of these people have been submerged by the subsequent rise in sea level. However, this may also be due, in part, to the nature of research in this field. As Hosfield et al (2009) identify, due to a focus on re-examining past collections and the lack of controlled excavations of this date, understanding of the context of Late Upper Palaeolithic finds is limited.
- 5.2.5. After 10,000 BP new flint tool-making technologies started to appear, the long blades of the Upper Palaeolithic gave way to smaller microliths that marks the beginning of the Mesolithic (Momber 2000: 87). Hampshire is recognised as one of

the richest counties in England for Mesolithic Findspots (Hinton and Hughes 1996). The enhanced RCZA data contains records of Mesolithic date within coastal stretches 2, 3 and 4 (see **Appendix B, C and D**). These comprise isolated finds of Mesolithic flint tools and potential evidence for a Mesolithic settlement in Coastal Stretch D (**MWX60442**).

- 5.2.6. The effects of the Holocene marine transgression upon the archaeology of this period may not be discounted, many of the coastal land surfaces that developed after the end of the Devensian glaciation have been eroded by the sea. Moreover, England's entire Mesolithic coastline now lies underwater. However, there is clear evidence for the presence of active Mesolithic populations within now submerged parts of the Solent region such as the early Mesolithic site of Bouldner Cliff (Momber, 2000) (see **section 6.1**).

5.3. NEOLITHIC TO IRON AGE (4,000 BC – 43 AD)

- 5.3.1. By the Neolithic, sea level rise was slowing and the Isle of Wight was separated from the mainland by what was at that time an 800m wide strip of water. At this time the adoption of farming led to a steady increase in the population, and contact with the continent was now wholly maritime (the 'land-bridge' in the Straits of Dover had been breached). People, who had formally been hunter-gatherers, were beginning to settle, work the land, domesticate animals and produce pottery. This led to the establishment of the first permanent settlements, and the appearance of the first field monuments in the form of long barrows (burial mounds) and causewayed enclosures (earthworks).
- 5.3.2. Much of the evidence for Neolithic activity within Hampshire comes from hilltop locations. The absence of finds from the valleys is thought to be the product of masking caused by colluvial and/or alluvial deposition (Hinton and Hughes 1996). However, the enhanced data set contains records of Neolithic date in coastal stretches A, B, D and E (see **Appendix A, B, D and E**). These records comprise isolated findspots of Neolithic tools as well as settlement evidence in the form of enclosures (**MWX59206, MWX59209**), a hearth (**MWX21789**) and a possible Early Neolithic trackway (**MWX56957**).
- 5.3.3. The relative paucity of Neolithic remains is also characteristic of Hampshire generally which lacks the monumental structures found in Dorset, Wiltshire and Somerset. It may be indicative that the Study Area is peripheral to the initial phases of settlement although the prospect of future archaeological discoveries can not be discounted.
- 5.3.4. The Bronze Age in Britain is characterised by rapid cultural change and the development of socially cohesive communities attested to by the appearance of metal tools, hill forts, burial mounds and other sites of ritual activity within the archaeological record.
- 5.3.5. The enhanced dataset demonstrates a dramatic increase in records dating to the Bronze Age in comparison with earlier prehistory. Each of the five coastal stretches contain Bronze Age monuments and findspots with a particular concentration in Coastal Stretch D (see **Appendix A, B, C, D and E**). Records include isolated finds, field systems, earthwork boundaries, cremation urns and funerary structures.
- 5.3.6. One of the most important aspects of the Bronze Age archaeology of the region is the role of the coastline as a subsistence resource (Hinton and Hughes 1996). It is

unsurprising, therefore, that the data demonstrates a clear increase in settlement and ritual activity throughout the New Forest coastal stretch during this period.

- 5.3.7. The start of the Iron Age heralded the arrival not only of a wetter climate but also of invaders from Gaul who established bridgeheads along the coast of Wessex. Hillforts and Oppida (trading centres) become the foci for broad networks of rural farming activity during this period.
- 5.3.8. There are three such forts within the Study Area. The first is Buckland rings (**MWX61628**) which lies to the north of Lymington. Pottery has been found here dated to 300BC and it is one of two Scheduled Ancient Monuments within Coastal Stretch B. 500 m along the bank of the river lies the defended settlement of Ampress (**MWX21841**) and a further fortified settlement lies on a promontory at Lower Exbury (**MWX21974**).
- 5.3.9. Additional evidence of settlement during this period is recorded from excavation at Efford Landfill site (**MWX58160**). These excavations revealed eleven roundhouses and a number of circular pits of contemporary date together with evidence for seasonal salt production (Wessex Archaeology 2004b). This site was dated to the Late Iron Age or Early Romano-British period, based on pottery found associated with the archaeological features.
- 5.3.10. It has been suggested that these salt working sites form part of an integrated approach to the utilisation of the areas coastal resources, with farmers bring their stock down to the coast in the summer to graze, at which time they produced salt for both personal use and trade. The Efford Landfill site may be the earliest evidence for what was later to become an important industry along this stretch of coast in the medieval and post-medieval periods.
- 5.3.11. The Iron Age within the region as a whole has been extensively studied, and a large number of sites have been examined (Hinton and Hughes 1996). It is surprising, therefore, that further evidence for the Iron Age within the enhanced dataset is limited in comparison to that for the Bronze Age and later periods (see **Appendix A, B, C, D and E**). There are records of isolated findspots in coastal stretches A (**MWX36651, MWX42167, MWX20886, MWX29885**) and D (**MWX60327**) and evidence for enclosures in coastal stretches B (**MWX61660**), C (**MWX61650**) and 4 (**MWX60453**). There are no finds of Iron Age date in Coastal Stretch E.
- 5.3.12. This decline in the number of records within the coastal region during the Iron Age may indicate the increased importance of constructing settlements on more easily defended higher ground further inland than the Study Area. However, this may equally be the result of a lack of systematic fieldwork and reporting. Targeted fieldwork to identify new sites from this period, or to secure dating of known sites of unknown date, may reveal a higher level of exploitation of this region than currently recorded.

5.4. THE ROMAN PERIOD (43 – 410 AD)

- 5.4.1. Roman occupation of the Isle of Wight and key settlements at Winchester and Dorchester attest to a strong Roman presence in the region although there are no known major Roman sites within the New Forest itself. A fort and port at Bitterne on the far side of Southampton Water and the Roman villa at Rockbourne to the north of the New Forest are the nearest known settlements dating to this period.

- 5.4.2. Regional industries include the pottery kilns of the New Forest and the limestone quarries of Bembridge and Quarr on the Isle of Wight (Momber, Rackley, & Draper, 1994). The saltworks at Efford Landfill site (**MWX58160**) may also indicate the continuation of salt production along the coastline (Wessex Archaeology 2004c). It is probable that goods travelling to the west of the island would have crossed the Solent from a harbour on the New Forest coast.
- 5.4.3. Such a port may exist at Stone Point near Lepe (Momber, Rackley, & Draper, 1994). A Roman Road from Dibden to Lepe has been postulated, part of which is recorded in the enhanced dataset (**MWX29696**). A large number of Roman coins have also been found at Lepe. The existence of the road, however, has been disputed and to date no physical remains of a port have been discovered.
- 5.4.4. With exception to the Roman road at Lepe (**MWX29696**), records dating to this period within the enhanced dataset are limited to isolated findspots and to sites of either Iron Age or Romano British date such as the Efford Landfill site (**MWX58160**) in Coastal Stretch B and enclosures visible as cropmarks on aerial photographs in Coastal Stretch C (**MWX61650**) and 4 (**MWX60453**).
- 5.4.5. There has been little change in sea level since the Roman period, however there has been considerable land reclamation occasioned by the Post-medieval salt production sites (see **section 5.7**). It is possible, therefore, that evidence for Romano-British coastal activity has already been lost or concealed by later occupation layers.

5.5. EARLY MEDIEVAL PERIOD (410 – 1066 AD)

- 5.5.1. Saxons settlers arrived in what is now South West Hampshire in the 6th century AD. However, the 'Dark Ages' are noted for the scarcity of documentary evidence and, in the New Forest, there is a corresponding gap in archaeological evidence. The SWARF (Somerset County Council, 2007) identifies that in the south many research projects have concentrated on filling this perceived gap in the chronology from the Roman to Medieval period. However, in many areas the nature of the evidence is such that the Early Medieval period remains elusive. Saxon archaeological evidence is generally rare and the main evidence for dating, pottery, is sporadic with most types having a long currency of use.
- 5.5.2. There are no records of Early Medieval date within Coastal Stretch A although the enhanced dataset includes a record of pottery (**MWX21835**) found during building works in Captain's Row in Lymington (Coastal Stretch B) and evidence for Early medieval land enclosure in Coastal stretches B, C, D and E (see **Appendix B, C, D and E**).
- 5.5.3. In particular, Early Medieval land enclosure, most likely connected with increased levels of settlement activity, is particularly evident within the dataset for Coastal Stretch D. Evidence includes banks, boundary banks and enclosures with an obvious concentration at Beaulieu (**MWX61936**, **MWX61961** and **MWX61953**). This also corresponds to more frequent records of monuments connected with agricultural practices within the dataset. For example, ridge and furrow cultivation (**MWX61875**), other cultivation marks (**MWX61914**), field boundaries (**MWX61741** to **MWX61743**) and drainage ditches (**MWX61989** and **MWX61990**).
- 5.5.4. Records of Early Medieval activity also attest to the continuation in growth of the salt industry believed to date back to the Bronze Age within the Study Area. This industry has been seen to have a longevity which continues through the medieval

and into the post-medieval and modern periods (see discussion below). Saltern sites of possible Early Medieval date are recorded at Great Marsh (**MWX57681**), Exbury (**MWX57680** and **MWX57681**) and Ashlett (**MWX62222**).

- 5.5.5. In addition to the records mentioned above, there are two possible Early Medieval churches recorded within the dataset at Fawley (**MWX12299**) and Eling (**MWX12364**). These are the medieval Church of All Saints and Church of Saint Mary, which are thought to have possible Saxon or Early Medieval origins. In the subsequent Medieval period there is much reference to the role of the church in agricultural exploitation of their estates and associated land reclamation in marginal areas. It is probably that such processes may have been initiated in the Early medieval period and indications of Saxon origins for churches in the Study Area may suggest similar activity.
- 5.5.6. There is also some indication of settlement in terms of place names. For example, Lyndhurst meaning 'lime tree wood' and *limen tun* somewhere in the vicinity of the current settlement of Lymington, 'the little village by the marshy river'. Lymington was first recorded in 689 AD and by the time of Domesday Book in 1086 the settlement was called *Lentune*. The Anglo-Saxon Chronicle described the arrival of the Jutes at a place called 'Cerdices Ora' believed to be at the mouth of the old river which is now Stanswood Marsh on the Cadland Estate ((Momber, Rackley, & Draper, 1994). Prior to the Domesday Book the region was known as 'Ytene', an Old Danish word meaning 'Of the Jutes'.
- 5.5.7. However, most of the Early medieval records within the Study Area are typified by a lack of secure dating and the absence of fieldwork focusing on sites of this period. It is possible that future discoveries may help to fill in this chronological gap and, as with the Iron Age, targeted fieldwork to identify new sites from this period, or to secure dating of known sites of unknown date, may reveal a higher level of exploitation of this region than currently recorded.

5.6. MEDIEVAL PERIOD (1066 – 1500 AD)

- 5.6.1. In comparison to the Early Medieval period there is a large amount of both historical and archaeological evidence for the Medieval period within the Study Area. The New Forest was created as a Royal hunting ground for William I in c. 1079, although earlier sources indicate that it may have been a hunting ground before this date. A number of large estates were established such as Beaulieu, founded in 1204 on land given by King John to the Cistercian Order and wealthy secular landowners also left their mark on the land with the establishment of Deer Park and Manor houses.
- 5.6.2. Agriculture could be practiced in designated areas within the forest and around the periphery and a large number of Medieval records within the enhanced dataset attest to the development of settlements and associated infrastructure throughout the Study Area (see **Appendix A, B, C, D and E**). Extant structures from the period survive as Listed Buildings while archaeological remains reveal widespread growth in settlement and larger scale food production and agriculture. The evidence from historical documents and place names is also significant.
- 5.6.3. Of particular interest within the region at this time is the development of industrial exploitation of the coastal landscape, primarily with regard to the salt industry. Within Hampshire as a whole, the Domesday Book records 12 references to salt production, totalling 22 pans although it is believed that many more sites of small scale or seasonal nature were omitted by the Domesday clerks. Evidence for salt

factories, or salterns, can be found across the New Forest coastline and by the Post Medieval period sea salt from the region was exported all over the world.

- 5.6.4. WA has investigated a large-scale medieval salt-making site to the west of the Study Area, by way of earthwork survey and watching briefs during topsoil stripping (Wessex Archaeology 2004c). Pottery was dated to the 12th to 14th centuries, with activity of a similar date recorded c.1km to the north near Pennington House. The investigations have demonstrated the presence of complex, multi-phase salt-making facilities, comprising a system of gulleys within embanked areas, various pits (some clay-lined) and a wide kerbed area that contained fire debris and was later buried to form a mound. This appears to correlate with Rudkin's description of 'sunworks' in an account of Medieval salt-making in Lincolnshire which relied on using large metal pans over a slow fire to finally turn brine into salt. Rudkin notes incidentally that they 'had been used at Lymington at least since the thirteenth century':

The Sunworks consisted of a seabank for protection, with open pans behind it. A sluice through the seabank allowed a stream of seawater to come through and flow up a ditch to the large pans ...

(Rudkin 1975: 39)

- 5.6.5. There are a large number of records relating to the salt industry in the enhanced dataset. These are discussed in detail in **Appendix A-E**.

5.7. POST-MEDIEVAL AND MODERN PERIODS (1500 – PRESENT DAY)

- 5.7.1. Salt-making remained a dominant industry throughout the Post-medieval period, such that in the 18th century Daniel Defoe records that all of Southern England obtained its salt from Lymington.
- 5.7.2. Of particular note are two surviving boiling houses at Creek Cottage, Lymington, recorded by WA and thought to date from the 18th century (Wessex Archaeology 2008c). Historic map evidence from the 19th century indicates that the site was once much more extensive with features such as wind pumps, ponds and other structures all now demolished. The larger of the two buildings is thought to be directly involved with the salt brine boiling process while the smaller may have been used for storage.
- 5.7.3. The move away from the medieval sleetings towards the more wide-spread, industrial production of salt by evaporation from large open pans, occurred during the 17th century. This change led to large scale land reclamation across the intertidal area. It is likely that the inhabitants of the coast practised several different activities simultaneously, or at least seasonally. Hence agriculture, salting and perhaps mariculture (shell and or fin-fishing) may have all been equally important. Post-medieval records in the enhanced dataset include evidence of agriculture reflected by enclosures and field systems (see **Appendix A-E**).
- 5.7.4. During the 19th century the salt making industry in the area began to decline although in Coastal Stretch C salt production continues as an industry characteristic of this area into the 20th century. Earthworks representing salterns, thought to be of early 20th century date, are visible on aerial photographs at Gins Farm (**MWX61810**) and Great Marsh (**MWX61769** and **MWX61770**).
- 5.7.5. Other Post Medieval industries within the Study Area include ironworks, mills, brickworks, and gravel extraction sites. An extensive maritime infrastructure also emerged at this time with and a general increase in the number of records relating to ports and harbours and other facilities across the Study Area, including the

development of one of the most important centres of shipbuilding in the seventeenth century at Buckler's Hard on the Beaulieu River

- 5.7.6. Buckler's Hard lies on the western bank of the Beaulieu River was created by the 2nd Duke of Montagu for the sugar trade with the West Indies, although it's role in this lucrative commercial network was never realised. Instead, its sheltered waterfront and the abundance of timber from the New Forest saw it evolve as one of the country's most important shipbuilding centres. From the 1740s the Royal Navy built over 50 ships here including *HMS Agamemnon*, Nelson's most favoured ship. The advent of iron in the 19th century, however, saw the demise of Buckler's Hard. Excavations at the site by the University of Southampton have revealed timbers associated with shipbuilding (MWX50042) although the results of this work are yet to be fully published.
- 5.7.7. The majority of Post Medieval Records within the enhanced dataset relate to surviving occupied structures. These are predominantly houses and other dwellings, but also include a church, hotels and public houses.
- 5.7.8. There are two Scheduled Ancient Monuments dating to the Post Medieval period within the Study Area, Hurst Castle (**MWX22376**) and Calshot Castle (**MWX21990**). These are both artillery forts built as part of a defence network by Henry VIII.
- 5.7.9. Hurst Castle, has a long history, having played a part in some of the most significant conflicts of the post-medieval period. The castle was initially built as part of Henry VIII's network of coastal defences to protect the Solent against French and Spanish invasion. During the English Civil War it was occupied by parliamentary forces and Charles I was held prisoner there. The castle was refortified during the Napoleonic wars and during further hostilities between Britain and France in the later 19th century.
- 5.7.10. Calshot Castle also shows continuity of use with an anti-aircraft battery (**MWX37356**) being added during the Second World War. The New Forest and surrounding areas played an important role during WWII. At the height of the war there were 12 airfields and Advanced Landing Grounds in and around the area with sites at Beaulieu Heath, Stoney Cross, Ibsley, Holmsley and Lymington, as well as Hurn to the west, now Bournemouth International Airport.
- 5.7.11. The majority of 19th and 20th century records within the dataset are connected with military functions. These include pillboxes, military camps, airfields, air raid shelters, anti-aircraft batteries, Mulberry Harbours and other defensive features.

6. OFFSHORE ARCHAEOLOGY

6.1. SUBMERGED PREHISTORIC LANDSCAPES AND SEA BED PREHISTORY

- 6.1.1. As sea levels rose in the Mesolithic (8500 – 4000 BC) (see **section 4.2**), they covered a landscape that had, at various periods in the Palaeolithic (650,000 – 9500 BC) been dry, inhabitable land. Consequently, anthropogenic evidence dating from the Palaeolithic and Mesolithic has been found in contexts offshore.
- 6.1.2. Much of this evidence comprises findspots of stone tools recovered through dredging. For example, the Solent region was studied as part of the ALSF project Artefacts from the Sea (Wessex Archaeology 2003) which recorded 298 (largely prehistoric) finds dredged from the Western Solent by fisherman Michael White,

including a number of Palaeolithic handaxes. The catalogue was incorporated within the HCC dataset at the end of that project and provided specific evidence for finds of prehistoric material directly off the mouth of the Lymington River as well as finds from other areas of the Solent.

- 6.1.3. Offshore findspots within the enhanced dataset include a Palaeolithic implement (**MWX65361**), a possible Acheulean Palaeolith (**MWX60449**), and Lower Palaeolithic handaxes (**MWX60542**, **MWX60559**, **MWX60571**, **MWX61371**). Mesolithic material includes a lithic implement (**MWX60622**) and flint picks (**MWX60451**, **MWX60455**). There were also a number of undated finds, possibly dating to these periods.
- 6.1.4. Further findspots relate to palaeoenvironmental evidence such as the discovery of a tusk from a Straight Tusked elephant (**MWX61370**) indicative of warmer climactic conditions. Bones from animals can provide useful information on past climate and habitat as well as detailed information about the type of game that was available for early hunters. Offshore deposits also provide valuable information about past environments through analysis of pollen, mollusca and other fossils and in some cases preserved vegetal remains within peat. For example, there is evidence of a submarine forest at Thorne Knoll (**MWX38926**) and submerged peat deposits off Pitts Deep (**MWX51253**).
- 6.1.5. The marine Study Area was not covered by glacial ice during the glacial maximums of the three most recent ice ages: the Anglian (478,000 – 423,000 BP), Wolstonian (c. 380,000 to 130,000 BP) or Devensian (110,000 BP – 8,000 BC), and therefore, there is the potential for the preservation of prehistoric remains from the earliest periods of hominid activity, currently thought to date to around 700,000BP (Parfitt *et al.* 2005).
- 6.1.6. *In situ* offshore deposits are rare as much of the submerged landscape has been subject to reworking as a direct result of sea level change. However, there is potential to discover archaeological material along palaeovalleys and below and within the palaeovalley infill sediments, all currently below the present sea level. As discussed in **section 5.1** interglacial deposits exposed in the foreshore at Lepe indicate further potential for Palaeolithic deposits within the Study Area.
- 6.1.7. The site of Bouldnor Cliff lies off the northern coast of the Isle of Wight at the top of a submerged chalk cliff in the Solent. Diver survey of a submerged forest in 1999 revealed a number of worked flints and subsequent investigations by the Hampshire and Wight Trust for Maritime Archaeology (HWTMA) have confirmed the site as a submerged Mesolithic site of international importance (Momber, 2000). Hundreds of burnt flints have been recovered, including over 40 struck flakes, as well as valuable palaeoenvironmental evidence.
- 6.1.8. While much of the evidence for seabed prehistory relies on environmental samples and isolated finds from the seabed, the discovery of the submerged site at Bouldnor Cliff indicates that many more similar sites are yet to be discovered in offshore contexts.

6.2. WRECKS AND AIRCRAFT CRASH SITES

- 6.2.1. Seafaring in the marine Study Area, in the Solent between the Isle of Wight and the New Forest, probably began as sea levels rose during the Mesolithic period (8,500 – 4,000 BC), when areas previously accessible by land were now only accessible by sea going vessels. Thus, there is potential the discovery of remains of vessels

dating from the Mesolithic period to the modern day. While some wrecks may be related to the area where they are found, for example local fishing or trading vessels, others may have been bound for destinations much further afield, and their final resting place owes more to chance.

- 6.2.2. Early maritime traffic was characterised by log boats, log rafts and hide boats, capable of coastal journeys, fishing in inland and coastal waters, and possibly longer journeys in favourable weather. Although there are no hide boats in the archaeological record, there is potential for log rafts and log boats in sealed contexts (McGrail 1987).
- 6.2.3. During the Bronze Age (2200 BC – 700BC), technology advances allowed for new types of boats to be constructed, such as sewn plank boats, which were capable of sea-borne trade and the transport of larger shipments. During the Iron Age, the 'Romano Celtic' boat developed, and there is evidence to suggest that these were substantial, sea-going vessels (Marsden, 1996).
- 6.2.4. In the medieval period, shipping continued to expand, and the ALSF study, England's Shipping (Wessex Archaeology 2004a: Figure 12A), identified the Solent as one of the busiest pre-15th century traffic routes in England. By the Tudor period, maritime activity had expanded dramatically. With the opening up of the New World, goods were traded further afield and as the perception of sea power emerged, there was an expansion of military activity around the coast of Britain.
- 6.2.5. Sea faring activity expanded further during the post-medieval period, and the Industrial Revolution had a profound effect on ship design, which culminated in the development of steam propulsion and the use of iron and steel in ship construction in the mid 19th century. This advance in technology also radically affected shipping, as vessels were no longer at the mercy of the winds and tides.
- 6.2.6. The Solent was a hub of military activity during the two World Wars, and a large number of both naval and commercial vessels were lost during this period.
- 6.2.7. Records of wrecks within the Study Area come from a number of sources, including the NMR, the Hampshire AHBR, Isle of Wight HER and from the UKHO via SeaZone. Consequently there was much overlap between records and, while care has been taken to consolidate records where possible, in some cases the information available in the datasets has been insufficient to determine whether or not several records with the same name definitively refer to the same site.
- 6.2.8. Problems were also encountered with regard to documented losses. As discussed in section 3.3 above, only records of extant wreck sites were entered into the project database and references to documented losses were excluded. However, not all datasets included the required information to distinguish extant sites from reports of lost ships. For the purposes of this report, however, each record has been reviewed and a judgement has been made. For example, where several records report wrecks at a single location it may be presumed that these are reported losses rather than actual wrecks as it is common to record such losses at specific 'Named Locations' within an area where the site of the wreck itself is unknown.
- 6.2.9. In the marine Study Area there are 333 records within the Study Area classified as 'Maritime'. These were reviewed to identify documented losses and were found to comprise:
 - 159 wrecks

- 124 documented losses
- 7 crashed aircraft
- 7 'maritime' monuments
- 36 unidentified features or anomalies

Known Wrecks

- 6.2.10. Of the 159 known wreck sites 16 records were identified as being possible duplicates although the information available was regarded as insufficient to consolidate them within the enhanced dataset. Of the remaining 143 sites 19 have been identified as 'Dead' by the UKHO. This is a wreck not detected by repeated surveys and therefore considered not to exist. 8 of the wrecks are classified as 'Lift' indicating the site of a wreck that has been salvaged. The dataset also includes two find spots of archaeological material that could indicate possible wrecks, or could just be material lost or jettisoned from passing vessels. These comprise Post Medieval cannon balls (**MWX55143**) and an anchor (**MWX60408**).
- 6.2.11. Of the remaining 114 wrecks the oldest is that of the Yarmouth Roads site (**MWX28071**) a 16th century merchant carrack protected under the Protection of Wrecks Act (1973). The most recent wreck is the *Robbins* (**MWX61059**), a yacht (sailing vessel) that was lost on 4 April 2008. The remaining wrecks range in date from 1627 to 2007.

Date	Number of Wrecks
Pre-1600	1
1600-1649	1
1650-1699	0
1700-1749	0
1750-1799	4
1800-1849	4
1850-1899	6
1900-1913	1
1914-1918	6
1919-1938	1
1939-1945	3
1946-present	12
Unknown	75
Total	114

- 6.2.12. Three of these known wrecks are protected under the 1973 Protection of Wrecks Act.
- 6.2.13. HMS *Assurance* (**MWX28108**) is located to the west of the Needles, Isle of Wight. The HMS *Assurance* was a British 5th rate warship, and it struck the west Needles, Isle of Wight in 1753 while seeking shelter.
- 6.2.14. *Pommone* (**MWX28107**) is located to the west of the Needles, Isle of Wight, in close proximity to the HMS *Assurance* (**MWX28108**) was a 38 gun warship, built in 1805. The vessel was en route from Istanbul via Malta and Cagliari to Portsmouth with dispatches on the night of 14th October 1811, and was lost while attempting to navigate the Needles Passage, Isle of Wight. Additional wreckage, though to possibly be the remains of part of this wreck is recorded as (**MWX60520**), and is located 1.4km to the north-east-east.

- 6.2.15. The *Dream*, although not a Protected Wreck in its own right, lies within the 75m designated area placed around the site of the *Assurance* (**MWX2810**) and the *Pommone* (**MWX28107**). The *Dream* was a schooner lost on the Needles, Isle of Wight in 1837.
- 6.2.16. A further ship wrecked off the needles is the *Campen* (MWX60474) a Dutch East India Company ship wrecked in 1627, from which a large amount of artefacts, including coins, lead and cannon, have been raised and reported by divers.
- 6.2.17. The Yarmouth Roads Wreck (**MWX28071**) is located 300m north of Yarmouth, Isle of Wight. It is believed to be a 16th century merchant ship of Mediterranean build, possibly the *Santa Lucia*, a cargo vessel lost at Yarmouth in 1567. Elements of structure still survive, and have been surveyed.
- 6.2.18. A further ship wrecked off the needles is the *Campen* (**MWX60474**) a Dutch East India Company ship wrecked in 1627, from which a large amount of artefacts, including coins, lead and cannon, have been raised and reported by divers.
- 6.2.19. Of the four wrecks dated 1750 to 1799 two are wrecks shown on past admiralty charts for which current data is available. Hence, it is likely that no extant remains survive at the sites of *Chesapeake* (**MWX54294**) and *John* (**MWX54295**). The third wreck is that of *HMS Assurance* described above. The fourth is *Juno* (**MWX60785**) a Dutch sailing ship which was lost in 1786 and which is considered 'Live' by the UKHO. There is, however, very little available information.
- 6.2.20. The four records of wrecks from 1800 to 1849 comprise *HMS Pommone* and *Dream*, described above, and two wrecks shown on past admiralty charts, *Mary* (**MWX54296**) and *Hero* (**MWX54291**).
- 6.2.21. Six wrecks date to the period 1850 to 1899 including three shown on past admiralty charts (**MWX54270**, **MWX54290**, **MWX54268**). The other three wrecks are all reported 'Live' by the UKHO. *Castle Crag* (**MWX60847**) was a British steam ship which ran aground in 1883, *Irex* (**MWX60471**) was a Scottish schooner lost in 1890 and *Fenna* (**MWX61002**).
- 6.2.22. There is little available information for the *Castle Crag* or *Irex*. However, *Fenna* (**MWX61002**) is a Dutch Schooner built in Hoogezand in 1862. It foundered, in westerly force 9 after springing a leak, in 1881 while sailing from Antwerp to Messina and Trieste with a cargo of glass, rails and manufactured items. The remains lie three miles to the west of the Needles. Dive reports suggest that most exposed wooden elements have been eaten away although the cargo remains stacked on the seabed (<http://www.hwtma.org.uk/fenner>). The extant cargo comprises railway lines, blocks of sheet glass and barrels of cement.
- 6.2.23. *Reindeer* (**MWX61065**) is the only wreck recorded after 1900 and before the First World War. Although this wreck is reported as 'Live' there is little associated information.
- 6.2.24. There are six First World War wrecks within the Study Area, all recorded as 'Live' by the UKHO. *Algerian* (MWX60476) was an English cargo vessel which sank whilst on tow after being mined. The wreck site has been subject to several attempts at dispersal and, although the current extent is unclear, it is unlikely that substantial wreckage remains at the site. *HMS Albion II* (**MWX 60969**) was a British steam trawler for which there is no information on the current extent of remains. *Luciston* (**MWX27891**) was a Scottish merchant ship which was torpedoed and eventually

beached at the mouth of Southampton Water. In 1922 the boiler room was cleared by explosives and the remains are reported as being very broken up. *War Knight* (MWX60475) was a steam powered merchant ship that was deliberately scuttled by gun action or torpedo after being beached in 1918. The current extent of remains is unclear. The final two records relate to two sections of the *Serrana* (**MWX60976, MWX60974**).

- 6.2.25. The *Serrana* was a British steamship torpedoed in 1918. She broke up into two pieces as she grounded on the Needles Bridge, the stern sinking quickly half a mile from the needles lighthouse. The remains are very broken up and dispersed, recorded in two sections (**MWX60976, MWX60974**). Dive reports describe the bow section as 'broken' while the stern section appears to be more intact with a gun on the stern and two boilers and an engine surviving as well as areas of plate (<http://www.southcoastshipwrecks.co.uk/Wight%20Spirit/Wrecks.htm>).
- 6.2.26. There is only one record of a wreck site dated to between the two world wars, that of *Spyros* (**MWX60860**) a Greek transport ship that foundered in 1920 and for which little information is available.
- 6.2.27. The three wrecks dated to the second world war comprise *Caroline Susan* (**MWX28063**), a British motor yacht which either foundered or was blown up by a mine on the Dolphin Banks, *LCT 809* (**MWX28105**) a Royal Navy tank landing craft lost on her way to Normandy and now dispersed, and a Sunderland flying boat (**MWX61051**).
- 6.2.28. A propeller from a flying boat was raised from the seabed off Calshot in February 2010 after a lifeboat mooring became snagged on an unknown object. It has been suggested that the triple-bladed propeller comes from the wing of a Sunderland flying boat which sank off Calshot spit 50 years ago, possibly associated with the RAF Calshot's base there (<http://www.pbo.co.uk/news/441265/lifeboat-s-anchor-draws-up-flying-boat-s-propeller>). This type of plane was used as both a passenger plane as well as a fighter plane and for munitions drop and, before its closure in 1961; RAF Calshot was the main seaplane and flying boat development and training unit in the UK. Although this is classed as a boat it has also been considered by some to be classed as an aircraft leading to numerous difficulties in how to proceed with investigation.
- 6.2.29. The number of wrecks from the post war period is greater than those of earlier date, probably reflecting the increased survival rate of modern vessels. The enhanced dataset contains little information on most of these wrecks although, due to the extent of the remains, modern vessels often make popular dive sites. For example, The *Margaret Smith* (**MWX60893**) was launched in 1943 as the 300 ton *Empire Reaper*. A steel motor dredger, she was renamed in 1972 (<http://www.calshotdivers.com/index.php/dive-sites/34-wreck-dive/62-margaret-smith-maggie.html>). On the 28th June 1978 the *Maggie* was heading for Cowes loaded with gravel when her cargo shifted in heavy seas and she lost control. She capsized and the crew were rescued by helicopter. A local tug towed her, hull upturned, to Yarmouth where she was secured to a boat mooring and sank.
- 6.2.30. Most of the records of wrecks of unknown date contain insufficient information to determine the extent of remains at the site. It is possible that with further investigation these may be identified as wrecks reported as lost but for which no known remains have yet been found.

Documented Losses

- 6.2.31. While they do not represent actual remains on the seabed, documented losses can provide insight into the archaeological potential, as they provide an indication of sea faring trends over time and clues about the level of vessel traffic, and navigational hazards in an area.
- 6.2.32. 124 of the 333 'maritime' records within the Study Area were judged to represent documented losses. However, as discussed in section 3.3 above, only records of extant wreck sites were entered into the project database and references to documented losses were excluded. Consequently, to gain a full overview of the Study Area, the discussion here focuses on records from the NMR and Isle of Wight HER, both of which differentiate between known wrecks and documented losses.
- 6.2.33. There are 235 records of documented losses in the National Monument Record dataset.

Date	Number
Pre-1600	7
1600-1699	12
1700-1799	46
1800-1849	57
1850-1899	72
1901-1913	17
1914-1918	6
1919-1938	5
1939-1945	4
1946-present	4
Unknown	4
Total	235

- 6.2.34. The majority of losses were attributed to the 1800s, and while this may reflect the increase in shipping and general maritime traffic, it could also reflect biases in recording.
- 6.2.35. Of the 178 vessels with a recorded nationality, the vast majority, 123, were recorded as British or English, while a further 11 were recorded as Scottish or Welsh. In addition, there were vessels from around Europe, from the Channel Islands, Holland, France, Ireland, Italy, Germany, Norway, Prussia, Sweden, and Russia. There were even vessels of America nationality.
- 6.2.36. The vessel types were equally varied, and 187 records indicated the vessel type:

Vessel Type	Number
Barge	7
Barque	7
Brig	14
Brigantine	5
Cargo vessel / merchantman	46
Cutter	7
Fishing Vessel, Trawler	2
Ketch	8
Schooner	17
Ship of the line	2

Vessel Type	Number
Sloop	14
Smack	14
Snow	5
Steamship	1
Warship / naval vessels	3
Yacht	6
Miscellaneous	29
Total	187

6.2.37. Vessel types represented by the miscellaneous category include a: barquentine, carrack, collier, concrete barge, dredger, fireship, flyboat, galleon, galley, galliot, launch, lugger, packet, tug and a yawl.

6.2.38. There are 47 records of documented losses in the Isle of Wight dataset.

Date	Number
Pre-1600	1
1600-1699	2
1700-1799	10
1800-1849	5
1850-1899	18
1901-1913	3
1914-1918	1
1919-1938	2
1939-1945	0
1946-present	1
Unknown	4
Total	47

6.2.39. The earliest recorded loss, the *Sanctus Vincentius*, dates to 1567, while the most recent, the *Happy Wanderer*, dates to 1991.

6.2.40. Only 27 records have recorded nationalities. The majority of these are British or English (including Scottish and Welsh), with Bermudian, Dutch, German, Italian, Norwegian vessels also represented.

6.2.41. As with the recorded losses from the National Monument Record, the records from the Isle of Wight indicate a wide variety of vessel types. Vessel types include: barges, barques, brigantines, dredgers, East Indiamen, galleons, gunboats, ketches, merchantmen, Royal Naval vessels including ships of the line, schooners, sloops, smacks, snows, steamships and yachts.

6.2.42. The datasets indicate a marked increase in numbers from the 18th century. This coincides with the beginning of systematic recording of casualties during the mid 18th century and should not be taken as a direct indication of increased shipping.

6.2.43. However, the high number of losses recorded in the NMR and Isle of Wight HER indicate the potential for future discoveries of as yet unknown wreck sites within the Study Area. It is also possible that 'unknown' wreck sites may be linked to individual record of loss with further research.

Aircraft Crash Sites

- 6.2.44. In the UK, fixed wing aviation first began in the early 1900s, with the first fixed wing flight across the English Channel in 1909 (<http://www.rafmuseum.org.uk>). During the First World War, military and naval aviation developed. By the Second World War, advances in aeroplane technology enabled flights over water to take place with a much lower level of risk, and air power became increasingly important at a strategic and operational level. Attacks on enemy territory by both the Allied forces and the German Luftwaffe were facilitated by the mass-production of aircraft. Following the Second World War and until the early 1990s, military aviation activity was dominated by the Cold War, while commercial aviation activity also increased
- 6.2.45. The New Forest and surrounding areas played a huge role in the Second World War. At the height of the war there were 12 airfields and Advanced Landing Grounds in and around the New Forest.
- 6.2.46. At Calshot one of the oldest military air stations in the county was opened in 1913. During WWI it was mainly used as an experimental and training station but with the formation of the RAF in April 1918 it became headquarters for flying boats and seaplanes (<http://www.rafweb.org/Stations/Stations-C.htm>). Just before the outbreak of WWII RAF Calshot became a flying boat maintenance centre and from May 1942 was home to a number of Air-Sea Rescue units which subsequently took part in the D-Day landings.
- 6.2.47. There were 7 aircraft classified as 'Maritime' within the Study Area:
- MWX28303 German bomber, Junkers Ju88 B3+LH of Unit 1/KG54 lost off Egypt point, Isle of Wight, 1945
 - MWX57248 Junkers Ju88 crashed in the Western Solent
 - MWX57252 Heinkel He111 crashed into the Western Solent
 - MWX57257 Bristol Beaufighter crashed after a propeller flew off during a patrol
 - MWX57272 Bristol Hydroplane suffered engine failure and loss of power caused rapid descent onto 'broken water' causing the single float to break away
 - MWX57282 Messerschmitt BF110D was shot down into the sea to the west of the Isle of Wight by RAF fighters
 - MWX57283 Miles M33 Monitor TT II, serial NP409, crashed into the sea off Fort Victoria at Yarmouth
- 6.2.48. Further examination, however, reveals many more aircraft crash sites offshore although these have been recorded as 'Monuments' rather than 'Maritime' due to the information source.
- 6.2.49. Data regarding documented aircraft crash sites was collated from Aircraft Crash Sites at Sea (Wessex Archaeology 2008a). In the UK, the majority of aircraft losses at sea have been recorded along the south and east coasts of England and the vast majority of these have been military aircraft that date to the Second World War (1939-1945). The aircraft losses recorded in this Study Area follow the same pattern. There are 53 recorded aircraft losses within the Study Area. Only one documented aircraft loss, a Bristol hydroplane that suffered failure and loss of power causing a rapid descent into the water in 1913, was attributed to the pre-Second World War period. However, the vast majority of aircraft losses at sea have been military aircraft and date from the Second World War (1939-1945).

Date	Number
1900-1939	1
Second World War (1939-1945)	52
Total	53

6.2.50. Although in the past aircraft losses received little attention, maritime archaeologists are increasingly regarding aircraft crash sites, particularly those of military origin, as important archaeological sites. All military aircraft crash sites are automatically protected by UK legislation under the Protection of Military Remains Act 1986 and (once found) a licence is required for any disturbance or works. Military aircraft crash sites are now also subject to archaeological and management guidance issued by English Heritage (2002) and by the MOD (Service Personnel and Veterans Agency, 2009).

Obstructions and unidentified features

6.2.51. Obstructions are sites that have been detected through geophysical survey or reported by fishermen, and although they may indicate geological features or debris on the sea bed, sites that have not yet been identified could prove to be archaeological in origin.

6.2.52. There were 36 obstructions and unidentified features in the marine Study Area:

Type	Source	Number
Unidentified anomaly	NFCAR survey	4
Unidentified feature	Geophysical survey	3
Unidentified feature	Recorded observation	2
Unidentified features	Air photo survey	8
Unidentified net fastener	Fishermen's report	17
Unidentified seabed obstruction	Fishermen's report	2
Total		36

Maritime monuments

6.2.53. There are seven records of sites classed as maritime within the offshore Study Area:

6.2.54. **MWX57672** bath house. There is little information within the enhanced dataset although this may represent the site of a house built to facilitate bathing in the sea and is possibly post medieval in date.

6.2.55. Four of the records relate to shipbuilding, an important industry within the New Forest during the post medieval period (section 5.7):

- MWX57210 Careening timber
- MWX57212 Possible hard
- MWX57449 Tanners yard
- MWX57209 Warping pile

- 6.2.56. The remaining two records (**MWX60557**, **MWX60487**) refer to Mulberry Harbours. These WWII floating docks have been discussed in detail in the appendices with regard to the theme of warfare, defences and military installations.
- 6.2.57. It is likely that further 'maritime' monuments exist within the dataset but that the nature of the information source means they have been recorded as 'monuments' rather than 'maritime'.

6.3. PRIORITY SITES

- 6.3.1. An examination of records within the offshore Study Area has revealed a number of sites that may be regarded as a priority for Phase 2 fieldwork.
- 6.3.2. The logistical difficulties of working offshore indicate that survey to identify new sites falls outside the remit of a RCZA. It is, therefore, recommended that fieldwork be restricted to furthering knowledge and understanding of existing sites.
- 6.3.3. The three protected wrecks within the Study Area, HMS *Assurance* (**MWX28108**), *Pommone* (**MWX28107**) and Yarmouth Roads Wreck (**MWX28071**) have been well studied and require permission to dive and it is unlikely that any further survey as part of Phase 2 will be beneficial.
- 6.3.4. As all military aircraft crash sites are automatically protected by UK legislation it is suggested that aircraft are not investigated as part of Phase 2. One notable exception, however, is the Sunderland flying boat (**MWX61132**) which is currently classed as a boat rather than an aeroplane. The recent removal of a propeller from this site has sparked local interest in the wreck and a survey to clarify the extent of the remains may be valuable with regard to identifying any requirements for legal protection. However, as diving at the site may be hazardous due to its location and to the large number of nets and other debris at the site geophysical survey may be more suitable.
- 6.3.5. The assessment of the known wrecks in the enhanced dataset revealed a number of sites for which the current extent and condition of remains on the seabed is unknown. These include:
- *Juno* (**MWX60785**) 1786
 - *Castle Crag* (**MWX60847**) 1883
 - *Irex* (**MWX60471**) 1890
 - *Reindeer* (**MWX61065**) 1907
 - *HMS Albion II* (**MWX 60969**) 1918
 - *War Knight* (**MWX60475**) 1918
 - *Spyros* (**MWX60860**) 1920
- 6.3.6. A basic swim over survey of these wrecks by divers will, in the first instance, confirm the presence of remains on the seabed and help to clarify the extent. This will facilitate appropriate management of the sites, if required and will provide valuable data to feed back into the ENHANCED DATASET. It may also help to identify if any of the sites warrant further investigation beyond Phase 2 fieldwork. However, account has not been taken here of the whether or not these wrecks are suitable for diving. Where diving is not possible geophysical survey may be preferable.
- 6.3.7. Likewise, ground truthing remains on the seabed which are recorded as of 'unknown' date, unidentified seabed features and anomalies and wrecks shown on admiralty charts may help to clarify current records and possibly provide information

which could lead to an identification or confirm that no archaeological remains are present. Health and safety and other logistical factors, particularly associated with deploying volunteer divers, suggest that sites identified for swim over survey should be restricted to sites less than 25m in depth, within the relative shelter of the Solent rather than the exposed open water around Hurst Spit.

- 6.3.8. In addition to furthering knowledge and understanding account may also be taken of how wreck sites within the Study Area could be used as part of training and public enjoyment of the resource. Within the Study Area there are a number of wrecks which are currently popular with divers and which may offer good opportunities with regard to both these aims. Three such sites are:
- *Fenna* (MWX61002)
 - Margaret Smith (**MWX60893**)
 - *Serrana* (MWX60976, MWX60974)
- 6.3.9. Although most structural elements are missing at the site of the Dutch schooner *Fenna* (**MWX61002**) the survival of the intact cargo could provide valuable information on late 19th century stowage arrangements, as well as providing more general information of site formation processes and seabed stability.
- 6.3.10. The intact structure of wrecks such as the *Margaret Smith* (**MWX60893**) a steel motor dredger lost in 1978 offer good opportunities for training volunteers for projects such as the Phased 2 fieldwork. In addition, a record of the remains now will enable future assessment of how diver pressure and seabed processes impact their continued survival. This information will subsequently inform the future management of not only this sites but other subject to similar processes.
- 6.3.11. Similarly, at the site of the *Serrana*. The remains are believed to be broken up and dispersed although diver reports suggest that some structure remains, particularly at the stern section (**MWX60974**). Survey will establish the extent of the remains and any seabed processes that may negate their continued survival.

7. ASSESSMENT OF THREAT AND VULNERABILITY

7.1. INTRODUCTION

- 7.1.1. Each coastal stretch has been assessed with regard to threat from development pressures and coastal processes. Datasets relating to coastal erosion and potential flood events were used to assess the level of threat from coastal processes and were considered in conjunction with current and previous management strategies for the areas concerned.
- 7.1.2. The presence or lack of substantial development also informed the assessment of potential threat. In cases where large scale development is present, areas can be viewed to be under threat from development pressure, however, in some cases the presence of large economic or industrial assets can result in increased investment in coastal management and sea defences, thus providing some mitigation against the threat from natural processes. Similarly, some under-developed stretches of coastline can be considered to be under increased threat from coastal processes as their economic value may not justify extensive investment in shoreline defences.
- 7.1.3. Existing sites have been assessed in terms of their vulnerability by viewing the enhanced dataset overlaid on GIS layers depicting potential threats as described

above. Discussion of the vulnerability of sites is limited to existing sites, rather than records of findspots found within the dataset.

- 7.1.4. A discussion of the threat and vulnerability of offshore sites identified as being of particular interest can be found in **section 7.4**.
- 7.1.5. The results of this assessment are summarized below. A detailed discussion of each coastal stretch can be found in **Appendix A to E**.

7.2. THREATS TO COASTAL HISTORIC ASSETS

Coastal Stretch A

- 7.2.1. The prevalence of agriculture within this coastal stretch indicates that any threats resulting from development pressure are likely to be low. However, much of this stretch of coastline is particularly vulnerable to coastal erosion. Threats to coastal historic assets resulting from natural processes, therefore, are considered to be high.
- 7.2.2. It is also possible that increased visitor numbers along the coast, encouraged by the Marine and Coastal Access Bill, may increase the vulnerability of certain areas while the creation of new access routes may directly impact the coastal resource.

Coastal Stretch B

- 7.2.3. Current levels of development within this coastal stretch are not considered to be a considerable threat. This coastal stretch is also well equipped with sea defences, including the natural barrier of Hurst Spit, its beach and the rock built defences surrounding them, the sea walls at Keyhaven and Lymington and raised embankments along the less populated stretches of coastline. While areas along this stretch of coastline are vulnerable to coastal erosion, and potential flooding events, immediate threats to coastal historic assets resulting from natural processes are considered to be minimal.
- 7.2.4. However, it is also possible that increased visitor numbers along the coast, encouraged by the Marine and Coastal Access Bill, may increase the vulnerability of certain areas while the creation of new access routes may directly impact the coastal resource.

Coastal Stretch C

- 7.2.5. The threat to this stretch of coastline from development pressures can be considered to be low as this coastal stretch is largely undeveloped and not heavily populated. However, threats from natural processes may be more significant.
- 7.2.6. The hydrodynamic processes affecting coastal erosion are, to a certain extent, limited by the barrier formed by Hurst Spit at the approaches to the Western Solent. However, areas along this stretch of coastline remain vulnerable to coastal erosion and flooding events including the significant loss of intertidal mudflats and saltmarsh in this area over the next 100 years, which would result in more serious wave climate conditions and increased potential for storm surges. The maintenance of current defences in this area may also contribute to additional erosion in some locations.
- 7.2.7. It is also possible that increased visitor numbers along the coast, encouraged by the Marine and Coastal Access Bill, may increase the vulnerability of certain areas while the creation of new access routes may directly impact the coastal resource.

Coastal Stretch D

- 7.2.8. The majority of coastal land in this area is undeveloped privately owned land given over to agriculture, country parks and conservation areas. The threat to this stretch of coastline from development pressures, therefore, can be considered to be low. The risk from coastal erosion is also significantly lower than that observed in the more westerly coastal stretches. The greatest risk may be to Calshot Spit. The current policy to take no active intervention is an acknowledgement that the long term protection of Calshot Spit against encroaching sea-level and flooding event is not likely to be possible.
- 7.2.9. However, increasing visitor numbers along the coast, encouraged by the Marine and Coastal Access Bill, may increase the vulnerability of certain areas while the creation of new access routes may directly impact the coastal resource. The prevalence of undeveloped land within this coastal stretch suggests that this should be a key consideration with regard to future management priorities.

Coastal Stretch E

- 7.2.10. Coastal Stretch E is the most heavily developed of all the coastal stretches in the Study Area and impacts associated with development pressure can be considered to be the most significant threat to archaeological features within this area. The risk from coastal erosion in this coastal stretch is significantly lower than that observed in any of the other coastal stretches.

7.3. AREAS OF INCREASED VULNERABILITY**Coastal Stretch A**

- 7.3.1. There are nine potentially vulnerable sites located in areas specified as at risk from cliff erosion, or in locations seaward of the projected erosion line.
- 7.3.2. The coastal stretches to the west of Barton-on-Sea, seaward of Naish Holiday Village, and from Barton Cliff to Hordle Cliff, are under considerable threat from potential future cliff erosion. Both of these areas should be considered as being relatively important as they are locations in which a number of artefacts have been reported including finds of Bronze Age, Iron Age and Romano-British material.
- 7.3.3. The most significant findspots in relation to these areas are the Palaeolithic artefacts which have been reported as being found along these stretches of coastline from the 19th century onwards. It is possible that Palaeolithic material may continue to erode from these cliffs, and any such finds would be of significance to the area and the New Forest region as a whole. The archaeological potential implied by the presence of Palaeolithic material, when considered in light of the erosion predicted for these areas would warrant these two areas being considered as particularly vulnerable.

Coastal Stretch B

- 7.3.4. There are 31 potentially vulnerable sites located in areas specified as at risk from cliff erosion, or in locations seaward of the projected erosion line. The most vulnerable sites are those with a high archaeological potential which are situated in the intertidal zone. These include wrecks, features associated with the saltworking industry, and sites of unknown type and period.

Coastal Stretch C

- 7.3.5. There are 32 potentially vulnerable sites located in areas specified as at risk from cliff erosion, or in locations seaward of the projected erosion line. There is a moderate risk of coastal erosion in this stretch and two areas, near the western and

eastern limits of the coastal stretch boundary, are identified as at risk from a number of environmental factors. Archaeological sites on or near the foreshore in this areas can be said to be particularly vulnerable to damage or deterioration.

Coastal Stretch D

- 7.3.6. There are 27 potentially vulnerable sites located in areas specified as at risk from cliff erosion, or in locations seaward of the projected erosion line. The most vulnerable area along this coastal stretch is the area at Calshot Spit. However, although long-term protection of the spit is regarded as unfeasible, works to maintain the integrity of the spit are currently continuing. There are a number of archaeological features in this area, including some which are presently unidentified that may be at risk of damage or deterioration.

Coastal Stretch E

- 7.3.7. This coastal stretch is of low risk due to coastal erosion. However, 22 sites situated in the intertidal zone, seaward of the high water mark, have been identified as of potentially greater vulnerability. The vulnerability of this coastal stretch is greater with regard to development pressure, although impacts against extant archaeological features should be subject to mitigation works as part of the planning process for any new development.

8. PHASE 2 SCOPING

8.1. RESEARCH PRIORITIES

- 8.1.1. Existing frameworks were examined to identify relevant research priorities with regard to this project.
- 8.1.2. The Centre for Maritime Archaeology at the University of Southampton is currently co-ordinating the development of a research framework for the maritime, marine and coastal archaeology of England. The aim is to provide a coherent overview of previous research which will enable long-term strategic planning, inform policy and provide a statement of agreed research priorities. A draft of results will be available in mid-March 2010 and publication is planned for July 2010. Consequently the results are not yet available for consideration in this report. However, it is probable that the this programme of work will be significant for determining future research priorities with regard to the NFRCA and it is recommended that these should be considered in the planning of Phase 2.
- 8.1.3. Numerous research priorities set out in the South West Archaeological Research Framework (SWARF) (Somerset County Council, 2007) and the Solent-Thames Archaeological Research Framework (Oxford Archaeology/ Buckinghamshire County Council). These both represent a comprehensive examination of supposed 'gaps' in our understanding and knowledge. With regard to Phase 2 fieldwork, general research aims set out by SWARF include:
- Research Aim 2: Encourage works of synthesis within and across periods, settlements, monuments and areas.
 - Research Aim 3: Address apparent "gaps" in our knowledge and assess whether they are meaningful or simply biases in current knowledge.
 - Research Aim 10: Address our lack of understanding of key transitional periods.

- 8.1.4. With regard to these research aims, the primary research priority of a RCZA is the identification and clarification of existing sites with further potential for identifying new sites during Phase 2 fieldwork.
- 8.1.5. The coast is largely an understudied resource typified by uneven coverage of discovery and knowledge. This DBA has revealed a number of 'gaps' in the archaeology of the New Forest.
- 8.1.6. Much of the archaeological evidence for the saltworking industry along the coast has never been surveyed or recorded despite its high importance as a New Forest industry believed to date back to the Bronze Age. Work carried out by WA on the Hampshire Salterns examined representations on historic maps, charts and aerial photographs but the sites identified have not yet been subject to survey (Wessex Archaeology 2002).
- 8.1.7. The relative paucity of Neolithic remains within the Study Area is characteristic of Hampshire generally, which lacks the monumental structures found in Dorset, Wiltshire and Somerset. Fieldwork would be required in order to identify coastal sites of this date.
- 8.1.8. A decline in the number of records within the coastal region during the Iron Age may be the direct result of a lack of systematic fieldwork and reporting in particular areas. Targeted fieldwork to identify new sites from this period, or to secure dating of known sites of unknown date, may reveal a higher level of exploitation of this region than currently recorded.
- 8.1.9. Most Early Medieval records within the Study Area are typified by a lack of secure dating, and there is a general absence of fieldwork focusing on sites of this period. It is possible that future discoveries may help to fill in this chronological gap and, as with the Iron Age, targeted fieldwork to identify new sites from this period, or to secure dating of known sites of unknown date, may reveal a higher level of exploitation of this region than currently recorded.
- 8.1.10. In addition, it was recognised in the project brief that education and outreach should form part of the rationale for planning fieldwork. In particular, RCZA should enhance public understanding and enjoyment of the coastal heritage of the New Forest. This is in accordance with research aims identified by SWARF:
- Research Aim 1: Extend the use of proven methodologies for site location and interpretation, and encourage the development of new techniques.
 - Research Aim 4: Encourage wide involvement in archaeological research and present modern accounts of the past to the public.
- 8.1.11. Consideration of perceived 'gaps' and this outreach element of the research will help to guide planning for Phase 2.

8.2. PROPOSED FIELDWORK

Rapid Coastal and Offshore Survey

- 8.2.1. As outlined above the key aim of RCZA Phase 2 fieldwork is to identify and clarify the nature of the archaeological resource within the Study Area. Initial survey, therefore, should comprise walkover and swimover surveys to confirm the existence of known sites and to identify new ones. Ground truthing known sites, to confirm and clarify the extent of remains, will provide valuable information to feed back into the

enhanced dataset and will help to identify sites and areas that may warrant further detailed survey and recording in later phases of the RCZA.

- 8.2.2. The walkover survey will include broad coverage of a wide area using GPS to record the location and extent of sites. The timescale for a general walkover walking broad transects is shown below.

Coastal Stretch	Primary Environment	No of days	Assumptions
A	Gravel beach	3 days	This assumes that only the beach area will be surveyed
B	Gravel beach, inter-tidal mud, coastal land	6 days	This assumes that the walkover will not extend into built-up areas
C	Narrow groyned foreshore, inter-tidal mud, coastal land	5 days	Excludes the Beaulieu River valley
D	Groyned foreshore, inter-tidal mud, coastal land	4 days	Excludes the Beaulieu River valley
D	Beaulieu River	4 days	
E	Foreshore, inter-tidal mud, coastal land	6 days	This assumes that built-up areas and areas of restricted access are not surveyed

- 8.2.3. These are broad estimates and, depending on health and safety restrictions and the expertise of project staff, any individual stretch may take longer than estimated. It assumes that the survey will not extend into built-up areas such as Lymington, Fawley and Hythe, and that some areas, such as Marchwood military base, may not be accessible. Features that enable access, such as rights of way and coastal car parks, have also been identified. These have been mapped in the project GIS and are discussed in **Appendix A to E**.

- 8.2.4. Offshore swim-over survey should aim to locate remains and assess the extent and condition of wrecks for which little information is known. This may include named wrecks or any of the unknown vessels or unidentified seabed features discussed above (section 6.3). Due to health and safety and other logistical factors, particularly associated with deploying volunteer divers, sites identified for swim-over survey should be restricted to wrecks less than 25m of water. It may also be appropriate, for logistical reasons, to priorities sites within the relative shelter of the Solent rather than the exposed open water around Hurst Spit. It may be possible to achieve coverage at a rate of two wrecks a day according to the ability of staff and other constraints such as weather.

- 8.2.5. In addition to rapid coastal and offshore survey a number of priority sites have also been identified which may be considered for more detailed survey during Phase 2. The suggested timescale for the priority sites is work that would be additional to the general walkover survey indicative timescale indicated above.

Priority sites

- 8.2.6. Priority areas or sites meriting further survey or evaluation have been identified based upon the enhanced data and assessment of threat and vulnerability. These have been mapped in the project GIS and an account of the rationale for their

prioritization can be found in **Appendix A to E**. The priority sites and proposed locations for fieldwork identified for each Coastal Stretch are shown in **Figure 4** and are summarized below.

- 8.2.7. It is not currently possible to determine the nature of any further survey as the status of the sites is unclear. Once an initial walkover survey has identified the sites it will be possible to determine the most appropriate methodology which may include topographic survey and/or targeted geophysical survey.

Coastal Stretch A

Priority Area or Site	Proposed Fieldwork
Areas seaward of Naish Holiday Village and from Barton Cliff to Hordle Cliff.	<p>'Fieldwalking' along the beach to identify the presence (or otherwise) of Palaeolithic artefacts and the strata that they derive from.</p> <p>Suggested method is the deployment of individuals with specialist knowledge of Palaeolithic flint. Possibly followed up by collecting samples for OSL dating of the gravels from which any finds have come.</p> <p>Suggested timescale is 2 days.</p>

Coastal Stretch B

Priority Area or Site	Proposed Fieldwork
Intertidal areas off Keyhaven (MWX61695, MWX27698, MWX27699)	<p>Field survey to record in detail intertidal features such as peat deposits, etc.</p> <p>Suggested method involves dGPS survey with use of an inflatable to secure access and exit from the seaward extents of the mudflats.</p> <p>Suggested timescale is 5 days.</p>
Unidentified wreck, Moses Dock near The Salterns at Oxey Marsh (MWX61305)	<p>Detailed recording of the wreck.</p> <p>Suggested method involves hand drawn plans and sections backed up by photographs.</p> <p>Suggested timescale is 1-2 days.</p>
Five wrecks, Lymington foreshore (MWX60680, MWX60787, MWX61143, MWX61144, MWX61184).	<p>Detailed recording of the wrecks.</p> <p>Suggested method involves hand drawn plans and sections backed up by photographs.</p> <p>Suggested timescale is 5 days.</p>

Coastal Stretch C

Priority Area or Site	Proposed Fieldwork
Intertidal zone at Gins (MWX61776, MWX61903, MWX61902, MWX61777)	Detailed survey of linear structure and landing stages within the mouth of the Beaulieu River. Suggested method is topographic (total station) survey backed up by photographs. Suggested timescale is 2-3 days.
Sites at Needs Ore Point (MWX61865, MWX61738, MWX61737, MWX61861, MWX61862)	Detailed survey of a range of features at Needs Ore Point, including linear structures, a sluice and buildings. Suggested method is topographic (total station) survey backed up by photographs and hand drawn plans as required. Suggested timescale is 3-5 days.

Coastal Stretch D

Priority Area or Site	Proposed Fieldwork
Calshot Spit unidentified foreshore archaeology (MWX62258)	Detailed survey of linear features close to the low water mark. Suggested method is topographic (total station) survey backed up by photographs. Suggested timescale is 1-2 days.
Stone Point unidentified foreshore archaeology (MWX61731)	Detailed survey of linear features on the foreshore. Suggested method is topographic (total station) survey backed up by photographs. Suggested timescale is 1-2 days.
Riverbanks between Beaulieu and Buckler's Hard	If the rapid coastal survey identifies sites along the Beaulieu River then they may be targeted for detailed work. Methodology might include use of divers in the river. Timescale uncertain.

Coastal Stretch E

Priority Area or Site	Proposed Fieldwork
Wooden wreck within intertidal area off Calshot Spit (MWX62200)	Detailed recording of the wreck. Suggested method involves hand drawn plans and sections backed up by photographs, dGPS positioning and possibly total station survey. Suggested timescale is 1-3 days (depending on the available working window).

8.2.8. Timescale in the above tables is based on the assumption that work will be conducted by at least a two-person team provided with the necessary experience

and equipment. In many cases there is an assumption in favour of equipment, such as dGPS and total station theodolite, that require specialist knowledge to operate, but which greatly reduce survey time. Some tasks are more easily undertaken than others by less experienced personnel using more basic equipment:

- The identification of Palaeolithic flint on a pebble beach would require that the team contains at least some specialist knowledge in the identification of such objects.
- Access to, and survey on the inter-tidal mudflats requires that health and safety considerations are paramount, and that dGPS position-fixing technology is employed. There is scope for larger (than two-person), and mixed ability teams for these tasks.
- Detailed hulk recording is the task most suited to low-tech methods and larger teams. Although some detailed knowledge would be advisable in order to 'direct' the work.
- Total station theodolite, topographic survey is by far the most efficient and accurate means of recording earthworks. However, in most areas where this has been suggested there is scope for expanding the basic two-person survey team for tasks such as hand drawn plans photography.

Offshore Sites

- 8.2.9. One wreck of particular interest that may warrant further survey is that of the Sunderland flying boat (**MWX61051**). However, although this is a shallow wreck site its location of Calshot Spit close to the lifeboat mooring and the presence of large numbers of nets and other snagged objects indicate that this may not be appropriate for diving, particularly with volunteers. This may provide an opportunity for geophysical survey, although the moorings may also be a problem for this.
- 8.2.10. Three wreck sites were identified as being worthy of further survey with regard to training and outreach.
- *Fenna* (**MWX60477, MWX61002**)
 - *Margaret Smith* (**MWX60983**)
 - *Serrana* (**MWX60976, MWX60974**)
- 8.2.11. The site of the Dutch schooner *Fenna* (**MWX60477, MWX61002**) comprises the extant cargo stacked on the seabed and, as such, could provide valuable information on late 19th century stowage arrangements, as well as providing more general information of site formation processes and seabed stability. A detailed site assessment may also identify additional elements of the site such as vessel structure, fixtures and fittings.
- 8.2.12. Reports as to the extent of the remains of *Margaret Smith* (**MWX60893**) are unclear although its popularity as a local dive site suggests that some structure must remain. Survey is recommended to establish the nature and extent of the remains, and any seabed processes that may negate their continued survival.
- 8.2.13. The remains of the *Serrana* (**MWX60974**) are believed to be broken up and dispersed although diver reports suggest that some structure remains, particularly at the stern section of the wreck. Survey is recommended to establish the nature and extent of the remains and any seabed processes that may negate their continued survival.

8.2.14. Seven further sites, that may also be the subject of detailed survey work at this stage have also been identified, however their position to the south of the Needles may mean that they are less attractive targets at this stage. These are:

- *Irex* (MWX60847)
- *War Night* (MWX60475)
- *Juno* (MWX60785)
- *Castle Crag* (MWX60847)
- *Reindeer* (MWX61065)
- *Spyros* (MWX60860)
- *HMS Albion* (MWX60969)

8.2.15. The time required for each detailed survey will depend upon the resources, equipment and dive window available. As a guide, a typical undesignated site assessment of a wreck undertaken for the Protection of Wrecks Contract generally allows 3-5 days per wreck, with one surface supplied diver backed up by acoustic tracking in the water at any one time. The deployment of larger numbers of volunteer SCUBA divers would increase the in-water time, but this would be offset by the need to establish position and extent of the sites by lower-tech means, thus the 3-5 day model is probably a reasonable estimate for an initial survey of this nature.

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- Marine Study Area
- Coastal Stretch
- Policy Unit from Shoreline Management Plan



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Study Area

Figure 1

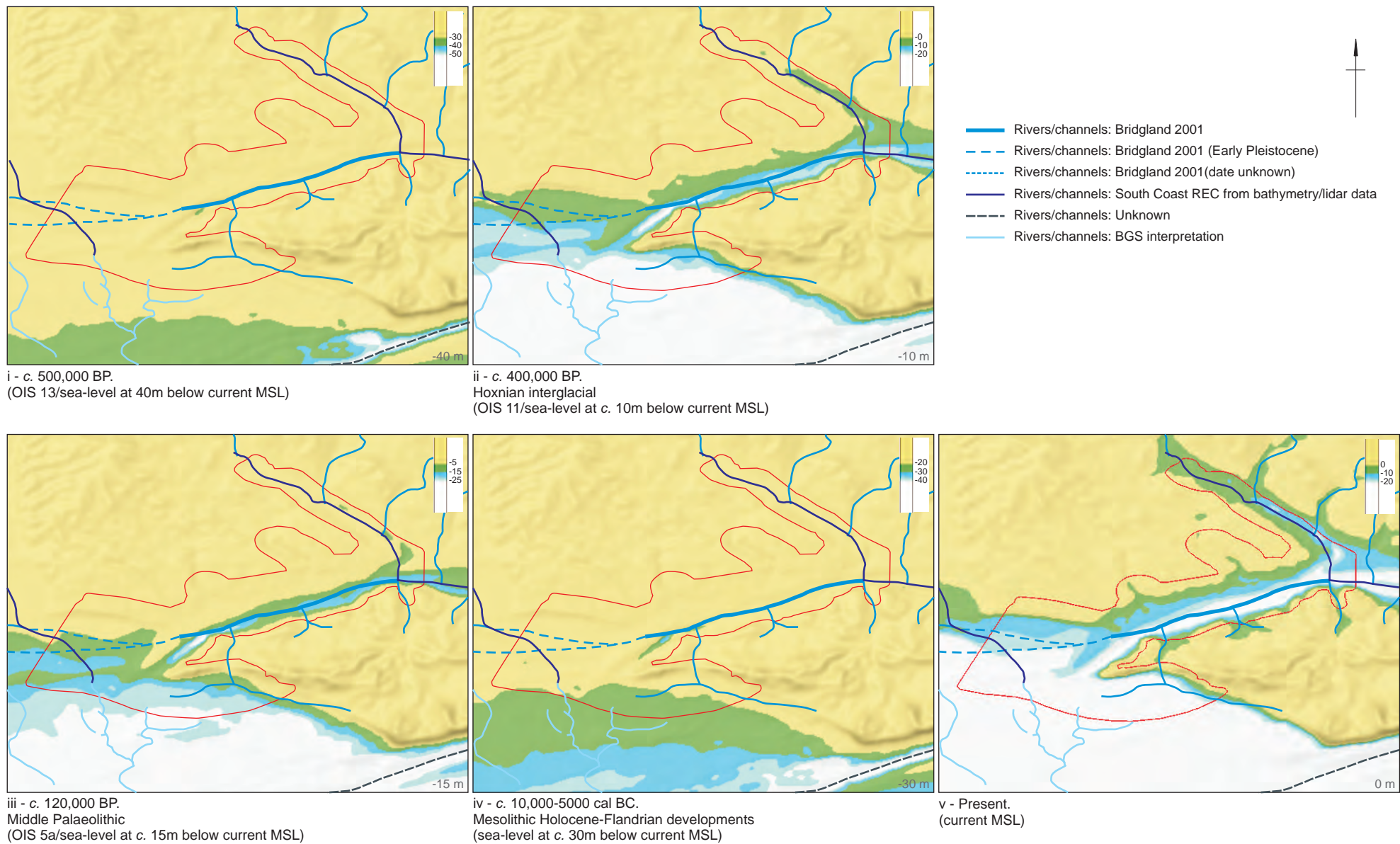



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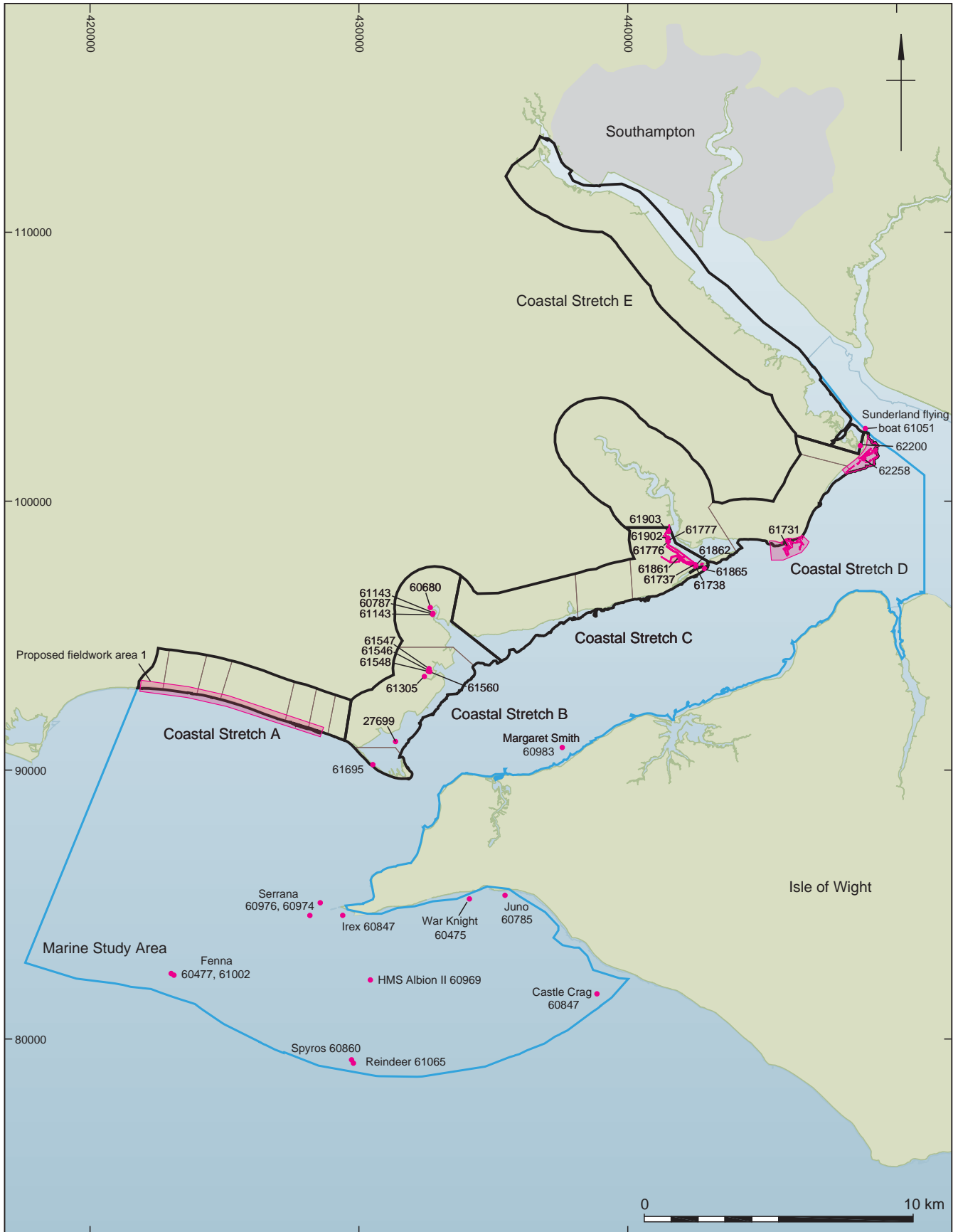
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Sea-level change within the Study Area

Figure 3



- Sites identified for further detailed work
- Marine Study Area
- ▭ Coastal Stretch
- ▭ Policy Unit from Shoreline Management Plan



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Sites identified for further detailed work

Figure 4



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