Christchurch Bay and Harbour Flood and Coastal Erosion Risk Management Study

Technical Annex 9: Strategic Environmental Assessment

Prepared
Halcrow Group Ltd

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Introduction

Man-made changes, notably coastal defences, have had a significant impact on the present morphology of Christchurch Bay and Christchurch Harbour. This has resulted in erosion in other areas along the coast. In combination with the effects of rising sea levels, this has led to the possibility of existing flood defence failure. The aim of this Strategy is therefore to determine a more sustainable way to develop coastal and flood management options, which takes into account the natural environment of this coast as well as the need to sustain the human and built environment.

The Strategic Environmental Assessment (SEA) Report is an integral part of the Strategy. The preliminary stage of the SEA is to prepare a baseline and objectives, of which this is a non-technical summary. The baseline:

- details the existing environmental conditions present within the Strategy study area (Figure 1);
- lists the key concerns of stakeholders; and
- defines environmental objectives for each component of the environment.

The next stage in the Christchurch Bay and Harbour Strategy is to develop a long list of strategic options. These will be assessed by the Project Team and Steering Group in terms of their technical feasibility, environmental acceptability, economic viability and consequences in order to develop a short list of site strategic options. The short list of options will be issued to all consultees for comment and appraised against the objectives identified in the SEA, as well as for their technical and economic viability.

Existing Environment

The strategy study area is situated on the south coast of England, encompassing approx 16km of frontage within the counties of Dorset and Hampshire. The boundaries of the Christchurch Bay study area is delineated by Hengistbury Head long groyne to the west and Hurst Spit to the east. Hengistbury Head provides protection to Christchurch Harbour and the town of Christchurch that lies along its northern boundary. The coastline of the bay consists of eroding clay cliffs backed by a combination of settlements and agricultural land.

Geology, Palaeontology and Geomorphology

The geology of the area predominantly comprises sands, clays and marls of the Headon and Barton beds. The cliffs between Highcliffe and Milford on Sea are of international significance for geological conservation. Important sites include the cliffs between Highcliffe and Barton on Sea, the coastal section from Friars Cliff to Milford on Sea and the Hordle Cliff. There are a number of fossil rich cliffs within the study area. There are conflicts between the need to maintain geological

exposures for conservation and study and the wish to prevent cliff recession to protect property by constructing and maintaining defences.

The coastline of Christchurch Bay has undergone significant erosion. Hengistbury Head, Mudeford Spit and Hurst Spit all play a key role in the overall morphology of the Bay. In their absence it is likely that the coast from Durlston Head to Hurst Spit would evolve into a single bay and erosion of the cliffs would increase from wave attack.

Ecology and Nature Conservation

Significant features of nature conservation importance in the Bay include coastal sand dunes, saltmarsh, vegetated shingle, earth heritage, sublittoral rock, maritime cliff and slopes, reedbeds and saline lagoons. The coastline of the Bay is composed of a suite of habitats, including terrestrial, semi-aquatic, freshwater/mildly brackish and marine all combining to form a stretch of open coast of great variety.

There are four Sites of Special Scientific Interest (SSSIs), eleven Sites of Nature Conservation Interest (SNCIs), and two Local Nature Reserves (LNRs) in the study area. Hengistbury Head and Hurst Spit form part of candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs), designated under European Directives for their nature conservation importance.

Coastal squeeze is likely to change the character of many sites within the study area, particularly low-lying saltmarsh and reedbeds within Christchurch Harbour. Erosion of Hengistbury Head is also reducing areas of maritime heathland and grassland. Christchurch Borough Council has recently completed a coastal defence scheme at Mudeford Sandbanks due to its strategic importance in defending the town.

The existence of the Hurst Spit is vital to the continued protection of the existing saltmarshes and mudflats in the western Solent, which are exhibiting extensive dieback, and are also receding through wave attack. The spit has become short of material as a result of defence construction within Christchurch Bay and in recent years has been reinforced with groynes and shingle recharge.

Landscape

There is one landscape designation in the study area, the South Hampshire coast Area of Natural Beauty (AONB). Hurst Spit is also considered to be of high landscape importance and is also included within this designation. Within the Countryside Agency's Character Initiatives there are two Character Areas of relevance to this study, Dorset Heaths and New Forest. The landscape setting of the study area can mainly be divided into open coast of Christchurch Bay and the naturally sheltered harbour of Christchurch Harbour.

Land use and Population

The main land uses within the study area include settlements, agriculture, tourism, leisure and recreation.

Agriculture within the study area is of varying quality, ranging from Grade 2 in the area of Keyhaven and Milford-on-Sea, to Grade 4 around Milford and Barton. Hampshire County Council characterise the area as open coastal plain. There is little opportunity for agriculture around Christchurch, as the harbour waterfront is highly developed.

Christchurch is the main town within the study area and borders the northern edge of Christchurch Harbour. It has a population of 45,000, of which more than 34% are of a pensionable age. Most of the commercial activity is situated here with the major employment sectors being 'high technology', aviation with industrial sites providing the remaining business.

Towns and villages lying to the east of Christchurch include Milford on Sea, New Milton, Barton on Sea and Highcliffe, which are all mainly residential, with tourism and service providing the main employment.

Transport Network and Traffic

The principal road network is the A35 from Bournemouth to Christchurch. The main railway link is the South Coast route, which is part of the Trans-European rail network. Car and passenger ferries operate between Yarmouth (Isle of Wight) and Lymington, just east of the study area. Passenger ferries operate between Keyhaven and Yarmouth and from Keyhaven to Hurst Castle.

Water and Aquatic Environment

There are five main rivers within the study area with varying degrees of quality. The River Stour and Avon, feeding into Christchurch Harbour, the Walkford Brook, the Becton Bunny and the Danes Stream, which discharges just beyond the study area, are all are monitored by the Environment Agency for their chemical and biological content (General Quality Assessments), and are set River Quality Objectives (RE classifications), for which they have to meet. The majority of the rivers are compliant with their RE classifications and have fair to very good General Quality Assessments.

Christchurch Harbour is routinely monitored to ascertain if it is eutrophic due to nutrient inputs from sewage treatment works and riverine inputs. Due to a lack of evidence, the Harbour has not been proposed for designation under the Urban Waste Water Treatment Directive or the Nitrates Directive.

There are seven designated EC Bathing Water Directive beaches in the study area but no designated Blue Flag beaches.

The threat of oil pollution to the study area is a real risk due to the active exploitation of oil reserves in Poole Harbour and their transportation to Southampton via the underground pipeline.

Landfill Sites, Former Refuse Tips and Contaminated Land

There are a number of existing and former landfill sites within and just outside the study area. In particular, Christchurch Harbour has a number of former landfill sites in close proximity, including one north of Stanpit Marsh and one at Wick Fields. These would present a danger of contamination in the event that a do nothing or managed realignment policy allowed them to become intertidal.

Tourism and Recreation

Numerous tourism and recreational opportunities exist within the area, with beaches being a particular asset. Christchurch Borough generated an estimated £35 million from tourism in 1995 and figures show that the total number of employees employed in the industry to be 1,590 (1991).

Popular recreational activities include walking, sea-angling, sun-bathing, swimming, and sailing. There are also a number of visitor attractions including museums, arts and community centres, town gardens, and castles.

There is an abundance of accommodation across the area, consisting of hotels, guesthouses and self-catering establishments, with the majority being static caravan parks and touring and camping parks.

Fisheries

Commercial fishing takes place along the coastline with an annual turnover of around £2.1 million. Mudeford is a Registered Sea Fishery, one of five in Dorset. The Southern Sea Fisheries Committee has a jurisdiction over commercial activity through a number of byelaws. There is also known to be illegal salmon fishing on the Stour in Christchurch Harbour, although salmon are legally set in Christchurch harbour at The Run, the method going back at least to Saxon times.

Archaeology and Cultural Heritage

There are 13 Scheduled monuments in the study area, some of which are at risk from flooding or erosion. The most significant monuments in terms of coastal protection are:

- Hengistbury Head, which contains evidence of Mesolithic, Neolithic, Bronze Age and Roman occupation together with a large Iron Age fortification known as Double Dykes. The Head has eroded significantly in the last 2,000 years, especially since the nineteenth century, and both archaeological and recreational resources are liable to be lost in future.
- Hurst Castle, which was built by Henry VIII as one of a chain of coastal fortresses on the end of Hurst Spit. The Castle is vulnerable to flooding or erosion as a result of breaching of the spit.

There is also a number of Grade I and II Listed Buildings. Highcliffe Castle is a Grade I Listed Building and one of the most important Listed Buildings in the area. The older 'hamlets' of Purewell, Stanpit and Mudeford also have numerous statutory Listed and Locally Listed Buildings.

A number of wrecks exist off-shore including two British Dumb barges stranded in 1889. There is also evidence of submerged land surfaces with evidence of human occupation within Christchurch Harbour and Bay.

Spoil Disposal and Dredging Operations

Three commercial licensed dredge sites exist within the Christchurch Bay area. Annual nourishment has been undertaken on Hurst Spit since at least 1981 with significant quantities of sea-dredged material being used. Hurst Spit Stabilisation Scheme was created in 1996 involving shingle beach renourishment to increase the level and width of the Spit.

Planning and Legislation

The concept of integrated coastal zone management (ICZM) is being actively promoted at the international level through various Conventions and initiatives.

European Union policy has become crucial to coastal decision-making and planning. The EU Directive on the Conservation of Wild Birds and on the Directive (the Birds Directive) on the Conservation of Natural Habitats and of Wild Flora and Fauna (the Habitats Directive) give statutory protection on designated areas (Special Protection Areas (SPAs) and Special Areas of Conservation (SACs)). The SPAs and SACs form part of the Natura 2000 Network, the European ecological network. The Habitats Directive provides for strict control over any plan or project with a direct or indirect impact on designated SPAs and candidate SACs.

National Government has recently initiated a number of reports and working groups that are relevant to this Study. These include the Environment Agency Vision Themes, which identify nine key 'themes' through which it will work for a more sustainable future; DEFRA High Level Targets for flood and coastal defence; and the UK Biodiversity Action Plan.

Regional Statutory planning policies for the Strategy area has been covered by The Bournemouth, Poole and Dorset Structure Plan and The Hampshire County Structure Plan, The Hampshire, Portsmouth and Southampton Minerals and Waste Local Plan and the Dorset Minerals and Waste Local Plan (in preparation).

Regional non-statutory plans include the Poole and Christchurch Bays Shoreline Management Plan (SMP), West Solent and Southampton Water SMP, Natural Area Profiles, Dorset, Hampshire Biodiversity Strategies.

The statutory local government plans for the site are the Christchurch Local Plan, New Forest District Local Plan and Bournemouth District Wide Local Plan.

There are also many non-statutory local plans prepared for Dorset and Hampshire, many of which have similar objectives, policies and strategies in place with common themes.

Consultation

Consultation undertaken as part of the Strategic Environmental Assessment involved:

1. Written consultation with a range of statutory consultees and local stakeholders.
2. A written questionnaire in which consultees were asked what they thought were the man issues that needed to be taken into account when considering future coastal defence needs.

The main issues identified by consultees were:

Coastal Processes	• Understanding of natural processes • Effects of sea level rise
Natural Environment	• Landscape damage and environmental loss • Damage to natural areas
Human & Built Environment	• Access • Effects on Tourism
Development in the Coastal Zone	• Integration and conflict with other management plans • Development in areas of flood risk
Coastal Defences	• Maintenance of natural defences • Beach /Cliff erosion

Environmental Objectives

In order to evaluate the environmental impact of a policy, plan, strategy, or programme, a Strategic Environmental Assessment establishes environmental objectives at the strategic level. In developing these objectives, it is important that any environmental regulations, good practice procedures, and environmental constraints are fully integrated. This way, sustainable flood management and coastal defence options can be developed and evaluated.

In the following section, a series of environmental objectives have been put forward for the Christchurch Bay study area to assist in the preparation of the strategic options and to present criteria against which the options can be tested. The objectives have been presented in two tables:

- A statement of general objectives and some of their implications in terms of specific sites and management policies (Table 5.1); and
- A table of objectives which specifically apply to individual management units (Table 5.2).

In formulating the objectives, account has been taken of the recommended policies in the following documents:

- Shoreline Management Plan (SMP) (Halcrow 1999);
- UK and international conservation regulations and objectives; and
- Structure, Local and non-statutory Plans.

Within the objectives, a distinction has been made between those that arise from legal obligations, including the Habitat Regulations and the Water Resources Act, (shown in ***bold italics)*** and other objectives which do not represent legal obligations. Underlining identifies where there may be a conflict between an objective, or the implications of an objective.

1 Introduction

1.1 General

Strategic Environmental Assessment is the formalised, systematic process of evaluating the environmental impact of a policy, plan, strategy or programme. It provides an environmental overview and establishes environmental objectives at the strategic level.

This Strategic Environmental Assessment comprises:

- A description of the baseline environment, concentrating on aspects of the environment that are relevant to, or may be affected by, coastal protection and flood defence plans.
- Consultation with relevant statutory bodies and other organisations with an interest in the coastal zone.
- Establishing specific environmental objectives that the adopted coastal management strategy should aim to fulfil.
- Appraisal of specific strategy options, to evaluate the types of environmental impacts and benefits that they will generate.
- Recommendation of the most acceptable strategy option(s).
- Conclusions as to the positive and negative environmental implications of the proposed option.
- Identification of environmental issues that need to be addressed (for example, generic mitigation measures) as part of the implementation of the preferred option.

1.2 Approach

Strategic Environmental Assessment (SEA) follows a similar approach to project-level environmental assessment, but differs from it in that it is a high level overview setting broad objectives and identifying generic approaches. Consultation is undertaken with the aim of agreeing the objectives with a wide variety of stakeholders, and ensuring that the strategy is environmentally sustainable. The information necessary to complete a project level environmental assessment, such as engineering scheme design details, is not available at this stage. However, the SEA fulfils an important role in ensuring that the agreed strategy is, at least in outline, environmentally acceptable. By identifying and considering the most important environmental issues at this stage, it is intended to prevent a situation in which detailed schemes are developed that subsequently have to be rejected or fundamentally re-designed to comply with legislation or other environmental requirements. By identifying strategic level issues that can be carried through to several projects or schemes, SEA also aims to minimise duplication of work later on. Hence, SEA occupies a central position in a hierarchy of studies, between shoreline management planning on the one hand and project environmental assessment on the other.

1.3 Objectives

The specific objectives of this Strategic Environmental Assessment are:

- Identification of nature conservation assets that may be lost or significantly affected by erosion or flooding, and an initial estimate to quantify the habitat changes expected;
- Identification of archaeological or other cultural heritage sites that may be affected by erosion or flooding, and recommendation of measures for recording them;
- Identification of any other environmental assets, including those relating to recreation and tourism, that may be affected by erosion or flooding;
- Development of environmental objectives for each unit of the frontage, to be used in developing and appraising strategy options;
- Review of Shoreline Management Plan policies, in relation to environmental assets, and identification of specific strategy options;
- Identification of legal issues and other constraints relating to strategy options (including the "do nothing" option);
- Contributing to the development of preferred strategic options for each unit of the frontage;
- Identification of significant environmental issues that are expected to arise in relation to the development of individual coastal defence or flood protection schemes, including recommending approaches to their assessment and mitigation.

1.4 Format

This SEA Report comprises:

- An account of existing environmental conditions that are relevant to coastal management in the study area (Section 2);
- A summary of consultation responses from interested organisations, together with comments (Section 3);
- Environmental objectives (Section 4);
- Evaluation of options (Section 5);
- Proposed approaches to mitigation and compensation (Section 6);
- Conclusions (Section 7).

2 Existing Environment

2.1 Sources of Information

Information on baseline conditions has been obtained from:

- previous reports on the study area;
- site visits;
- correspondence and meetings with consultees;
- statutory policies, plans and citations relating to environmental designations.

2.2 Location and Character

The strategy study area is situated on the south coast of England, encompassing approx 16km of frontage within the counties of Dorset and Hampshire (Figure 1). The boundaries of the Christchurch Bay study area is delineated by Hengistbury Head long groyne to the west and Hurst Spit to the east. Hengistbury Head provides protection to Christchurch Harbour and the town of Christchurch that lies along its northern boundary. The coastline of the bay consists of eroding clay cliffs backed largely by a combination of settlements and agricultural land.

2.3 Geology and Geomorphology

2.3.1 Geology

The geology from Hurst Spit westwards comprises Headon Beds for most of the coastal strip up to the Becton Bunny outfall, where the geology changes to Barton Sand. It is part of a complex known as the Hampshire Basin, a wider geological area extending over the New Forest catchment. The Hampshire Basin comprises silts, sands and clays laid down in alternating marine, estuarine and freshwater environments 30 to 40 million of years ago.

Further east, Hordle cliffs predominantly comprise sands, clays and marls of the Headen and Barton beds with beds of a higher clay content exposed near the toe. The cliffs are capped by Pleistocene gravels. Naish cliffs comprise Becton sands and clays and Boscombe sands of the Tertiary Barton group overlain by river terrace deposits. Cliffs between Hengistbury Head and double dykes are formed in Barton clay, Warren Hill sand and Boscombe sands of the tertiary Barton group. Cliffs to the east comprise ironstone nodules and thin pebble beds overlain by river terrace gravel deposits whilst to the west of double dykes the low cliffs predominantly comprise valley gravels.

The cliffs between Highcliffe and Milford on Sea are considered to be of at least national importance, and possibly internationally significant. Important sites include:

- The cliffs between Highcliffe and Barton on Sea;

- The coastal section from Friars Cliff to Milford on Sea;

- Hordle Cliff.

2.3.2 Palaeontology

The cliffs between Highcliffe and Milford on Sea provide access to the standard succession of the fossil rich Barton and Headon Beds. The coastal section from Friars Cliff to Milford on Sea is the type locality for the Barton Beds and is also the best exposure of the Lower Headon Beds.

Chewton Bunny is the only site to yield fossil plants from the Lower Barton Beds and is an internationally important site, whilst the Barton Cliffs are important for early Tertiary reptiles, particularly turtles. Paddy's Gap is a famous fossil plant locality with abundant fossil fruit remains.

Hordle Cliff is a key site for fossil birds, mammals, reptiles and plants. Seven genera of fossil plants found here are limited to this site in Britain and many species are unique in Tertiary deposits worldwide. Associations of plant fossil with faunal remains make this a valuable site for palaeoenvironmental analysis. This is a critical site for European Tertiary palaeobotany and palaeoecology. The whole coastline between Highcliffe and Milford on Sea is designated a SSSI for its geology. There are no designated sites of geological interest in Christchurch Harbour.

2.3.3 Geomorphology

Littoral drift in the study area is predominantly from west to east, corresponding with the direction of greatest fetch along the English Channel.

Hengistbury Head, at the western end of the study area, is a feature of major environmental interest, which has undergone significant erosion. Archaeological evidence suggests that the Head has reduced in size very significantly over the last 2,000 years since the Iron Age Double Dykes fortification was constructed (Middlesex Polytechnic, 1987). Erosion is believed to have accelerated in the 19th century as a result of mining ironstone from the soft cliffs, which formerly provided a natural defence. Over the last 200 years the coastline of the Head has retreated some 100m northwards and Warren Hill has been reduced to about half its former area. Examination of old Ordnance Survey maps and aerial photographs indicates that the recent rate of retreat is about 1 to 2 m per year. However, the construction of Hengistbury long groyne has led to beach accretion and sand dune formation on the south west corner of the Head, which has stabilised this area and protected it from wave attack. The currently most vulnerable part of the Head to erosion is thought to be in the area of Double Dykes.

Hengistbury Head plays a key role in the overall morphology of Christchurch Bay, firstly by forming the southern side of Christchurch Harbour and protecting the town of Christchurch, and secondly by acting as a hard point which separates Christchurch Bay from Poole Bay to the west. In the absence of the Head, it is likely that the coast from Durlston Head to Hurst Spit would evolve into a single bay with its head inland of the present position of Christchurch.

Mudeford Spit extends from Hengistbury Head northwards across the mouth of Christchurch Harbour. It is believed to have undergone accretion as a result of ironstone mining from the Head in the 19th Century and by 1880 the spit extended a kilometre further east than its present position. However, since 1950 the spit has eroded as a result of lack of replenishment material from the south, increasing the exposure of the cliffs at Highcliffe to wave attack.

Hurst Spit, at the eastern boundary of the study area, lies across the western end of the Solent and protects Keyhaven Marshes, on its northern shore, from direct wave action. The spit is a mobile feature formed from deposited flint gravels. Narrowing and recession of the spit over the past century or so has been attributed to a shortage of material from the cliffs within Christchurch Bay, which have been progressively protected by sea defence works, although the erosion of Plateau gravel is the main source of gravel sized material. The spit breached in 1989. Recent engineering work has been undertaken to stabilise the spit, including recharge in 1996.

2.4 Ecology and Nature Conservation

Information on the ecology of the study area is based on information from:

- English Nature Natural Area profiles;
- Citations and other environmental data provided by English Nature;
- discussions with English Nature and the Wildlife Trusts;
- fisheries survey information provided by the Southern Sea Fisheries Committee and the Environment Agency;
- JNCC Coastal Directory Region 9: Southern England
- site visits by Halcrow scientists.

2.4.1 General Description

Christchurch Bay falls within the Solent and Poole Bay Maritime Natural Area (109). The Natural Area extends inland to all habitats with a coastal influence and offshore to the 12 mile territorial limit. Significant features of nature conservation importance in the Bay are:

- Coastal sand dunes
- Coastal saltmarsh
- Coastal vegetated shingle
- Earth heritage
- Inshore sublittoral rock
- Maritime cliff and slopes
- Reedbeds
- Saline lagoons

The Bay is composed of a suite of habitats, including terrestrial, semi-aquatic, freshwater/mildly brackish and marine all combining to form a stretch of open coast of great variety.

2.4.2 Nature Conservation Designations

In recognition of the wildlife, geology and landscape importance of many parts of the UK coastline many coasts have been designated as conservation areas, or otherwise identified under a variety of domestic and international regulations, both statutory and non-statutory. Some are designated specifically for nature conservation, whilst others are designated for geology landscape, amenity and other purposes, and it is common for several designations to overlap.

The protection of the natural environment in the UK currently depends on a mixture of statutory designations and other legislation/regulations as well as voluntary management agreements. Much of the current approach to conservation in Britain is site-based, but coastal environments need a wider approach. Land-use on environmentally sensitive areas of the coast is controlled by a great variety of designations, which are based upon international, national and more recently, European legislation.

The Dorset and Hampshire coast contains many sites of international and national nature conservation, geological and landscape importance. This is reflected in the high proportion of shoreline with statutory and non-statutory designations.

Table 2.1 provides definitions of the main nature conservation designations within the study area and briefly summarises the characteristics of the designated sites, the extent of which is shown on Figures 2 (international) and 3 (national and local). More detailed descriptions are given in Sections 2.4.3 to 2.4.5.

2.4.3 International and European Sites of Nature Conservation Interest

European sites of nature conservation significance are Special Protection Areas (SPAs) designated under the European Communities Directive on the Conservation of Wild Birds. Also Special Areas of Conservation (SACs) designated under the Habitats Directive. International sites include wetlands designated under the Ramsar Convention. The Habitats Regulations 1994, which implement the European Union Habitats Directive into UK law, are of particular relevance to coastal management. The Regulations place a legal obligation on the UK government and its agencies to preserve SPAs and cSACs, and specifically:

(i) to maintain the *favourable conservation status* of their cited habitats and species;

(ii) to carry out an *Appropriate Assessment* of any plan or project that may have a significant effect on the designated sites;

(iii) not to carry out a plan or project that may *adversely affect the integrity* of the site, except under closely defined circumstances, which must include there being:

- no available alternatives;

- over-riding public interest (which in the case of sites hosting a priority habitat or species, must relate to benefits to human health or the environment);
- provision of compensation.

These are far-reaching requirements that have not yet been fully tested. However, they are likely to have a major impact on determining the acceptability of any plan or scheme for coastal protection or sea defences that are proposed within, or impinge upon, a designated SPA or cSAC.

There are six sites of International/European importance within the study area, the boundaries of which are shown in Figure 2 and details of which are given below:

(a) The Solent & Isle of Wight Maritime cSAC

The Solent and Isle of Wight Maritime has been forwarded to the European Commission as a candidate SAC as it includes five features of European interest for nature conservation:

- Vegetated sea cliffs
- Cordgrass swards
- Atlantic saltmeadows
- Estuaries
- Reefs

The Solent and Isle of Wight is a complex site with a high habitat diversity which, in particular is recommended for the range and quality of its estuaries (and estuarine habitats) and its reefs. The marine components (i.e. the parts of the sites below highest astronomical tide) of the cSAC constitute a European marine site within the meaning of section 33 of the Habitats Regulations. The marine habitats for which it has been selected are:

- Reefs - extensive sublittoral reefs, around the Isle of Wight, including 5% of European coastal chalk exposures, some of which extend into the littoral zone;
- Estuaries - The majority of the site is an estuarine complex with six coastal plain estuaries and four bar built estuaries centre around the Solent.

(b) Dorset Heaths cSAC

This large site extends just into the western boundary of the study area at Hengistbury Head, where it includes areas of maritime heathland and grassland.

Table 2.1 Summary of Nature Conservation Designations within the Christchurch Bay and Harbour study area

	Type	Name of Area	Reason for Designation
European Designations	**Candidate Special Areas of Conservation (SAC)** Aim to protect habitats &/or species of European importance. Designated under the EU Habitats Directive (implemented in the UK by the Conservation (Natural Habitats &c) Regulations 1994)	The Solent Maritime	Atlantic salt meadows, vegetated sea cliffs, cordgrass swards
		Dorset Heaths	Maritime heathland and grassland on Hengistbury Head
		Avon River	Ecology
	Special Protection Area (SPA) Designated under the EU Birds Directive (implemented in the UK by the Wildlife and Countryside Act 1981 and the Conservation (Natural Habitats &c) Regulations 1994)	Solent and Southampton Water	Bird populations
		Dorset Heathlands	Wet heathland
		Avon Valley	Chalk river
	Ramsar Site Designated under the Ramsar Convention on Wetlands of Importance Especially as Waterfowl Habitat	Solent and Southampton Water	Wetland habitat
		Avon Valley	Chalk river
National Designations	**Site of Special Scientific Interest (SSSI)** Sites notified by English Nature, which represent some of the best examples of Britain's natural features. Designated under the Wildlife & Countryside Act 1981	Hurst Castle and Lymington River SSSI	Ecology and geomorphology
		Highcliffe to Milford Cliffs	Fossils and bed exposures. Key site for European Tertiary palaeobotany & palaeoecology
		Christchurch Harbour	Saltmarsh and Geology
		Avon River	Ecology
	GCRs	Paddy's Gap	Geology
		Highcliffe	Geology
		Friars Cliff	Geology
		Barton	Geology

Local / Regional Designations	**Local Nature Reserves (LNRs)** Established by Local Authorities in conjunction with English Nature. Sites of local significance & provide important opportunities for public enjoym recreation & interpretation.	Stanpit Marsh	Grazing marsh
		Hengistbury Head	Heathland
	Area of Outstanding Natural Bea (AONB)	South Hampshire Coast	Landscape
	Sites of Nature Conservation Importa (SNCIs) Defined by Wildlife Trusts and Local Authorities as sites of local nature conservation interest. Sites usually identified in Development Plans and protected through Structure and Local F policies	Barton Common	Heathland
		Hengistbury Head	Sand dunes, gravel, shingle foreshore
		Mudeford Quay	Dry ruderal grassland
		Mude Valley	Woodland
		Chewton Bunny	Deciduous woodland
		Sturt Pond	Semi-natural coastal habitats
		Studland Common	Unimproved grassland
		Stanpit	Semi-improved grassland and fen
		Stony Lane Drain	Wet grassland and ditch
		Milhams Mead	Wet tall herb
		Becton Bunny	Heathland

Solent and Southampton Water proposed SPA
The site extends from Hurst Spit to Lee-on-the-Solent along the south coast of Hampshire and along the adjacent north coast of the Isle of Wight. The site qualifies under Article 4.1 of the EU Birds Directive by regularly supporting nationally important breeding populations of:

- Little tern (*Sterna albifrons*) 40 pairs (1.6% of the British population);
- Sandwich tern (*Sterna sandvicensis*) 162 pairs (1.2% of the British population);
- Common tern (*Sterna hirundo*) 262 pairs (2.0% of British population);
- Roseate tern (*Sterna dougalli*) average of 4 pairs (3.6% of British population).

The site also qualifies under Article 4.2 as a wetland of international importance by regularly supporting over 20,000 waterfowl in winter and regularly supporting internationally important numbers of the following species of wintering migratory waterfowl:

- Dark-bellied brent geese (*Branta bernicla bernicla*) 7.2% of British population & 2.9% of NW European
- 704 black-tailed godwit (*Limosa limosa*) 9l.4% of British, 1.0% of east Atlantic flyway population.

Also nationally important numbers of wintering shelduck (*Tadorna tadorna*), wigeon (*Anas penelope*), teal (*Anas crecca*), shoveler (*Anas clypeata*), gadwall (*Anas strepera*), ringed plover (*Charadrius hiaticula*), grey plover (*Pluvialis squatarola*), dunlin (*Calidris alpina*), curlew (*Numenius arquata*) and redshank (*Tringa totanus*). Black headed gulls (*Larus ridibundus*) also breed on the site in numbers approaching international importance.

Solent and Southampton Water proposed Ramsar Site
The site extends from Hurst Spit to Gilkicker Point along the south coast of Hampshire and along the north coast of the Isle of Wight. The site qualifies under the following aspects of the Ramsar Convention:

- Criterion 1a - contains good and representative e.g. of wetland habitats characteristic of the biogeographical region including saline lagoons, saltmarshes, estuaries and reefs;
- Criterion 2a - supports important assemblage of rare plants and invertebrates (including 39 red data book (RDB) invertebrates and 8 RDB plants);
- Criterion 2c - important staging area for migratory waterfowl (notably black-tailed godwit *Limosa limosa*); and
- Criterion 3a - regularly supports over 20,000 waterfowl in winter.

The site also qualifies under Criterion 3c for the same reasons as those given for SPA qualification under Article 4.2 above.

Avon Valley SPA

The site encompasses the lower reaches of the River Avon and its floodplain between Bickton and Christchurch. The site supports a nationally important assemblage of breeding wetland birds and is especially important for breeding waders associated with lowland wet grassland. The site qualifies under:

- Article 4.1 for supporting nationally important numbers of Annex 1 species Bewick swan (*Cygnus bewickii*), an average of 156 in the five year period 1988/89 to 1992/93 representing 2.2% of the population.

- Article 4.2 for supporting internationally important wintering populations of gadwall (*Anas strepera*) and nationally important wintering populations of the white fronted geese (*Anser albifrons albifrons*), pochard (*Aythya ferina*) and coot (*Fulica atra*).

A nationally important assemblage of breeding birds is also associated with the lowland open water and its margins.

(c) Avon Valley Ramsar Site

The boundaries of the Ramsar Site largely follow those of the SPA (Figure 2). The site qualifies under:

- Criterion 1a as it shows a greater range of habitats than any other chalk river in Britain including fens and mires, lowland wet grassland and small areas of woodland. The diversity of habitats supports a notable assemblage of breeding wetland birds and provides roosting and feeding areas for an important assemblage of wintering wildfowl.

- Criterion 2a by supporting a diverse assemblages of wetland plants and animals, including several nationally rare species, including two wetland RDB plants and four wetland RDB invertebrate species.

The site also qualifies under Criterion 3c for the same reasons as those given for SPA qualification under Articles 4.2 and 4.3 of the Birds Directive.

(d) Dorset Heathlands SPA

The site extends to the Avon Valley in the east, bordered by the Wessex Downs to the north and west, and by the Purbeck chalk ridge to the south. The site qualifies under Article 4.1 of the EC Birds Directive by supporting nationally important breeding populations of three species listed on the Annex 1 of the Directive:

- Nightjar (*Caprimulgus europeaus*) 13% of the British population.

- Woodlark (*Lullula arborea*) 56 pairs, approximately 16% of the British population
- Dartford warbler (*Sylvia undata*) 38% of the British population

The site also qualifies under Article 4.1 by supporting up to 20 hen harrier (*Circus cyaneus*) and 15 merlin (*Falco columbaris*), approximately 2% and 1% respectively of the British wintering population, both Annex 1 species.

2.4.4 Nationally Important Sites of Nature Conservation Interest

National conservation designations include SSSIs and National Nature Reserves (NNRs). Many stretches of the Dorset and Hampshire coast are covered by these designations (Figure 3). Within the study area there are three SSSIs, details of which are given below. A brief summary of marine habitats within the study area is given in Section 2.4.7.

(a) Hurst Castle and Lymington River Estuary SSSI

The site is notified for its ecology and geomorphology and extends along 9 km of the north-west Solent shore. The SSSI below the seawall comprises the estuaries of three substantial streams, intertidal muds, cord-grass (*Spartina anglica*) marshes and high level mixed saltmarsh. Behind the seawall is a belt of marsh including a series of lagoons.

The south-west boundary of the site is formed by Hurst Spit, which is of national geomorphological importance, and represents the eastern boundary of the study area.

The site supports nationally important populations of black-headed gulls (*Larus ridibundus*), black-tailed godwit (*Limosa limosa*) and three species of tern which are listed under Annex 1 of the EU Directive on the Conservation of wild birds. Also internationally important are over-wintering populations of wildfowl and waders, including dark-bellied brent geese (*Branta bernicla bernicla*).

(b) Highcliffe to Milford Cliffs SSSI

The site is notified for its geology (fossils and bed exposures) and as a key site for European Tertiary palaeobotany and palaeoecology. It extends for 9km along the cliffs of Christchurch Bay and comprises steep coastal slopes and cliffs, which are locally dissected by deeply incised ravines. The site contains the standard succession of the fossil rich Barton Beds and Headon Beds, various exposures of which are of national and international importance.

(c) Christchurch Harbour SSSI

The site is notified for its ecology and geology. It comprises the drowned estuary of the Rivers Stour and Avon and the peninsula of Hengistbury Head. The varied habitats include saltmarsh, wet meadows, drier grassland, heath, sand dune, woodland and scrub. This site is rich in invertebrates, about 260 species of beetle have been recorded as well as a number of nationally rare hoverflies and

dragonfly. The site is also important for supporting a number of rare breeding and wintering bird species.

(d) Avon River SSSI

This site has been notified for its ecology and occupies 11 km of the lower River Avon, its flood plain and some of the associated river terraces. The River Avon system shows a greater range of habitat diversity and a more diverse flora and fauna than any other range of chalk river in Britain. The flood plain within the SSSI comprises a variety of habitats ranging from herb rich hay meadows and pastures to flood meadows, relic bog, riparian woods and river terraces.

The lower Avon valley grasslands are used as feeding grounds by large flocks of the white fronted geese (*Anser albifrons albifrons*), Bewick swan (*Cygnus bewickii)* and black-tailed godwit (*Limosa limosa*).

2.4.5 Regionally/Locally Important Sites of Nature Conservation Interest

Areas of nature conservation significance have for the most part been identified by Dorset and Hampshire County Council and the Wildlife Trusts for Local Authorities. These sites have been designated as Local Nature Reserves (LNRs), other nature reserves and Sites of Nature Conservation Interest (SNCIs).

There are eleven SNCIs within the study. The names of these sites and reasons for their designation are detailed in Table 2.1, with their extent and location shown on Figure 3. There are two LNRs within the study area, Hengistbury Head on the western boundary of the study area and Stanpit Marsh within Christchurch Harbour.

2.4.6 Coastal habitats

The coastal cliffs that form much of this area are vegetated in places and form a habitat-type associated with soft cliffs. This includes species such as willow (*Salix* spp.), reeds (*Phragmites austalis*), reedmace (*Typha spp*.) and coltsfoot (*Tussilago farfara*). In other areas the cliffs are actively eroding and are devoid of vegetation. The vegetated and open cliffs provide habitats for a range of invertebrates.

Hengistbury Head comprises a mosaic of habitats ranging from dunes and maritime cliff-top grassland (ranging from neutral to acidic) to scrub, heathland and woodland. On the Christchurch Harbour side of the spit are areas of saltmarsh and extensive reedbeds. Mudeford sandbank supports populations of *P. maritimum*, *Crambe maritima* and *Glaucium flavum*. A map of habitats at Hengistbury Head is presented in Figure 4.

The beach at Hurst Spit is mainly composed of shingle, which supports little vegetation. However, the shingle ridges at Hurst Spit, support an important flora which is dependent on the substrate. Intertidal mudflats, cord-grass (*Spartina anglica*) marshes and level mixed saltmarsh occur to the north of Hurst Spit and

around Sowley Pond. These areas support large breeding and over-wintering populations of wildfowl and other birds.

Christchurch Harbour contains a wide range of habitats including shallow mudflats, saltmarsh, reed beds, ditches, wet meadows, sand dunes, dry and neutral grassland, heath, woodland and scrub. These habitats support diverse plant and animal communities, and the site is of great ornithological importance.

The River Avon is an ecologically important chalk river that drains into Christchurch Harbour. The Avon Valley shows a greater range of habitats and a more diverse flora and fauna than any other chalk river in Britain.

2.4.7 Marine Environment

East of Hengistbury Head, an ironstone reef stretches 5 km out into Christchurch Bay forming the Christchurch Ledges. The Ledges provide a solid substrate in an area dominated by mobile sandy sediments, which support diverse assemblages of kelp and other algae, along with a variety of animals including nationally rare fish (gobies), bryozoans, sponges and anemones. Hengistbury Head is included in the western limit of the Solent and Isle of White SMA (JNCC 1997) for its nationally important marine plant and animal communities.

Offshore of Hurst Spit is the deepest area of the Solent, reaching 60 metres in depth, which has an unusual tidal regime and encompasses a diverse range of habitats and communities. The subtidal marine life represents a transition between the warm temperate (Lusitanian) and cold temperate (Boreal) marine biogeographic provinces, resulting in a rich variety of organisms including representatives of both provinces. The seabed is composed of sandy sediment, which supports a variety of organisms including the dominant slipper limpet (*Crepidula fornicata*), which is an alien species, burrowing polychaete worms and molluscs. The coastal marine environment acts as a spawning and nursery area for several species of commercially important fish including Dover sole, cod, and bass.

Christchurch Harbour is included in the Poole Bay SMA and the Christchurch Harbour SSSI (English Nature 1994, JNCC 1997) for its nationally important marine and lagoon plant and animal life.

The Harbour's narrow entrance reduces the level of flushing creating an internationally rare habitat of brackish lagoon conditions, consisting of relatively low species abundance but with large populations of intertidal and subtidal marine invertebrates. Extensive areas of shallow intertidal mudflats support dense populations of burrowing organisms, which provide an important food source for the internationally important bird life that frequents the Harbour. Rare brackish water species include the nationally rare amphipod *Gammarus insens* and tentacled lagoon worm *Alkmena romijni.*

The Harbour also acts as an important nursery ground for several commercial species of fish, including bass, Dover sole, thick-lipped mullet, thin lipped mullet, pollack and flounder. The estuaries that form the Harbour are important salmon and eel fisheries and recreational angling occurs throughout the year.

2.4.8 Biodiversity Action Plans

(a) Hampshire Biodiversity Action Plan

The Hampshire Biodiversity Partnership has recently finalised a Coastal Biodiversity Action Plan covering the most important estuarine, coastal and intertidal habitats in Hampshire. Each of these habitats contributes essential components to a single, highly interdependent, ecological system, comprising a network of estuaries, harbours and the Solent itself.

A number of Habitat Action Plans have also been produced as part of this wider coastal plan, those relevant to this study are:

Maritime cliff

West Hampshire contains 7 km of coastal cliff (the section of Hordle Cliffs between Barton and Milford), representing 2.7% of the UK extent of this habitat.

Shingle

Hurst Spit is a dynamic 2.5 km long shingle spit with terminal recurved ridges, which is moving slowly into the Solent over the saltmarsh that it shelters. Although affected by breaches and repairs, it is still of regional importance for its geomorphology, shingle vegetation and nationally rare invertebrate communities, and it plays a vital role in protecting the western Solent coast from storms.

Sand dune

Dunes dominated by marram (*Ammophila arenaria*) have developed at the foot of the cliff behind the Hengistbury Head breakwater with smaller areas on the face and top of the cliff top. Extensive areas of unusual cliff-top dune grassland also occur on Warren Hill and Whitpits Rough.

Saltmarsh

Christchurch Harbour contains substantial amounts of saltmarsh, some of which has recolonised old saltpans, forming a complex pattern of low and high level salt-marsh communities. To the north of Hurst Spit there are areas of high level mixed saltmarsh.

Coastal wet grassland

There are some 750ha of coastal wet grassland in Hampshire. Keyhaven to Pennington Marshes are some of the largest remaining areas of coastal wet grassland remaining on the south coast. Christchurch Harbour also supports areas of coastal wet grassland associated with the lower reaches of River Avon

Saline lagoon
Saline lagoons are considered a priority habitat type under Annex 1 of the EC Habitats and Species Directive because of their high nature conservation interest. The Hampshire coast and adjacent areas has among the greatest concentration of saline lagoons in Britain, representing 7.3% of the habitat in England and Wales. The most important lagoonal sites lie within the Solent and Isle of Wight.

Intertidal mud and sandflats habitats with eelgass (Zostera) beds
Most of Hampshire coast is bordered by sediment flats at the low water mark. There is a large area of mud and sandflat in the western Solent, (sheltered by Hurst Spit) and rivers. Eelgrass is considered to be nationally scarce in the UK, occurring on the western Solent shores.

(b) Dorset Biodiversity Strategy
A biodiversity strategy for Dorset is in preparation comprising a number of topic action plans. The plan of relevance is that for marine and coastal management. There are 16 priority BAP habitats identified along the coastline and marine waters of Dorset. Those relevant to this study are maritime cliff and slope, coastal sand dunes, littoral chalk, coastal saltmarsh, mudflats, sheltered muddy gravels, seagrass beds, sabellaria reefs, tidal rapids, sublittoral chalk, saline lagoons, mud in deep water, maerl beds and sublittoral sands and gravels. Evaluation criteria have been applied to each including survey priority, however no specific habitat or species action plans have been produced.

2.4.9 Natural Area Profiles
Natural Areas are tracts of countryside or coastline that are readily recognised by their characteristic land forms, wildlife and land use. English Nature has divided the whole of England into 120 Natural Areas. They are not designations and they are not confined by traditional administrative boundaries. Natural Areas are intended to provide a framework to identify the priorities and objectives for nature conservation at a local level and have a key role in translation of national targets for habitats and species into action at the local level.

There are three Natural Area Profiles of relevance to the Study Area, one of which is maritime:

(a) Dorset Heaths
The Dorset Heaths are located in southeast Dorset in an area centred on the large natural harbour of Poole. The New Forest borders the area to the east while the Dorset Downs and Cranborne Chase lie toe the north and west with South Purbeck to the south.

This area supports a range of internationally important habitats. Key wildlife habitats include: Fens; Coastal and floodplain grazing marsh; and Reedbeds

A significant feature around the shores of Poole Harbour are the reedbeds which are among the largest reedbeds in the south west, regularly supporting over 20,000 waterfowl as well as supporting a number of rare and vulnerable species of plant and animal.

(b) New Forest

The New Forest Natural Area is situated within the Hampshire basin between Southampton and Bournemouth. The Salisbury Plain and West Wiltshire Downs are to the north and the Dorset Heaths to the west, with Solent Water and the South Hampshire Lowlands forming the eastern and southern boundaries.

The New Forest comprises a diverse mosaic of landscapes and habitat types, these include

- Saline lagoons
- Vegetated shingle features
- Saltmarshes
- Reed beds
- Intertidal mudflats and sediment shores

Saline lagoons and vegetated shingle are rare and vulnerable habitats listed in Annex I of the EU Habitats Directive and as a key habitat of concern in the UK Biodiversity Action Plan. Intertidal mudflats and saltmarshes are listed as being habitats of Community Interest.

(c) Solent and Poole Bay

The Solent and Poole Bay Area includes the maritime habitats of the coastal drainage and the sea and seabed out to the 12 mile limit, from Studland cliffs in Dorset to Selsey Bill in West Sussex, including the Isle of Wight.

Key habitats have both a national and international importance and include:

- Estuaries
- Harbours
- Saltmarsh
- Sand dune
- Lagoons
- Rocky shores and sub-littoral reefs
- Hard Cliffs
- Unprotected soft cliffs

The intertidal mudflats, saltmarshes and shingle habitat within the Natural Area forms extensive areas, supporting national and internationally important numbers of migratory wildfowl and waders and resident seabird colonies.

2.4.10 Key Nature Conservation Issues

The Natural Area Profile (English Nature 1998b) identifies the following main issues relating to nature conservation that may affect the study area:

- loss of semi-natural habitats
- climate change
- natural coastal processes
- coastal protection schemes, managed retreat
- shoreline management
- management conflicts
- sediment movement and diminishing of supply
- mineral workings
- pollution from the sea (e.g. oil or litter)
- water quality and sewage outfalls
- agricultural improvements and intensification
- lack of management of livestock
- development and disturbance
- noise pollution
- complex ownership and legislation
- impact of dredging
- shellfish farming
- recreational pressures (noise, disturbance,)
- lack of education and interpretation facilities
- vegetation obscuring geological faces and neglect of geological faces
- Scrub invasion, changing the character of the dunes and altering the key sand dune vegetation types.

English Nature has also put forward a number of objectives for the Natural Areas:

(a) Manage characteristic wildlife habitats and associated species in a sustainable way and restore these where appropriate and where they have been lost from the Natural Area. Key components are:

- sea cliffs and cliff vegetation - including maintenance of natural processes of erosion and buffer strips of semi-natural vegetation along cliff tops to protect coastal habitats from agricultural impacts;
- sandy and muddy shores - including maintenance of natural processes, improvement of water quality and taking account of the needs of wading birds;
- shingle and rocky shores; and
- offshore subtidal habitats and open sea, including sublittoral sediments, chalk reefs and eelgrass beds.

(b) Maintain characteristic and rare species populations, whilst maintaining natural processes. Key components are:

- cliff nesting birds;
- shoreline and intertidal birds;
- rare invertebrate populations characteristic of soft cliffs;

- plants and animals associated with base-rich coastal grassland and cliff habitats;
- species associated with rocky shores, chalk reefs and sea caves; and
- species characteristic of sublittoral sediments such as sea slugs and eel grass.

(c) Maintain or restore the diversity of geological interest found in the area. Key components are:

- maintenance of natural processes, with active management where necessary;
- raising the profile by better interpretation and education;
- maintaining access to all exposed sites;
- responsible fossil collection;
- local conservation strategies such as a RIGS
- serious consideration of geological interest in determining planning applications;
- international designations for geological sites.

2.4.11 Relationship between Nature Conservation, Coastal Dynamics and Coastal Structures

Future coastal erosion and predicted sea level rise is likely to result in land of high ecological value being lost and zones of vegetation becoming reduced in area. This is especially the case around Stanpit Marsh, which coastal squeeze is likely to change in character from grazing marsh to saltmarsh, with eventual total inundation by the sea. Managed retreat of Stanpit Marsh is in theory possible, with the nature conversation of the marsh recreated inland. However the land to the north of the marsh was a former landfill site, now used as a golf course. If the marsh were to erode back to the landfill site the area would either require coastal defence to prevent waste and toxins being washed into Christchurch Harbour or the removal of the waste. This is an issue that will require further consideration in the development of the strategy.

The saltmarsh to the north of Warren Hill is also vulnerable to sea level rise, but is protected from erosion by Hengistbury Head. Again, sea level rise is likely to lead to coastal squeeze and the eventual loss of saltmarsh.

The supply of sediment and freshwater from the rivers needs to be maintained in order to stabilise the mudflats and to maintain the lagoonal characteristics. Continuation of dredging is required to prevent siltation and keep the variety of habitats suitably inundated with seawater.

Mudeford Sandbank is at risk of being eroded by the sea and, due to its strategic importance in defending Christchurch, the Local Authority has recently completed a coastal defence scheme to improve the standard of defence (subject to DEFRA approval). The sandbank is a SNCI and provides a habitat for at least one RDB species, Sea Knotgrass (*Polygonum maritimum).* This community requires storm

damage for its continued survival. The Local Authority has designed the defences to minimise damage to the nature conservation interests of the area. Mitigation measures are likely to include avoiding areas for recharge, which provide a habitat for important species, and ensuring sediments taken from other sources are compatible with the existing sand and shingle of the sandbank.

Hurst Spit is intrinsically important as a geomorphological feature and is vital in protecting large areas of saltmarsh from wave action between the Spit and Pylewell Point. The development of the Spit is inextricably linked to coastal processes within Christchurch Bay. Human interference with natural processes has taken place over the last 300 years, including mineral exploitation and the construction of coast protection schemes. These have resulted in effectively stopping the movement of shingle from Poole Bay into Christchurch Bay, and increasing the rate of erosion between Hengistbury Head and Barton on Sea. This prompted a series of protection works at Mudeford, Highcliffe, and Barton, which with additional work at Becton Bunny, has enormously reduced the eastward movement of shingle. As a result of significantly reduced volumes of sand and gravel eroding from the soft cliffs, the natural eastward movement of this material onto Hurst Spit has been disrupted. This has resulted in a steady decline in the volume of the shingle bank that forms the Spit. Severe damage to the Spit occurred during the storms of late 1989 and 1990 and overtopping occurred. Artificial shingle recharge has been carried out to secure the spit.

Hurst Spit provides a barrier to the prevailing wind and wave direction (the south-west), and therefore ensures a low wave energy environment for the saltmarshes that lie to its north-east. The saltmarshes are already exhibiting extensive dieback and are also receding through wave attack. The existence of the Spit is vital to the continued protection of the existing saltmarshes and mudflats.

A long-term sustainable approach could involve reversing previous coastal defence decisions and removing some of the hard defences that currently prevent littoral drift. However, this is unlikely to be an acceptable option due to the existence of development on the cliff-top, and therefore coastal defence will continue to be required. Alternatives include the continuing artificial recharge of Hurst Spit, the and the re-design of defences to reduce, rather than completely halt, erosion. Bray and Hooke (1995) cite the use of dredged material from Shingles Bank as a geomorphologically compatible solution to provide recharge material for Hurst Spit. They argue that the offshore bank forms the natural deposition point of material removed from the Spit. From here the material, under natural processes, moves back across the bay and recharges the coastline along Christchurch Bay, which then feeds Hurst Spit. The moving of material directly from the bank to the Spit would constitute the recycling of material within a limited part of a single process system. Wider impacts should be minimal (Bray *et al*, 1995).

Cliff geological exposures are usually best maintained by allowing active erosion. However, where property interests are present, coastal protection work is a compromise between the scientific requirements to maintain the exposure and the necessity to protect the coasts. The high geological importance of Barton and Milford Cliffs is dependent upon the continued exposure of the site. This can be maintained by ensuring that the cliffs are not covered by accreting material such as soil or vegetation. In areas where the slope of the cliffs has been reduced, drainage carried out and sea defences built, erosion has slowed down and allowed vegetation to grow. Material has also been imported to the base of these cliffs as part of a cliff stabilisation scheme. This has resulted in the loss of significant areas of geological exposure and therefore reduction in the earth heritage value of these sites. This is likely to continue in the future in areas where the cliff is stabilised. The interests of nature conservation, especially geology, and those of coast protection, are in conflict in this area. English Nature is seeking a strategy for management of Highcliffe to Milford SSSI with the relevant Local Authorities, to allow permanent exposure of the geology (Coastal Defence and Earth Science Conservation, 1998). However, this is likely to be resisted by local residents who are concerned by the risk to their properties.

Agricultural improvements and intensification have substantially reduced the area of natural maritime cliff top vegetation and resulted in a sharp transition in many places between the farmland and cliff habitats, with the natural vegetation being squeezed out by coastal erosion. There is a need for buffer strips to be established on eroding cliff tops if the value of this habitat is to be maintained.

2.5 Landscape

Landscape information has been obtained from various landscape reports undertaken as part of landscape guidance from Dorset County Council, the Hampshire Landscape Strategy Plan and the Shoreline Management Plan (1999).

2.5.1 Landscape designations

There is one landscape designation within the study area, the South Hampshire Coast Area of Outstanding Natural Beauty (AONB), the boundary of which is shown in Figure 5. Hurst Spit is considered to be of high landscape importance and is included within the South Hampshire Coast AONB. The remainder of the coastline is not covered by any national landscape designations.

The New Forest National Park, an area of outstanding landscape importance, is located to the north and east of the study area, but does not include any coastal frontage within Christchurch Bay.

2.5.2 Landscape Character

The Countryside Agency has undertaken a Countryside Character initiative to define the character of England's countryside at the end of the 20th century. The country has been classified into 159 separate character areas that are essentially sub-divisions of English Nature's Natural Areas (Section 2.4). Published in eight

regional volumes, the reports of relevance to this study are Volume 8: South West. Within these volumes there are two Character Areas of relevance to this study, No 135 Dorset Heaths and No 131 New Forest. Within each area the landscape is defined including physical, historical and cultural influences, buildings and settlements and land cover.

There is a landscape strategy for Hampshire and landscape management guidance for the Dorset coast. The landscape character of the study area is divided into two distinct areas, namely the open coast and Christchurch Harbour:

(a) Open coast

From Mudeford Quay to Highcliffe there is a narrow beach consisting of sand and shingle divided by timber and rock groynes with some concrete seawalls and shingle recharge in places for protection from erosion. Residential properties, partially screened by mature trees, are situated on the flat land behind the beach. There is cliff top development at Milford on Sea, Barton on Sea and Highcliffe although these settlements are generally set back from the cliff edge, Mudeford Quay also provides a scenic hamlet of old houses.

The landscape from Highcliffe to Milford on Sea consists of low-lying slumped cliffs behind a sand and shingle beach. Numerous beach huts occur at various locations at the base of the cliffs.

Hurst Spit consists of a narrow shingle embankment extending seawards approximately 2.5km with a castle and lighthouse at the tip. Water occurs on both sides of the Spit, with open sea to the south and saltmarsh creeks to the north. This is an area with a special sense of remoteness, being accessible only by foot or boat, and is of great natural beauty.

(b) Christchurch Harbour

Christchurch Harbour is a natural harbour sheltered to the south by the higher ground of Hengistbury Head. The estuary, surrounding marshes, heath and woodland present a natural landscape creating a distinct attractive character. The main rivers the Stour and Avon drain into Christchurch Harbour and their alluvial deposits have created a flat flood plain to the west. The town of Christchurch lies adjacent to the Harbour on the west and north side. The area is not covered by any national landscape designations, although the local authorities recognise the beauty of the area and seek to protect it through local policies.

2.6 Land Use and Population

The main land uses within the study area include agriculture, tourism, leisure and recreation, with fishing along the coast.

2.6.1 Agriculture

The area around Christchurch Harbour is highly developed in nature and provides little opportunity for agricultural use. There is, however, a small area of Grade 4

agricultural land to the north of the Harbour in the vicinity of Purewell that is used for rough grazing and horticultural crops. To the east of the harbour, agricultural land between Hurst Spit and Milford is of varying quality and characterised as open coastal plain by Hampshire County Council. The majority of the area around Keyhaven, up to the boundary of Milford-on-Sea, is Grade 2. Agricultural data for the Parishes of New Milton and Milford on Sea state the main agricultural uses as livestock rearing and arable crop production. Land between Milford and Barton is predominately Grade 3 and broken up by a strip of Grade 4 along this length, consisting of large open fields of pasture and arable land. The remainder of this area is residential in nature or used for other non-agricultural purposes.

The Avon Valley is classified as an Environmentally Sensitive Area (ESA), designated in 1993. It is a voluntary scheme whereby farmers and landowners receive annual payments for entering into a ten-year management agreement. The ESA has four environmental objectives:

- To maintain and enhance landscape quality and wildlife conservation value by retention of existing grassland and by increasing the area of grassland;
- To enhance the wildlife conservation value of wet grassland without detriment to the landscape by maintaining higher water levels in ditches and watercourses;
- To maintain and enhance landscape quality through management of characteristic landscape elements;
- Maintain and enhance the archaeological and historic features.

2.6.2 Settlements and Population

The town of Christchurch borders the northern edge of Christchurch Harbour. This is a residential and tourist town which provides a locally important service and retail centre. Christchurch Borough has a population of 45,000 of which more than 34% are of pensionable age, which is the highest percentage of retired people in any district in the Country. Most of the buildings are residential but there is some holiday accommodation in the form of hotels, guest hotels and bed and breakfast establishments. These are mainly found in the Mudeford and Stanpit areas. Static caravans are situated at Sandhills (130 caravans approximately) adjoining the coast and situated close to Mudeford Quay.

Towns and villages lying to the east of Christchurch towards the study area boundary at Hurst Spit include Highcliffe, Barton on Sea and Milford on Sea, New Milton and Keyhaven which are all mainly residential in nature, but with tourism and service industries providing the main employment. These seaside settlements generally have an older than average population, with many people choosing to retire here.

At Highcliffe, the houses are principally residential in nature rather than holiday accommodation. There is a car parking area on the Highcliffe cliff top and the

adjacent open space is retained for overspill car parking. Highcliffe and Friars Cliff beaches are popular and are intensively used in peak summer months.

Milford on Sea originated in the centre of an agricultural parish, when the coastline was further south than it is now. The village retains its nucleus around a village green, however, it has expanded rapidly over the past 100 years. There has been substantial redevelopment at the western end of the cliff top in recent years, including blocks of flats at Milford on Sea. Milford is well provided with amenity and open spaces (Hordle and Rook Cliff open spaces) as well as Studland Common and sports grounds to the west of the village. There are some low-lying areas at Milford, which are subject to flooding.

New Milton is a modern settlement that is really an expansion of Old Milton.. The town has expanded both to the north and southward of the cliffs at Barton. Barton comprises mainly suburban developments of one and two storey dwellings whilst, at Milford, the coast is dominated by blocks of flats as well as more suburban development. There are some large areas of public open space and car parks along the cliff tops at both settlements. Housing developments that remain to be completed include the White House, Barton House and Barton Chase Hotel in the New Milton/Barton area.

Keyhaven is a small hamlet, which is protected as a conservation area, with a number of vernacular buildings dating from around the 18th and 19th centuries, some of which are listed. Once an important port particularly for the salt trade Keyhaven is now a quiet haven for yachting, fishing and bird watching.

2.6.3 Commerce and Industry

Most of the commercial activity is situated in Christchurch town centre. The major employment sectors are ‘high technology’ (electronics, software, engineering and manufacturing companies) and aviation with industrial sites providing the remaining business base. There are six industrial areas in Christchurch, which include Grange Road, Airspeed Road, Airfield Way Road, Wilverley Road, Groverley Road and Stony Lane. The traditional association of Christchurch with boat building and related maritime industry has declined in recent years with only one boat building yard now remaining. Provision has been made in the Local Plan to encourage the retention of such industry due to its contribution to the local character and employment needs.

New Milton is the principal employment centre further east. Modern industrial estates have been built in a number of locations with service employment located within the town centre. A small industrial estate also provides employment at Milford along with retail and service outlets around the Green.

2.7 Transport Network and Traffic

2.7.1 Road Links

The principal road networks are the A35 from Bournemouth to Christchurch. The A337 continues along the coast to Lymington with the B3058 branching off to Milford on Sea. A network of small roads run close to the coast for much of the area, particularly at Barton on Sea where the road runs parallel to the cliff top.

2.7.2 Rail Links

The main railway link within the study area is the South coast route, which is part of the Trans-European rail network.

There are three main train operators within the study area:

- South West Trains (operates between London, Southampton and Weymouth)
- Connex South Central (operates between Bournemouth, Gatwick and Victoria)
- Virgin Cross Country (operates between Bournemouth/Portsmouth, Reading, Birmingham/The North and Scotland).

2.7.3 Shipping and Ferry Services

A car and passenger ferry is operated between Yarmouth (Isle of Wight) and Lymington, just east of the study area. Seasonal passenger ferries also operate between Keyhaven and Yarmouth, and Keyhaven to Hurst Castle. Within Christchurch Harbour, passenger ferries operate across The Run, from Mudeford Spit to Christchurch Quay and Tuckton, and across Hour at Wick. Major ports are located immediately to the east and west of Christchurch Bay (Southampton and Poole).

2.8 Water and Aquatic Environment

The quality of the coastal waters is dependent on a number of variables, including both natural effects, such as weather and ocean currents, as well as those due to human influences, such as the dumping and discharge of sewage, industrial waste and other pollutants. Information has been obtained from the Hampshire Avon Local Environment Agency Plan (LEAP), the Dorset Stour LEAP and New Forest LEAP. There are two significant main rivers feeding into the study area within Christchurch Harbour, the Stour and the Avon.

2.8.1 Water Quality Monitoring

(a) Rivers

The Environment Agency is responsible for carrying out water quality monitoring, under the Water Resources Act, 1991. Much of the monitoring is carried out for the purposes of the General Quality Assessment (GQA) scheme and to assess compliance with the River Ecosystem (RE) classification scheme. Classified rivers are sampled on a routine basis with stretches of river assigned a sample point characteristic of that stretch. Data from each sample point is then used to assess

the river quality in that stretch (Environment Agency, 1997). The RE classification comprises five classes in order of decreasing quality, which relate to the following uses:

- RE1: water of very good quality and suitable for all fish species;
- RE2: water of good quality and suitable for all fish species;
- RE3: water of fair quality and suitable for high class coarse fish populations;
- RE4: water of fair quality and suitable for coarse fish populations; and
- RE5: water of poor quality that is likely to limit coarse fish populations.

There are five main watercourses within the study area.

- River Stour, from Holdehurst to Tuckton (estuary), was compliant with its River Quality Objective (RE Classification) of RE2 and awarded a Biological and Chemical GQA grade B (Good) (2000).
- Hampshire Avon River, from Ripley Brook to Christchurch (estuary), received a River Quality Objective (RE Class) of 2, it is currently unclassified. This stretch of river is graded A (Very Good) for its Chemical and Biological GQA (2000)
- Walkford Brook, from its tidal limit to the B3058 at Ossemsley, (The New Forest District) was set a River Quality Objective of 2 in 1999. At present however, there is insufficient data to determine whether this objective was reached. This stretch was graded B (Good) for its Biological and Chemical GQA (2000)
- Becton Bunny, from Mouth to Source, was set a River Quality Objective of RE3 in 1999, it is also not possible at present to determine whether this Objective was reached. The river was graded B (Good) for its Chemical GQA and a D (Fair) for its Biological GQA (2000)
- The Danes Stream discharges just beyond the study area. Its upper reaches however, just upstream of the tidal limit, are within the area of interest. At present it is not possible to determine whether the stream reached its River Quality Objective RE2, set in 1999. The Chemical and Biological GQA was graded A (Very Good) in 2000.

(b) Urban Waste Water Treatment Directive sampling

Routine data is collected from Christchurch Harbour, the freshwater inputs to the harbour, and STW discharging directly and indirectly into the harbour. The samples are analysed to ascertain if the harbour is eutrophic due to nutrient inputs from qualifying sewage treatment works and riverine inputs and should be designated as a sensitive are/polluted water (SA/PW) eutrophic to protect its high ecological status. Sampling point locations can be seen in Figure 6.

Christchurch Harbour was not proposed for the 2001 designations, due to a lack of evidence of a problem in the Harbour. Data will continue to be collected for the next round of designations.

(c) EC Bathing Waters Directive

The EU Bathing Water Directive (76/160/EEC) was agreed in Brussels on 8 December 1975 and imposes statutory objectives on bathing waters. Its two main objectives are:

- to improve or maintain the quality of bathing water for reasons of amenity;
- to protect public health.

The Environment Agency carries out the monitoring and then reports to the Department of the Environment, which assesses compliance on a calendar year basis. The bathing season in England and Wales runs from 15 May to 30 September and sampling commences two weeks before the start of the season. Twenty samples are taken at regular intervals throughout the season at each site and these are analysed for total and faecal coliform bacteria. All samples are taken at predetermined points off the beach of the identified bathing water where the daily average density of bathers is at its highest (Environment Agency, 1999).

The mandatory coliform standards given in the Directive that are used to assess compliance are that 95% of samples meet the following:

- a limit of 10,000 total coliforms per 100ml; and
- no more than 2,000 faecal coliforms per 100ml.

The more stringent guideline values for coliform and faecal streptococci standards given in the Directive are that:

- 80% of samples must not contain more than 500 total coliforms or 100 faecal coliforms per 100ml; and
- 90% of samples must not contain more than 100 faecal streptococci per 100ml.

There are seven designated bathing waters within the study area. Results for these beaches for the period of 2001 are reproduced in Table 2.2.

Mudeford Sandbank, Highcliffe, Christchurch Bay and Milford on Sea bathing waters have consistently achieved the stringent guideline coliform and faecal streptococci standards in the last 5 years. Avon beach has consistently improved in this time from poor in 1997 to excellent in 2001.

Friar's Cliff and Highcliffe Castle have previously met the more stringent guidelines but in 2001 these sites only managed to comply with the mandatory coliform standards.

There are no designated Blue Flag beaches within the study area and no Tidy Group seaside award beaches. These are awarded to beaches achieving mandatory Bathing Water Directive Standards over the past six years. These awards are only given to beaches that are clean, safe and have water quality that meets European legislation. Applications for seaside awards are made on an annual basis.

Table 2.2 Bathing Water Quality for Designated Bathing Waters in Christchurch Bay (2001)

Units: bacteria per 100 ml sample

Criterion	**Christchurch Mudeford Sandbank (East)** BBC ref 18900	**Christchurch Avon Beach Ref**	**Christchurch Friar's Cliff** Dorset CC ref 18750	**Christchurch Highcliffe Castle** Dorset CC ref 18700	**Highcliffe** Dorset CC Ref 17300	**Christchurch Bay** HCC Ref 17200	**Milford-on-Sea** HCC ref 17100
Total Coliforms							
80th Percentile *(Guideline)*	18	99	280	260	200	64	27
90th Percentile	168	225	315	441	304	86	62
95th Percentile *(Mandatory)*	175	279	580	795	340	125	134
Maximum	225	2160	840	2660	370	179	2200
Faecal Coliforms							
80th Percentile *(Guideline)*	18	54	**162**	**108**	91	45	<10
90th Percentile	27	99	210	340	118	55	<10
95th Percentile *(Mandatory)*	36	198	234	360	173	73	18
Maximum	230	370	315	1860	310	73	27
Faecal Streptococci							
90th Percentile *(Guideline)*	<10	18	27	54	20	10	10
95th Percentile	<10	36	108	63	20	10	20
Maximum	27	72	126	117	100	50	20

Note: Results in shaded boxes represent exceedances of the corresponding standard in the EU Bathing Water Directive.

Source of data: Environment Agency website © 2002

2.8.2 Oil Pollution

The threat of oil pollution to the study area is a real risk due to the active exploitation of oil reserves around Poole Harbour and their transportation to Southampton via underground pipeline.

The Dorset Coastal Pollution Clearance Plan assists those dealing with a spill, assesses the likely impacts on the coast and sets priorities for clean up operations. There is only one area relevant to this study, Sector 1: from the Dorset County boundary east to Hengistbury Head. Access points identified for emergency access are Chewton Bunny, Highcliffe Castle, Friars Cliff beach promenade, Avon beach promenade and Mudeford Quay. Within the Harbour access is identified at Fishermans Bank, Stanpit Marsh, River Avon, Christchurch Quay, Mayor's Mead and Wick Ferry, Wick recreation ground, outdoor recreation and field studies centre and Hengistbury Head.

In Hampshire, comprehensive instructions for dealing with oil and chemical pollution are contained in the Hampshire County Council coastal oil and chemical pollution plan maintained by the Emergency Planning Unit.

2.8.3 Nutrient Enrichment

Concentrations of nutrients originating from the land are also found near the coast in less saline waters. However, these sources of nutrients are being reduced due to the changes in practice that are required by European legislation. This includes the increased treatment of sewage effluent, as required by the Urban Waste Water Treatment Directive (EU Directive 91/271/EEC), and the protection of waters against pollution caused by nitrates from agricultural sources (EU Directive 91/676/EEC). Directive 91/676/EEC involves Nitrate Vunerable Zones being designated. In the case of coastal and marine waters, this designation is based on whether they “are found to be eutrophic or in the near future may become eutrophic” (Harding & Nichols, 1987 cited by English Nature, 1998).

Christchurch Harbour was proposed as a candidate Sensitive Area (Eutrophic) under the EC Urban Waste Water Treatment Directive and a candidate Polluted Water (Eutrophic) under the EC Nitrates Directive. Insufficient criteria however were attained for it to go forward for designation, and the Agency are continuing to gather information to support a case. If the Harbour is designated under the EC Nitrates Directive at the next review meeting, areas of land draining to it will be designated as a Nitrate Vunerable Zone.

2.8.4 Licensed Discharges and Abstractions

There are a number of licensed ground water abstraction sites for spray irrigation purposes, all of which are less than 50,000m^3 per annum. Five of these are in the vicinity of Walkford Brook to the west of New Milton and one to the east of Beckton Bunny.

There are also three surface water abstractions within, or just outside the study area. Two abstractions of less than 50,000 m^3 for spray irrigation purposes are located at Walkford Brook and Danes Stream. There is also an abstraction at Becton Bunny of less than 50,000 m^3, which may be for gravel washing, fish farming or impoundments.

Discharges into rivers or estuaries are controlled by the Environment Agency by means of discharge consents. Continuous discharges are connected to the public foul sewerage system for treatment at Southern Water Services waste water treatment works (WWTW). Asset Management Plans (AMP's) are nationally agreed strategic programmes, which Water Companies must implement to improve the level of treatment and quality of the discharge. The driving mechanisms are the EC Bathing Waters and the EC Urban Waste Water Treatment Directives. At Barton-on-Sea wastewater is now pumped to Pennington WWTW for full secondary treatment. Previously, treatment involved preliminary treated water discharging via an outfall into a designated bathing water.

2.9 Contaminated Land

Details of potentially contaminated sites have been obtained from Environment Agency records and a search of historical Ordnance Survey maps dating from 1860. The locations of identified sites are shown in Figure 6.

The most significant known contaminated sites along the coast of the study area are a number of former landfill sites around Christchurch Harbour, described in Section 2.9.1.

2.9.1 Former Refuse Tips and Contaminated Land

There is a number of historical refuse tips within the study area (Figure 6):

- A - Stanpit Marsh (comprising two areas, one tipping progressively South east to North west, overlaid over a number of years between 1950 and 1980, the other tipping progressively east to west approx 1938).
- B - North of /adjacent to Mudeford Quay (1947-50)
- C - Avon Run Road Car Park , Mudeford (adjacent to) (1951-52)
- D - Mudeford Promenade (adjacent to car park) (1955)
- E - Bank of River Stour to west of Priory Wall, south of Queen Av (1920s)
- F – Wick Fields, north of Broadway on southern side of Christchurch Harbour (domestic refuse, filled by Bournemouth Borough Council)

Stanpit Marsh, which lies in Christchurch Harbour, has a historic landfill site on its north side. The majority of the land lies between 0.5m and 1.0m above sea level, and is therefore within the local tidal range, especially in winter. During the winter, spring tides commonly reach 0.75 m OD, at which level over half the marsh floods. Even during periods of no tidal flooding, the marsh can be inundated from rainwater. Also, a relatively small proportion of the marsh appears to be suffering

additional erosion damage, mostly affecting those aspects facing the prevailing south-westerly winds.

Due to predictions in sea level rise and climate change, there are concerns that erosion of the toxic tipped land behind the marsh will wash into the sea, which is considered environmentally unacceptable. There is a long-term need, therefore, to manage the erosion. The Future of Stanpit Marsh (Christchurch Borough Council 2000) and the Poole and Christchurch Bays Shoreline Management Plan (Halcrow 1999) outline management treatments in terms of coast protection and sea defence. The Plan recognises that defence is not feasible, and that selective long-term (2005-2049) retreat is the preferred option.

A number of further former landfill sites are located just inland of the study area and are therefore not considered in the coastal strategy:

- Riverside Park and Watermead Area (1951-52), close to the River Stour;
- Recreation Ground adjacent to Beaulieu Gardens (1960) on the banks of the River Stour.
- Dudmoor Lane is located to the north of Christchurch.

2.9.2 Landfill Sites

There are several licensed waste management facilities lying in the lee of Hurst Spit, just outside the study area (Table 2.3). These sites could potentially be affected if the spit were to breach, therefore they have been included here for completeness.

Table 2.3 Licensed waste management facilities

License Ref	Site Name / Location	Type of facility
NF51 (i)	Lymington Rd, New Milton	Transfer station
19879	Manor Rd landfill site - treatment & transfer, Manor Farm, Pennington.	Non biodegradable wastes (not construction)
19880	Manor Farm eastern extension, Manor Farm, Milford Road.	Non biodegradable wastes (not construction)
19874	Efford landfill site, Lymington	Household, commercial and industrial waste
10205	Newbridge field, Manor Farm, Pennington	Non biodegradable waste (not construction)

2.10 Tourism and Recreation

Tourism plays a significant role within the study area, however formal tourist facilities are largely limited to those associated with the various caravan parks within the study area. There are numerous opportunities for informal recreation that allow enjoyment and appreciation of the natural assets of the coast.

Christchurch Harbour and Mudeford Quay are highly important to the overall tourism industry within Christchurch. Holidaymakers, day-trippers and water sports enthusiasts use the area, particularly during the summer months. It is crucial to gain a balance between the conflicting uses, ensuring that tourist and recreational activities do not adversely affect the natural environment of the Harbour and its surroundings.

2.10.1 Land Based Recreation

This is an important stretch of coast for tourism, with the beaches being a particular asset. Tourism is a major generator of wealth in the Christchurch Borough, with an estimated visitor expenditure in the order of £35 million in 1995. Tourism facilities include two golf courses, one at Highcliffe, the other at Barton on Sea, and a holiday complex at Naish Farm. The complex at Naish includes an area of holiday chalets and caravans with some leisure facilities. Beach huts have been constructed at Hordle Cliff, Milford on Sea and Barton on Sea, many of which are in a poor state of repair. However, these huts remain a popular and traditional element of the coastal scene. Hurst Castle is also a popular destination for visitors. Access to the castle is either on foot, along the spit, or by boat.

2.10.2 Water Based Recreation

Popular recreational activities include walking and sea angling as well as traditional seaside activities such as sun-bathing and swimming. There are designated bathing beaches at Barton and Milford, both of which have facilities such as car parks, shops, cafes, kiosks, beach huts and toilets. There is also an amenity beach at Naish that is popular with summer visitors.

There is significant sailing within Christchurch Harbour with three sailing clubs lying within its confines. Highcliffe also has good facilities for the sailing fraternity and has hosted international sailing events. National competitions are also held here for windsurfing. Christchurch Harbour also attracts large numbers of anglers who fish its tidal stretches. The fishing rights extend along a considerable length of the Harbour bank. Boats are discouraged from landing in Stanpit Marsh Nature Reserve and the whole marsh is subject to a management plan produced by Christchurch Borough Council. The Harbour is also a base for Christchurch rowing club and offshore angling with recreational bass fishing a popular activity at the mouth. Mudeford Quay is an important tourist attraction and recreation facility.

Facilities on shore are somewhat limited and a considerable increase in the number of pleasure crafts is contained by the physical nature of the Harbour, which dictates the number of available moorings. Those existing moorings are currently being used to full potential. Large areas of open space can be found within the Harbour confines, the majority of which is accessible to the public for informal or more passive recreational pursuits. A range of tourist and water-based recreational facilities are available including dinghy sailing, windsurfing and rowing.

The importance of Milford on Sea as a focal point for recreation and amenity on the coast has declined in recent years. A number of small scale developments have been proposed to improve the area including the creation of a new slipway at the eastern end of Milford to take pressure off existing access points at Lymington and KeyHaven.

2.10.3 Attractions

There are a number of tourist attractions throughout the study area. Two museums are situated in Christchurch town centre, The Red House Museum and The Museum of Electricity. The Red House Museum was originally the local workhouse. It dates back to 1764 and gives an insight into Christchurch's heritage, displaying information on natural history, geology and archaeology. The Museum of Electricity, in Bargates, is set in an Edwardian power station and describes the history of electricity.

Situated within The Regents Centre, in the High Street, is an arts and community centre, which contains a cinema and theatre with regular exhibitions. Christchurch is also famous for its floral displays with two town gardens, the Priory House Gardens, and the New Zealand Garden. The New Zealand Garden has plants indigenous from Christchurch's twin town in New Zealand. The Quomps area adjoining Christchurch Quay is intensively used for recreational purposes. The improvements to the site by the Council are intended to encourage the Quomps as a major tourist attraction.

Situated at the end of Hurst Spit is Hurst Castle, built by Henry VIII as one a chain of coastal fortresses. The Castle is used regularly used by educational groups as well as members of the public.

2.10.4 Access to the Beach and Coastal Area

A coastal footpath facilitates public access along or close to the shoreline from Mudeford Quay to Chewton Bunny. The Council intends to move the policies stated in the Local Plan 1989 a stage further to acquire land at Rothesay Park for the dual purpose of creating a coastal park as well as completing the coastal path. The Council also proposes the establishment of a coastal cycle path between Mudeford and Chewton Bunny, which exploits the network of tracks and access roads that have been developed over the years.

Public access is more restrictive along the remaining stretch of coastline from Chewton Bunny to Hurst Spit. At present there is no public access through Naish Holiday village along the cliff top, and beach access improvements are required both at Barton on Sea and the western end of Milford on Sea. A number of amenity car parks exist at various points along this stretch of coast including Avon Beach, Highcliffe, Barton, Taddiford Gap and Milford.

Facilities for launching boats are provided at Fishermans Bank and Mudeford Quay. The latter is more important due to the boat storage area, large car park and

good access to the open sea. Other slipways also exist further up river at Avon Bridge and Christchurch Sailing Club.

Access to the coastline in the Harbour area is varied. Although land along the Fisherman's Bank area of the Harbour is in private ownership, there are common rights and a public footpath along this length. Development on the northern edge of the Harbour has also inevitably produced a number of access points along this fringe. Passenger ferry services operate from Tuckton Tea Gardens to Christchurch Quay and Mudeford Spit; and, from Mudeford Quay to Mudeford Spit enabling waterborne access to much of the Harbour.

Access to the southern shores of the Harbour is relatively limited, consisting of footpath access and the land train that operates in the vicinity of Hengistbury Head and terminates at Mudeford Spit.

There are two public car parks within the Purewell area of Christchurch. One is located at Two Riversmeet Leisure Centre, the other at 'The Buttery'. There are three amenity car parks on the riverside adjacent to the Priory, Priory car park itself, Town Quay and Mayors Mead, which serves the town's upriver public slipway. Mudeford and Stanpit also have car park facilities at Mudeford Quay and the Stanpit recreational ground. There are also a number of other smaller car parks within the study area. Traffic congestion in this area is considerable, particularly during the tourism season.

2.10.5 Accommodation

Accommodation within the study area consists of a variety of establishments including hotels, guesthouses, self-catering accommodation, static caravan parks, and touring caravan and camping parks.

Within Christchurch Bay, sites for camping and caravaning are located mainly on the Bay coast, with sites at Milford and Barton-on-Sea accommodating some 1600 pitches. There are also a number of hotels and guesthouses located within Christchurch town centre and Highcliffe offering a wide range of accommodation.

The Naish Farm Holiday Park extending over 55 hectares between the New Milton built up area and Chewton Bunny, providing a variety of chalet and caravan accommodation. Beach huts have also been constructed at Hordle Cliff, Milford-on-Sea and Barton-on-Sea, although many are in a poor state of repair.

2.10.6 Tourism and the Local Economy

Tourism is a valuable industry in the Borough of Christchurch. The Borough is not only enjoyed by local residents but is of particular importance as a tourist centre within south-east Dorset. The Council have attempted to promote the area for tourism, whilst at the same time safeguarding the quality amenities. In recognition of the benefits of tourism to the local economy, communities and employment the Council has adopted a number of documents aimed at encouraging and promoting

tourism. In consultation with the Southern Tourist Board and the Christchurch Tourism Association, a Tourism Strategy was produced to ensure the area benefits fully from the new and growing tourism market. The Strategy recognises tourism is a major generator of wealth in the Borough and assesses ways of promoting the Borough to specific segments. Research from the Dorset Tourism Data Project 1995 estimates that expenditure by visitors was over £35 million in 1995. The 1991 Census of Employment identifies the total number of employees employed in tourism in Christchurch Borough as 1,590. This includes employees in the hotel trade, other tourist/short stay accommodation, cultural and recreational services, restaurants, public houses and nightclubs.

A buoyant tourist industry has also played a part in the economic success of Hampshire and it is expected that its contribution to the local economy will grow. The wide range of recreational facilities has added to the attractions of Hampshire for commercial investment. The New Forest District is an important tourist destination with 7% of the workforce in tourism. Although tourism is recognised as being important, The Local Plans policies also seek to avoid damage to the environment, to not enhance the overall attraction of the area of tourism, nor to increase the overall visitor numbers of the area.

2.11 Fisheries

Information on fishing activities within the study area was obtained through consultation with the Southern Sea Fisheries Committee and DEFRA District Fisheries Officer.

Commercial fishing activity takes place along this stretch of coastline. The sub-littoral habitats around Hengistbury Head are important as fishing grounds for crabs and lobster. Approximately 30 boats are registered at Mudeford that constitutes one of the largest fleets in this study area, exceeded only by Poole. General fishing for a range of fish species takes place in addition to some potting.

The catch is almost entirely non-quota shellfish and oyster, with an annual turnover of around £2.1m. Salmon are caught by seine-netting in the Harbour entrance, mostly for conservation purposes. Such activities have taken place here since Saxon times but rights are now being slowly withdrawn by the Environment Agency to maintain diminishing stocks.

There are no designated areas for freshwater fisheries, the nearest being in the lee of Hurst Spit towards Keyhaven where the area is closed to fixed gill netting ¼-30/9 under Sea Fisheries Committee.

Fishing for sea trout occurs in the tidal river and estuary. The principal spawning area is the Moors river system.

Licensed netting for salmon and migratory trout takes place in Christchurch Harbour, the joint estuary of the Rivers Avon and Stour, in the Mudeford run, the

narrow mouth of the estuary, and from the beach within the public fishery part of the harbour. Fishing is solely by means of seine nets. The number of nets is limited to six in accordance with the NRA (Poole Harbour and Christchurch Harbour) (Limitation of Draft and Seine Net Licences) Order 1993, and these are licensed by the Agency. The netting season used to run from 15 April to 31 July, both dates inclusive. However, since the introduction of the National Byelaws in 1999, the opening of the salmon and sea trout netting season has been delayed to 1 June. These byelaws remain in force for ten years with a formal review after 5 years.

There is known illegal salmon fishing on the Stour in Christchurch Harbour and the sea immediately offshore, and on the spawning grounds. Illegal fishing in the harbour and sea usually occurs during the period June to September and the favoured method is fixed gill netting. This method may be more of a problem during low flow summer when salmon accumulate in harbour and tidal river.

Some commercial fishing for eels takes place using fixed eel traps at various locations on the lower Avon and there is some ring netting for mullet in the harbour. Within the confines of the harbour and an area of sea outside the harbour the Environment Agency has the powers of a local Sea Fisheries Committee. (see Dorset Stour LEAP Consultation report, 1997).

2.11.1 Seasons and Byelaws

The Southern Sea Fisheries Committee has jurisdiction over commercial fishing activity within the study area and through a system of byelaws restricts fishing effort for certain species through the implementation of closed seasons. The closed seasons are summarised in Table 2.4.

Table 2.4 Fishery Closed Seasons

Species	Season	Area of Application
Cockles	1 February - 30 April	Throughout District
Oysters	1 March - 31 October	Throughout District (separate regulations for Poole Harbour)
Prawns	1 January - 31 July	Poole Harbour
Periwinkles	15 May - 15 September	Throughout district
Trawling	1 May - 31 August	Chesil area
Clams	By licence only	Poole Harbour

Source: Southern Sea Fisheries Committee

2.12 Archaeology and Cultural Heritage

In England, three statutes provide protection for archaeological sites and their settings:

- *Ancient Monuments and Archaeological Areas Act (AMAA) 1979.* Sites judged to be of national importance are protected by the AMAA Act and known as Scheduled Monuments.

- *Town and Country Planning (Listed Buildings and Conservation Areas) Act 1990.* This provides the principal legislative framework for protection of specific buildings and areas considered to be of special architectural or historic importance.

- *Protection of Wrecks Act 1973.* This provides for the designation of shipwrecks for archaeological or historical interest.

Further protection is afforded through the land use planning system under the Town and Country Planning Act 1990, with advice provided through Planning Policy Guidance Notes, notably PPGs 14, 15, 16 and 20. The Code of Practice for Seabed Developers (Joint Nautical Archaeology Policy Committee, 1995) embodies the principles of PPG16, setting out the need for consideration of the archaeological resource to be incorporated at the outset of project planning. It is recommended that Coastal/Tidal Defence strategies provide sufficient information on the restrictions imposed by these statutes and guidelines in relation to coastal defence planning.

Nationally important archaeological sites are designated as Scheduled Monuments (SMs). These sites make up a comparatively small proportion of the total archaeological resource, thus unscheduled sites are identified and recorded on the Local Authorities Sites and Monuments Record (SMR). These records contain details of important historic buildings that are identified as Listed Buildings whilst larger urban areas of historic significance are identified as Conservation Areas.

Information on the historic environment, including archaeology and built historical interest, within the study area has been obtained from Hampshire County Council, Dorset County Council, English Heritage and the National Monuments Record Centre.

2.12.1 Scheduled Monuments

Hurst Spit Castle, forming the eastern boundary of the study area, was built between 1541 and 1544 and formed part of a string of coastal defences built by Henry VIII to protect Southern England from the French. It was specifically designed to defend the Needles Passage to the Solent. It is now designated a Scheduled Monument (SM). The stone artillery fort consisted of a 12 sided keep and a nine-sided curtain wall with 3 of the sides enlarged to form bastions. It was originally surrounded by a moat.

Another feature of archaeological importance within this area is Hengistbury Head, the whole of which from the Iron Age fortification of Double Dykes eastwards is 0 a Scheduled Monument. It is the only non-cave occupation site known in the region

that dates back from the earliest (Palaeolithic) period. The discovery of a rich range of artefacts from the Iron Age promontory fort reveals that the promontory was a trading centre for goods, such as wine and glass, from the continent and Mediterranean with copper from Cornwall. There is also evidence that surface deposits of iron ore were worked on the site. Hengistbury Head includes evidence of occupation from Palaeolithic, Mesolithic and Neolithic times through the Bronze and Iron Ages until the end of the Roman period. Many artefacts from across these periods have been found and extensive studies have been carried out, for example by Professor Cuncliffe of the University of Oxford (1987). Archaeological remains from the historical period include evidence of lime burning, salt making, and dockworks from the 18th and 19th centuries and harbour works from the 17th century. A significant part of the Scheduled Monument at Hengistbury Head has been lost to erosion, particularly over the last 200 years. There is concern that continued erosion and rising sea levels will lead to a breach or overtopping at the location of Double Dykes and ultimately the complete loss significant features within the Monument.

Table 2.5 gives a list of Scheduled Monuments in the study area, some of which are at risk of flooding or erosion, and their locations are shown in Figure 5.

Table 2.5 Scheduled Monuments in the Study Area

Parish	SMR	Description	NGR
Lymington	SM26716	Hurst Spit Castle	SZ 4318 0897
Bournemouth	SM 824	Bronze Age Round Barrow	SZ 1793 9056
Bournemouth	SM 824	Bronze Age Pottery	SZ 1798 9096
Bournemouth	SM 824	Palaeolithic Flint Assemblage	SZ 178 905
Bournemouth	SM 824	Mesolithic Flint Assemblage	SZ 178 905
Bournemouth	SM 824	Bronze Age Round Barrow	SZ 1797 9055
Bournemouth	SM 860	Bronze Age Bowl Barrow	SZ 1528 9209
Christchurch	SM 821	Bronze Age Bowl Barrow	SZ 1918 9281
Christchurch	SM 22962	C15 Medieval Bridge	SZ1608 9276
Christchurch	SM22962	Early Christian Cemetery	SZ 1603 9255
Christchurch	SM22962	Augustinian Priory	SZ 1603 9255
Christchurch	SM 22962	Motte and Bailey Castle	SZ 160 927
Christchurch	SM22962	Constables House	SZ 160 927

Note: SMR = Sites and Monument Record; NGR = National Grid Reference

Originally a Saxon burgh (fort) against Vikings, the medieval town of Christchurch also contains Roman material and important prehistoric remains. A Saxon Monastery of the Church of the Holy Trinity existed on the site of the present Priory church, which itself was commenced in 1094. The Priory Church was built at the same time as Twynham Castle and a domestic building to house the Constable

was erected at the foot of the Castle a little later in about 1160. The ruins of these remain today and the area is designated a Scheduled Monument. Three other Scheduled Monuments exist outside the Christchurch Town Centre Conservation Area, all of which contain the remains of Bronze Age Barrows. Isolated findings of flint and pottery were also found within the area dating from Palaeolithic and Bronze Ages respectively.

2.12.2 Other sites of archaeological importance (SMR sites)

The locations of archaeological sites in the study area are shown are shown in Figure 6.

Many artefacts have been found along this coastline to the west of Hurst Spit, this is due in part to the eroding cliff face that continues to liberate archaeological material. This is particularly the case at Barton where one find consisted of 128 implements including 97 Palaeolithic hand axes. A number of isolated finds of worked flint tools have been found in the Friars Cliff and Mudeford vicinities dating from Prehistoric, Neolithic and Bronze Age eras. Some pieces of Bronze Age metalwork have also been discovered in the area. One particular find of interest is a deserted Medieval village that included six salt houses. However, the only archaeological site above the cliffs that could be under threat from erosion are the earthworks at Taddiford Gap that may have been associated with the Medieval village of Hordle.

To the south of this area lie the drowned river valleys of the River Solent. Work on this valley has produced a wide range of archaeological information. Such valleys would feature in any detailed archaeological assessment of the area.

2.12.3 Listed Buildings

Listed Buildings are designated by Local Authorities for their architectural and/or historic value. Listed Buildings are either Grade I, Grade II* or Grade II. Grade I Listed Buildings are of exceptional quality and their preservation is of national importance. Grade II* may also be of national significance while Grade II buildings are of Regional interest.

Highcliffe Castle is a Grade I Listed Building and one of the most important Listed Buildings in the Area. The castle, which had fallen into disrepair as the result of a fire, is now owned by Christchurch Borough Council. The Castle has undergone a £5.2m programme of repair works recently and its future use lies in the hands of the Council. The older 'hamlets' of Purewell, Stanpit and Mudeford also have numerous statutory Listed and Locally Listed Buildings situated along historic streets. It is noticeable that there are five Grade I Listed Buildings in the town centre of Christchurch. Those that fall within the study area boundary include Christchurch Priory, Constable's House, Town Bridge and the Castle.

A number of other 'local grade' listed buildings of importance (identified in the local plans) are located within this area.

2.12.4 Conservation Areas

A Conservation Area is an area of special architectural or historic interest, the character or appearance of which it is desirable to preserve or enhance. A number of Conservation Areas exist along this stretch of coastline. Those under the jurisdiction of Christchurch Borough Council include:

- Bramble Lane - Situated in an area to the north of Chewton Common Road it comprises a number of residential developments from different historical periods, the oldest of which were once part of an C18th hamlet. A number of the cottages are Grade II Listed and are of local interest.

- Mudeford Quay – The Quay has a long association with the fishing community and this is reflected in the terraces of fishermen's cottages found in the area. These are grouped closely together with an inn on the head. The area also contains a number of listed cottages of the 17th and 18th century including Grade II 18th century house 'The moorings.' The historical interest and visual quality of the area are integral to the character. The Quay has particular policies to protect its historical and amenity interest within the Christchurch Local Plan by preventing development of an unsympathetic nature.

- Mudeford/Christchurch Harbour Frontage – This area contains a number of Grade II Listed Buildings that front Mudeford. The most important reason for designation, however, is the open character and natural appearance of the waterfront.

- Stanpit and Fishermans Bank – groups of white or cream rendered or painted brick terraced cottages characterise the area. Other properties of interest include a Grade II Listed Building, a row of 18th century Coastguard cottages along Stanpit and The Watch House at Fisherman's Bank.

- Christchurch Central Conservation Area – Retaining its Saxon street plan and millstream, the character of the historic town centre is maintained through its network of narrow streets, the quality of its buildings and variety of architecture. The importance of the town centre is reflected in the number of statutory Listed and Local Interest Buildings that it contains.

- Mudeford Sandbank – The remains of an attempt to create a permanent harbour entrance can still be seen here. The Clarendon Rocks, an inshore training wall was built by the Earl of Clarendon in 1666 in an effort to make the River Avon navigable for trade. Its sister training wall lies beneath a modern groyne. The sandbank also has a shipbuilding pedigree, with two coasting barques of 200 tonne burthen being built there in the mid-1800s. The Black House, c1898, is thought to have been built to support the boat building industry.

Two Conservation Areas have also been designated by New Forest District Council. One of these is in Milford-on-Sea, centred around the green in the village

centre and the church. The previously derelict White House hospital on the sea front at Milford has now undergone redevelopment and repair is an important Listed Building and prominent coastal landmark. The other Conservation Area is at Keyhaven, which has a number of buildings dating from the 18th and 19th centuries, some of which are listed, as well as several interesting houses of more recent date especially facing the waterside.

2.12.5 The New Forest Heritage Area

New Forest Heritage Area, defined in 1991, comprises some 57,783 ha including land that has an agricultural, landscape or historical link with the New Forest proper. This area has status equivalent to a National Park, but is not yet a National Park proper. However, designation is in progress, and the proposed National Park now includes Hurst Spit.

2.12.6 Underwater Archaeology

A number of wrecks exist offshore including two British Dumb barges that were stranded in 1889; the S.B Hume, a British Brigantine which was stranded in 1895 and an English Merchant Vessel; William and Eliza that was lost in 1884. Known wreck sites in the study area are listed in Table 2.6.

A Roman shipwreck was reported as being discovered in the Harbour at the beginning of this century (SMR Christchurch 30). Finds sent to the British Museum in 1910 have since been lost. Should such a vessel be rediscovered it would be of considerable historic importance and would almost certainly be designated under the Protection of Wrecks Act. The presence of Bronze Age, Iron Age, Roman, Saxon and Medieval ports around the Harbour raises the possibility of other ancient wrecks being discovered in the Harbour sediments.

There is substantial evidence of submerged land surfaces within Christchurch Harbour. The presence of a Mesolithic occupation site, below maximum HWM at Mother Siller's Channel, on Stanpit Marsh, raises the possibility of other prehistoric, and later sites at or below HWM. Work by Oxford University (Professor Cunliffe) provides a good insight into the archaeological potential of the Harbour.

Christchurch Bay also contains evidence of a submerged land surface. Evidence includes underwater sarsen stones discovered by DR Collins of the University of Southampton. Evidence of human occupation includes worked flints from 12 m depth, reported to be the deepest evidence of human occupation in the UK and estimated to fate from 8,500 years ago when the western Solent was an extensive saltmarsh on the margin of a small estuary. A Neolithic hand axe, probably the finest ever found in Hampshire, has also been discovered offshore.

2.13 Mineral Production

There is no mineral production in the study area. However, just outside the area in New Milton is Ashley Arnwood Sand and Gravel Processing site.

There are three commercial licensed dredge sites in the south coast region lying within the Christchurch Bay area, operated by United Marine Dredging, Hanson Aggregates Marie and South Coast Shipping Ltd.

There is no information available about land reclamation in Christchurch Harbour.

Table 2.6 Wreck Sites within the Christchurch Bay study area

Name	SMR No	Location	Description	Period	Position
Rachel Harrison	SZ39SW 60	Pennington Spit	Wooden schooner stranded and lost in W force 4 on Pennington Spit on 24th January. Carrying oats. Built 1856	Post Medieval 1540 to 1900	SZ 31880 91070
Triton	SZ39SW 57	Lymington	Wooden sailing vessel burnt and foundered off Lymington on 3rd December 1802,		SZ 31880 91070
Providence	SZ38NW 58		Wooden sailing cargo vessel stranded and lost on 26st February 1802. Part of cargo saved		SZ 31770 89650
Surprise	SZ38NW 57	Hurst Castle	Wooden sailing cargo vessel stranded and lost near Hurst Castle on 23rd October 1780. Carrying a cargo of wheat.		SZ 31770 89650
Three Brothers	SZ38NW 56	Lymington	Wooden smuggling lugger lost between Lymington and Christchurch on 25th January 1775		SZ 31770 89650
Samuel	SZ38NW 55		Wooden sailing, cargo vessel (170T) stranded and lost on 16th January 1753. Carrying a cargo of cotton, ebony and sugar.		SZ 31770 89650
Unknown	SZ38NW 49	Isle of Wight	Unknown vessel stranded at Cliff End, Isle of Wight, 1746		SZ 32900 89080
"Saint"	SZ38NW 48	Isle of Wight	British schooner stranded at Cliff End, Isle of Wight, 1904.	Modern 1901 to 2050	SZ 32900 89080
"Lively"	SZ38NW 47	Totland Bay, Isle of Wight	English cutter foundered following a collision off Totland, Totland Bay, Isle of Wight, 1893	Post Medieval 1540 to 1900	SZ 32900 89080
"Emma"	SZ38NW 46	Colwell Bay, Isle of Wight	English smack stranded at How Ledge, Colwell Bay, Isle of Wight, 1882		SZ 32900 89080
"Foam"	SZ38NW 45	Isle of Wight	British smack stranded at Totland Bay, 1883.		SZ 32900 89080
"Providence"	SZ38NW 44	Isle of Wight	French sloop stranded on Warden Ledge, Totland Bay, Isle of Wight, 1881		SZ 32900 89080
"Four Friends"	SZ38NW 43	Isle of Wight	English smack stranded at Warden Ledge, Colwell Bay, Isle of Wight, 1842		SZ 32900 89080
"Henry"	SZ38NW 42	Isle of Wight	Stranded at Yarmouth, Isle of Wight, 1760		SZ 32900 89080

Name	SMR No	Location	Description	Period	Position
“Tygar"	SZ38NW 4	Isle of Wight	British vessel stranded at Cliff End, Colwell Bay, Isle of Wight, 1746. Wooden sailing vessel. Wooden sailing vessel stranded and lost on 20th January (or February) 1747. Forced ashore by a French privateer	Post Medieval 1540 to 1900	SZ 32900 89080
"Hind"	SZ38NW 40	Hurst Castle	Royal Navy warship, 6th rate, lost near Hurst Castle,1709. British sixth rate, 13 gun, ship of the line, stranded and lost on 16th September 1709. Ran aground between Hurst Castle and Shingles bank and became a total wreck. Built 1709.		SZ 31790 89700
"Comet"	SZ38NW 39	Hurst	English merchantman, lost at Hurst, West Solent, in 1888. Wooden, sail powered savage vessel (23T) lost during salvage operation in S forces8, on 28th November 1888. Carrying oil and gasoline. Built 1858		SZ 31790 89700
"Ann and Eliza"	SZ38NW 38	Hurst Castle	English merchantman, lost near Hurst Castle, West Solent in 1859.		SZ 31790 89700
"Jessie"	SZ38NW 37	Hurst	Schooner, lost on Chisel Strap. opposite Hurst, Solent, 1867. Wooden schooner wrecked on Chisel Strap on 30th November 1867. Carrying a cargo of coal.		SZ 31790 89700
"Hope"	SZ38NW 36	Hurst Camber?	Lost at Hurst Camber (?), Isle of Wight, in 1865. Wooden smack (34T) foundered and lost in NE force 2 on 13th October 1865, with loss of one life. Carrying a cargo of stone.		SZ 31790 89700
"Archibald"	SZ38NW 35	Hurst Castle	British schooner stranded on the beach at Hurst Castle, West Solent in 1880		SZ 31790 89700
"Three Brothers"	SZ38NW 34	Hurst Castle	British fishing smack, stranded 0.5 miles west of the Low Light, Hurst Castle, West Solent in 1876. 2) Wooden fishing smack (15T) stranded and wrecked in SSE force 6, 5 miles W of Low Light, on 19th December 1876. In ballast. Lost at same time as the Jemima (SZ38NW 33). Built in 1856.		SZ 31790 89700

Name	SMR No	Location	Description	Period	Position
"JEMIMA"	SZ38NW 33	Hurst Castle	British fishing smack, stranded 0.5 miles west of Low Light, Hurst Castle, West Solent, 1876. Wooden fishing smack (25T) stranded and wrecked in SSE force 6, 0.5 miles W of Low Light, on 19th December 1876. In ballast. Lost at same time as the Three Brothers (SZ38NW 34). Built 1852.	Post Medieval – 1540 to 1900	SZ 31790 89700
"Ann and Eliza"	SZ38NW 32	Hurst Castle beach	British vessel stranded on Hurst Castle Beach, Solent, in 1859. Wooden sailing vessel (15T) stranded and lost on 1st January 1859. Built in 1842.		SZ 31790 89700
"Friends"	SZ38NW 31	Hurst Castle	British merchantman foundered near Hurst Castle, Solent, in 1853. Wooden sloop (25T) leaked and foundered in E force 6 on 12th May 1853. Sank in 18 fathoms carrying a cargo of bricks.		SZ 31790 89700
"Good Intent"	SZ38NW 30	Hurst beach	British vessel stranded on Hurst Beach, Solent, in 1826.		SZ 31790 89700
"Good Intent"	SZ38NW 29	Hurst Castle	British merchantman stranded near Hurst Castle, Milford, West Solent, in 1814. Wooden sailing vessel stranded and lost near Hurst Castle on 13th December 1814.		SZ 31790 89700
Unknown	SZ38NW 4		Unknown Vessel	Modern 1901 to 2050	SZ 30192 88246
"Mabel"	SZ39SW 16	Pennington Spit	Welsh brigantine, lost at Pennington Spit, Isle of Wight, 1870.	Post Medieval 1540 to 1900	SZ 31880 91080
Unknown	SZ39SW 6		Unidentified Feature	Unknown	SZ 32338 93417
Unknown	SZ39SW 5		Unidentified Feature		SZ 31362 91063
Unknown	SZ39SW 4		Unidentified Feature		SZ 31686 91065
"S.B.Hume"	SZ29SE 21	Milford-on-Sea	British brigantine, stranded at Milford-On-Sea, 1895.	Post Medieval 1540 to 1900	SZ 28500 91450
"Rose"	SZ29SE 20	Hordle Cliff	British dumb barge, stranded at Hordle Cliff, Milford, Solent, 1889.		SZ 28500 91450
"Thistle"	SZ29SE 19	Hordle Cliff	British dumb barge, stranded at Hordle Cliff, Milford, Solent in 1889		SZ 28500 91450
"William &	SZ29SE 22	Milford	English merchantman lost at Milford, near Hurst Castle Isle		SZ 28500 91450

Eliza"			of Wight in 1884.		
		Christchurch Harbour	Vessel	200 (Roman)	417566E – 91585N
		Christchurch Harbour	Sailing Vessel	1796	418824E – 90880N
Caroline Susan		-	Vessel	1940	422766E – 86077N

3 Planning and Legislation

3.1 Introduction

The aim of this section is to present the existing planning situation in Dorset and Hampshire, particularly with reference to the policies and plans relevant to coastal planning and defence. This Section provides an inventory of statutory and non-statutory plans, details of individual local policies, their coverage and their potential limitations for the requirements of the Study.

3.2 Review of Planning Policy

Planning policies relating to land down to Mean Low Water (MLW) exist from the international to local level. Policies range from statutory Unitary Development Structure Plans, which outline current constraints and predicted future trends, to non-statutory plans that put forward objectives and implementation strategies for certain issues to be incorporated into statutory Local Plans.

Table 3.1 presents a summary of the International, European, National, Regional and local policies (both responsibilities and initiatives) relevant to this study. A description of the constraints and opportunities defined by these policy documents is provided in the remainder of this section.

Table 3.1 International, European, National, Regional and Local Conventions, Legislation and Guidelines Relevant to the Study

Tier Level	Convention/Legislation/Guideline
International	**The Rio Convention on Biological Diversity**. Commitment of Member States to integrated coastal management and sustainable development of coastal areas and the marine environment under their jurisdiction.
	The Ramsar Convention on Wetlands of International Importance. Requires the UK government to take appropriate legislative measures to ensure the conservation of wetlands and waterfowl.
	The Convention on the Conservation of Migratory Species of Wild Animals (the Bonn Convention). Provides for strict protection of endangered animals listed in its Appendix 1.
	The Council of Europe Convention on the Conservation of European Wildlife and Natural Habitats (the Berne Convention). Requires parties to take necessary measures to ensure the conservation of the habitats of wild flora and fauna species, especially those listed as rare in Appendices I and II.
	OECD Initiatives. The OECD has requested Member States to develop strategic planning and management of coastal zones.
European Union	**Directive on the Conservation of Wild Birds (Directive EEC/79/409)**. Requires Member States to protect the habitats of rare or vulnerable species and of regularly occurring migrating birds as Special Protection Areas (SPAs). Achieved in the UK by the designation of SPAs by the Department of the Environment in consultation with the JNCC.
	Directive on the Conservation of Natural Habitats and of Wild Fauna and Flo (Directive EEC 92/43/EEC). Incorporated into UK law through the Conservation Regulations 1994. Sites designated under this legislation are known as Special Areas for Conservation.
National Government	**The Conservation (Natural Habitats & c) Regulations 1994.** This translates the EU Habitats Directive into UK Law.
	UK Biodiversity Action Plan (1994). Drawn up in response to the Rio Convention on Biodiversity, describing strategies, programmes and proposed policies aimed at conserving the UK's biodiversity.

Table 3.1 International, European, National, Regional and Local Conventions, Legislation and Guidelines Relevant to the Study (Cont'd)

Tier Level	Convention/Legislation/Guideline
National Government	**Department of Environment National Policy Guidelines**. Published in 1995 with the intention of drawing together existing national policy guidance.
	Guide to Best Practice for Coastal Zone Management in England. Published in 1997, highlighting examples of best practice and interactions of different elements in coastal management.
	Planning Policy Guidance Note (PPG) 25 Development and Flood Risk. Published in 2001 providing guidance on how flood risk should be considered at all stages of the planning and development process in order to reduce future damage to property and loss of life.
	Planning Policy Guidance Note (PPG) 20 on Coastal Planning. Published in 1992, providing guidance for councils on policies for development, managing risk and conserving biodiversity and landscape.
	Planning Policy Guidance Note (PPG) 9 on Nature Conservation. Published in 1994, providing guidance for Councils on policies for nature conservation.
	Relevant Acts of Parliament Coast Protection Act 1949 Ancient Monuments and Archaeological Areas Act 1979 Wildlife and Countryside Act 1981 Town and Country Planning Act 1990 Land Drainage Act 1991 Water Resources Act 1991 Environment Act 1995 Countryside and Rights of Way Act, 2000
Regional Government (statutory)	• Regional Planning Guidance for the South West (RPG10), 2001 • Regional Planning Guidance for the South East (RPG9), 2001 • Dorset, Bournemouth and Poole Structure Plan 1991 – 2006 • Hampshire County Structure Plan, Review 1996-2011
Regional Government (non-statutory)	• Shoreline Management Plan Sub-Cell 5F: Poole and Christchurch Bays • Dorset Local Transport Plan, 2001-2006 • Hampshire Local Transport Plan, 2001/2002
Local Government	• Bournemouth District Wide Local Plan, 1999 • Christchurch Local Plan, March 2001 • Dorset Minerals and Waste Local Plan, 1999 • Hampshire, Portsmouth & Southampton Minerals and Waste Local Plan, 1998 • New Forest District Local Plan, November 1999
Local (Non statutory)	• Dorset Draft Biodiversity Strategy, 2002 • Hampshire Biodiversity Action Plan, 2000 • **Regulation 33 advice for Solent European Marine site** • Natural Area Profile: Dorset Heaths • Natural Area Profile: New Forest • Natural Area Profile: Solent and Poole Bay • Mudeford Sandbank Beach Management Plan, April 2001.

	• Mudeford Quay Management Plan, 2001 • Hengistbury Head Management Plan, • New Forest District Coastal Management Plan • A Tourism and visitor management strategy for the New Forest District • New Forest LEAP, 1999 • Dorset Stour LEAP, 1999 • Hampshire Avon LEAP, 2000

3.3 International Level

The concept of integrated coastal zone management (ICZM) is being actively promoted at the international level through various Conventions and initiatives (Table 3.1). This is part of a wider global attempt to encourage the sustainable development of natural resources, the importance of which should be understood and appreciated when planning coastal defence strategies during this Study.

3.4 European Level

European Union policy has become crucial to coastal decision-making and planning. The EU Directive on the Conservation of Wild Birds and on the Directive (the Birds Directive) on the Conservation of Natural Habitats and of Wild Flora and Fauna (the Habitats Directive) give statutory protection on designated areas (SPAs and SACs). The SPAs and SACs form part of the Natura 2000 Network, the European ecological network. The Habitats Directive provides for strict control over any plan or project with a direct or indirect impact on designated SPAs and cSACs.

These directives have become incorporated into UK law through the Conservation (Natural Habitats &c) Regulations 1994. Under this legislation there is a statutory requirement for the production of Regulation 33 Advice and a Scheme of Management for marine sites, which includes the Solent and Isle of Wight Maritime.

3.5 National Level

The UK Government has recently initiated a number of reports and working groups that are relevant to this Study. The government published the UK's first Biodiversity Action Plan in 1994 to fulfil its obligation as a signatory to the Convention to draw up National Plans and Programmes for biodiversity conservation. The Plan details programmes and policies that will be developed in order to protect the UK's biodiversity.

National Guidance has been issued by DEFRA, English Nature and the Environment Agency for the production of Coastal Habitat Action Management Plans (CHaMPs). It is intended that CHaMPs will assist with the development of sustainable coastal defence strategies in those areas where coastal defence measures have implications for internationally important wildlife sites.

National government planning policy is issued in the form of Planning Policy Guidance Notes (PPGs). Planning Policy Guidance Note 20 on Coastal Planning is the most relevant to this Study. It sets out the key policy issues for coastal planning: nature conservation, development and risks (including flooding, erosion and land instability). Other relevant PPGs are:

- PPG 25: Development and Flood Risk;
- PPG 9: Nature Conservation;
- PPG 16: Archaeology and Planning;
- PPG 14: Development on Unstable Land; and
- PPG 11: Regional Planning.

3.5.1 Environment Agency Vision Themes

The Environment Agency have identified nine key 'themes' or 'frameworks for change' through which it will work for a more sustainable future, these are:

1. **a better quality of life** –The Agency will work with all sectors to enhance the quality of the environment and the services it provides – for business, anglers, the boating community and other users of the waterways, farmers, planners and all sections of the community;

2. **an enhanced environment for wildlife** - The Agency will ensure that its activities and those it authorises do not threaten key species and habitats;

3. **cleaner air for everyone** – The Agency will work towards shared strategies with our partners at a local level to improve air quality from all sources**;**

4. **improved and protected inland and coastal waters** – The Agency will work to clean up polluted waters and to reduce the risk of further pollution;

5. **restored, protected land with healthier soils** – The Agency aims to help make the best possible use of land and to put as much contaminated land as possible back into productive use;

6. **a 'greener' business world** – The Agency will work to simplify and improve the regulatory process for business, improve access to environmental information for business and the public, and promote the prevention of pollution and minimisation of waste in industry;

7. **wiser, sustainable use of natural resources** – The Agency will promote and support the introduction of economic incentives and other non-regulatory approaches to achieve the sustainable use of resources;

8. **limiting and adapting to climate change** - The Agency will explore, in partnership with others the most effective mixture of economic measures,

negotiated agreements and direct regulation to ensure that significant cuts are made in 'greenhouse gas' emissions from industry and other sectors; and

9. **reducing flood risk** – The Agency will improve flood defences and information on flood risks**.**

3.5.2 DEFRA High Level Targets

High level targets for flood and coastal defence have been produced by the government and, where relevant, reflect the elaboration of the Environment Agency's supervisory duty. The adoption of the series of targets provides a framework for ensuring and demonstrating delivery of the Government's stated policy aims and objectives for flood and coastal defence. DEFRA's stated policy aim is: '*To reduce the risk to people and the developed and natural environment from flooding and coastal erosion by encouraging the provision of technically, environmentally and economically sound and sustainable defence measures.'*

DEFRA has produced three main objectives. Each objective has a series of targets which aims to help achieve the objective, these are outlined below:

1. "to encourage the provision of adequate and cost effective flood warning systems"

- *Target - Provision of flood warnings* – develop a method for categorising the flood risk to an area for flood warning purposes; determine where a flood warning service can be provided and the appropriate dissemination arrangements using the method developed; determine and publish flood warning service standards for each area at risk of flooding and report to DEFRA on achievement of service standards.

- *Target – Emergency exercises and emergency plans* - arrange, in conjunction with local authorities and other partners; a programme of flood emergency services and other partners; a programme of flood emergency exercises at national; regional and local levels.

2. "To encourage the provision of adequate, economically, technically and environmentally sound and sustainable flood and coastal defence measures"

- *Target – National flood and coastal defence database* – develop a National Flood and Coastal Defence Database and maintain it. Provide the Environment Agency with information on flood and coastal defence assets that are the responsibility of the operating authority. Reach agreement with the other operating authorities on the means by which private defences will be identified and incorporated into the database. Provide timely information from the database to other operating authorities to fulfil their obligations.

- *Target – Flood defence inspections and assessment of flood risk* – ensure a programme is in place for the regular inspection of all the flood defence assets included in the database and main rivers and critical ordinary watercourses.

- *Target – Coast protection inspections and assessment of coastal erosion risk* - ensure that a programme is in place for the regular inspection of all coast protection assets included in the database, including those which are in private or other ownership.

- *Target – Shoreline Management Plans (SMPs)* – have in place a programme for completing strategy plans necessary to implement SMPs; and updating SMPs in accordance with DEFRA guidance.

- *Target – Biodiversity* - when carrying out flood and coastal defence works aim: to avoid damage to environmental interest; to ensure no net loss to habitats covered by Biodiversity Action Plans; and to seek opportunities for environmental enhancement. Report to the Environment Agency on all losses and gains of habitats covered by Biodiversity Action Plans as a result of their flood and coastal defence operations.

- *Target – Water Level Management Plans (WLMPs)* – in partnership with English Nature, complete WLMPs in European sites and in other SSSIs. Have in place a programme for implementing and reviewing WLMPs.

- *Target – Coastal Habitat Management Plans (CHaMPs)* – Identify sites where a CHaMP is needed and produce a programme for their completion.

3. "To discourage inappropriate development in areas at risk from flooding and coastal erosion"

- *Target – Development in areas at risk of flooding* – Report to DEFRA on those local authority development plans upon which the Agency have commented, identifying plans which do, and do not, have flood risk statements or policies and the Agency's response to planning applications; the Agency sustained objections on flood risk grounds; and final decisions, either by the LPA or on appeal, were in line with, or contrary to, Agency advice.

- *Target – Development in areas at risk of coastal erosion* – Report to DEFRA on local authority development plans identifying the extent to which they contain coastal erosion statements and reflect the assessed risk of coastal erosion as set out in *inter alia* Shoreline Management Plans and planning applications where coastal erosion was a material consideration and any conflicts between the final decision, either by the LPA or on appeal, with the assessed risk of coastal erosion.

- *Target – IDB Administration and Membership* – produce and distribute to IDBs guidance on the means by which efficiency can be improved through amalgamations and consortia; and ensuring that relevant interests are reflected in membership of Boards

3.5.3 The UK Biodiversity Action Plan

The UK Biodiversity Action Plan was launched in 1994 following the Earth Summit in Rio in 1992 the overall aim of the plan is: -

"To conserve and enhance biological diversity within the UK, and to contribute to the conservation of global biodiversity through all appropriate mechanisms"

In order to achieve this aim a number of individual species and habitat action plans have been produced in order to protect the most threatened and endangered species/habitats in the UK. In order to implement the action plan successfully Local Biodiversity Action Plans have been produced which reflect the value of local people and which are based on the range of local conditions and thereby cater for local distinctiveness.

3.6 Regional Statutory Level

3.6.1 Regional Planning Guidance

(a) Regional Planning Guidance for the South West

Regional Planning Guidance for the South West (RPG10) was issued by the Secretary of State in 2001 replacing the previous 1994 guidance. It retains the four underlying themes that express Central Government's four objectives for sustainable development at a regional level:

- Protection of the environment
- Prosperity for communities and the regional and national economy;
- Progress in meeting society's needs and aspirations; and
- Prudence in the use of resources.

(b) Regional Planning Guidance for the South East

Regional Planning Guidance for the South East was issued in 2001 by the Secretary of State for Environment, Transport and Regions and covers the period up to 2016, setting the framework for the longer term future of the region. The guidance supersedes the Regional Planning Guidance for the South East issued in March 1994, which covers the period up to 2011. The Guidance also retains the four underlying themes that express Central Government's four objectives for sustainable development at a regional level (see above).

3.6.2 The Bournemouth, Dorset and Poole Structure Plan, 2001

The Dorset Structure Plan and associated policies ensure that the consideration of development issues and the sustaining of coastal and marine resources, set out in the RPG 10 document, will be fully integrated. As these are required to take into account national and regional policy advice, the interpretation of such advice

should reflect local circumstances where appropriate and in turn provide the context for individual local areas.

The Bournemouth, Dorset and Poole Structure Plan, covering the period up to 2011 was adopted by the three authorities in 2000 following an examination in public held in 1996 and publication of modifications in 1998 and 1999.

Table 3.2 Bournemouth, Dorset & Poole Structure Plan – Relevant Policies

Policy	Title	Description
TOU A	Tourist/ recreation development	Development of new chalet, caravan or tent sites will be restricted within the Heritage Coast & subject to rigorous examination in AONBs
TOU B	Tourism attractions	Development for tourism & recreation should be encouraged where it contributes to regeneration and/or extension of the tourist season.
CF C	Countryside Recreational facilities	Provision should be made for the development of countryside recreational facilities if compatible with character of rural environment, accessible to main centres of holiday and residential populations & reduce pressure on sensitive areas
CF D	Facilities for water-based recreation	At coastal resorts make provision for development of new facilities for marine recreation subject to assessment of impact on marine environment.
TRA V	Port facilities	Port facilities at Poole should be improved subject to safeguarding the ecological value of the harbour and its use for recreation
ENV A	Development in SACs or SPAs	Proposals for development which may adversely effect the integrity of a candidate or designated areas will only be allowed if there is no alternative solution or there are reasons of overriding public interest
ENV B	Development in SSSIs or NNRs	Development proposals should only be allowed if it is evident that the benefits arising clearly outweigh intrinsic nature conservation/scientific value of the site
ENV C	Development in SINCs or RIGs	Development proposals which may adversely affect such sites should only be allowed if evident that the local benefits arising from the development outweigh the intrinsic nature conservation/scientific value of the site.
ENV D	Development in Protected faunal areas	Proposals for development which may result in harm to specially protected species or habitats will be allowed only if there is no alternative solution and if there are reasons of overriding public interest.
ENV E	Re-establishment of habitat loss	The bio-diversity of Dorset will be maintained /enhanced through re-establishment of lowland heath & replacement of appropriate habitats damaged /lost through development

Policy	Title	Description
ENV F	Maintenance of landscape quality	The quality and diversity of the Dorset landscape should be maintained and enhanced through by enhancing natural and man-made features /respecting characteristics of the local/encouraging sensitive design in the built environment.
ENV J	Protection of the undeveloped coast	Within Heritage Coast priority will be given to conserving natural beauty, biodiversity & geology whilst enabling public access, enjoyment & appreciation of the coast
ENV K	Coastal erosion/ flooding	Development should not be allowed in areas where coastal erosion, flooding, sea level rise and increased storminess are likely to affect it during its lifetime
ENV L	Coast protection/ sea defence criteria	Development essential for sea defence/coast protection should take account of the environmental significance of its proposed location & its effect on natural processes
IMP B	Land stability	When preparing local pans & determining applications for development, the local planning authorities should take into account the stability of the site & its surroundings

Note: TOU - Tourism; ENV - Environment; TRA - Transport; CF - Community Facilities; IMP – Implementation

3.6.3 *The Hampshire County Structure Plan*

This is relevant for policies covering the length of coast from Hurst Spit to Chewton Bunny. The Hampshire Structure Plan includes a number of section devoted to coastal issues, emphasising the need to preserve a balance between commercial and recreational activities and the protection, conservation and enhancement of the environment. The plan also stresses the importance of encouraging the current regeneration of the urban coast to bring useful activity and improved environmental quality back into run-down areas, through investment in suitable redevelopment schemes. These specific coastal policies and others addressing land use issues of relevance to the SMP are listed in Table 3.3.

Table 3.3 Hampshire County Structure Plan Review - Relevant Policies

Policy	Title	Description
C1	Conservation of the countryside	Delineation of countryside areas through day to day development control to promote the conservation and enhancement of the countryside and avoid or minimise development are of importance in other policies and proposals in the Plan
***C4**	Development on the built up coast	On the built-up coast delineated in local plans, permission may be granted for development which is consistent with the criteria outlined in the

Policy	Title	Description
***C5**	Development on undeveloped coast & estuaries	Development will not be permitted except within areas allocated for port development and associated infrastructure, if it detracts from the landscape, wildlife or historic value of the area concerned.
***C6**	Provision of new moorings	Provision of new moorings may be permitted on the built-up coast provided that the proposed development does not have a detrimental effect on the townscape, seascape or areas of nature conservation and archaeological importance; the amenities of local residents; other recreational users; or commercial port operations; and will not detract from the criteria outlined in the Structure Plan.
***C7**	Land Reclamation	Permission will not be granted for development involving the reclamation of land from the sea or the reclamation, excavation or permanent flooding of intertidal areas of conservation value unless the criteria outlined in the Structure Plan are met
E2	Flood Risk	Development, other than change of use, which would be at direct risk of flooding or likely to increase risk of flooding elsewhere will not be permitted. Within defined flood risk areas any development permitted should incorporate flood containment or public safety measures justified on that account. New development, or the extension or intensification of existing
E7	Development in / adjacent to AONBs	Any development which would have a significant adverse effect on the natural beauty, character and quality of the landscape will not be permitted.
E10	SPA, SAC, Ramsar, SSSIs and NNRs	Development likely to harm the nature conservation interest of such designated conservation areas will not be permitted, unless the need for development is shown to outweigh the adverse impact, taking into account the protection given to the designation concerned in legislation or government guidance.

Policy	Title	Description
E11	SNCIs	Development likely to have an adverse impact on SNCI's will not be permitted unless the LPA's are satisfied the need for the development outweighs that impact. Where development is permitted the LPA's will need to be satisfied that sufficient provision is made to minimise the damage and provide appropriate compensatory measures

Footnote * Specific coastal policies

C4 On the built-up coast delineated in local plans permission may be granted for development which:

- is consistent with other policies in this Plan; and

- is designed to a high standard having regard to views from land and sea taking account of retaining or opening up views of the water and has particular regard to the effects of the proposal on the townscape, landscape and seascape; and

- incorporates public pedestrian access to the water where practical and in a form suited to the site and the requirements of the proposed development; and

- has particular regard to the effect of the proposal on nature conservation;

except that development not requiring access to the water may be refused permission if:
(a) the site is specially suited by reason of location, facilities or other features to use for purposes requiring access to the water; and
(b) there is an insufficiency of sites to meet realistically foreseen requirements in the general locality.

Other than for exceptional social, economic or health reasons permission will not be granted for development on intertidal areas of nature conservation value.

3.7 Regional Non-Statutory Level

3.7.1 Shoreline Management Plan

The need to develop strategic management plans for the coastline of England and Wales is recognised and the first step has been to produce a series of Shoreline Management Plans based on recognised cells and sub-cells of sediment movement around the coast. The Shoreline Management Plan covering the majority of this Study Area is Sub-cell 5F, however there is an overlap with the West Solent and Southampton Water SMP from Chewton Bunny to the eastern boundary of this study area at Hurst Spit.

The aim of these plan documents is to increase awareness of shoreline defence issues in relation to other coastal uses, and present an analysis of coastal processes, resources and options for defence. The SMP areas are divided into Management Units, reflecting zones where a coherent management approach is required in terms of coastal protection and opportunities for realignment.

There are 13 coastal process units falling within the Christchurch Bay Study Area, that are sub-divided into smaller management units. The specific policies recommended for each section of coast are summarised in Table 3.4.

Table 3.4 Summary of Shoreline Management Policies in the Study Area

Unit Code	Management Unit	SMP Policy
CHB1	Harbour Side of Mudeford Spit	Selective Hold the Existing Line (short and long term)
CHB2	South Side of Christchurch Harbour	Do Nothing (observe and monitor at Double Dykes) (short-term) Do nothing (limited intervention at Double Dykes) (long-term)
CHB3	Stanpit and Grimbury Marshes	Do nothing (observe and monitor) (short-term) Selective Retreat the existing line (subject to future survey results) (long-term)
CHB4	Mudeford Town Frontage	Hold the Existing Line (short and long term)
CHB5	Mudeford Quay	Hold the Existing Line (short and long term)
CBY1A & CBY1B	Hengistbury Long Groyne to tip of Mudeford Sandbank	CBY1A: Retreat the Existing Line (short and long term) CBY1B: Hold the Existing Line (short and long term)
CBY2	Mudeford Sandbank to Chewton Bunny	Selectively Hold the Existing Line (short and long term)
CBY3	Chewton Bunny to start of defence at Barton on Sea	Retreat the Existing Line (short term) Selectively Hold the Existing Line (long term)
CBY4	Start of defence at Barton on Sea to Barton Golf Course	Hold the Existing Line (short and long term)
CBY5	Barton Golf Course to Hordle Cliff	Do Nothing (observe and monitor) (short term) Selective Retreat the Existing Line (long term)
CBY6	Hordle Cliff to Hurst Spit	Hold the Existing Line (short and long term)
CBY7	Hurst Spit	Hold the Existing Line (short and long term)

3.7.2 Hampshire Local Transport Plan

This document is the first full local transport plan and replaces the previous annual Transport Policies and Programmes. The Plan proposes a five year programme of transport infrastructure and services to cover the period 2001/2002 to 2005/2006.

The overall aim of the Plan is to provide a safe, reliable, efficient, better maintained and fairer transport systems by the 21st Century. A key feature of the Plan its policy led strategy with greater emphasis on improving travel choices, encouraging more use of public transport, cycling and walking.

3.7.3 Dorset Local Transport Plan

The Dorset Local Transport Plan sets out a strategy for transport in Bournemouth, Poole and Christchurch over the next five years, 2001 to 2006. The Local Transport Plan covers all forms of transport, including those that are provided by the public and private sectors and by communities. Its central theme is one of partnership and making best use of existing and future resources in a sustainable way. It recognises that a comprehensive integrated approach needs to be adopted in order to improve the way we use our transport system to help resolve wider issues. This involves including the wider community and the private sector in partnerships.

The main aims of the Plan are to:

- Provide quality alternatives to the private car

- Introduce traffic claming schemes on residential roads affected by through traffic

- Reduce journey times for 'all uses' by improving EXISTING traffic control systems and providing bus priority measures. Development funding for these measures along strategic corridors

- Press for reinstatement of A31 to Poole Link Road in the Trunk Road programme

3.7.4 Dorset Coastal Pollution Clearance Plan

This document is designed to assist with those dealing with oil spills on the Dorset coast. The plan and details of access points for emergency response have been detailed.

3.7.5 Hampshire Coastal Oil and Chemical Pollution Plan

The coastal oil and chemical pollution plan is maintained by the Emergency Planning Unit of Hampshire County Council.

3.7.6 Dorset Coast Strategy

The Dorset Coast Strategy is a document which aims to set out a consensus view on the way in which the members of the Dorset Coast Forum work together to improve management of the Dorset Coast.

The tasks of the Strategy are:

- establishing integrated policy
- establishing guidelines for more detailed coastal management plans
- identifying strategic opportunities for resource development
- engaging and developing participation of a wide range of partners
- developing a co-ordinated approach to strategy implementation
- identifying solutions for the sustainable coastal development and management
- evaluating success and the reporting of results throughout Europe.

3.7.7 A Strategy for Hampshire's coast

A Strategy for Hampshire's Coast was published in June 1991. The purpose of the strategy is to provide a framework for the planning and management of Hampshire's Coast. The main elements of the Coastal Strategy are:

(a) The Council will press Central Government to:
(i) acknowledge the special character and role of the Solent; and
(ii) promote changes to legislation and administration responsibilities to secure a more integrated approach to coastal planning and management.

(b) The County Council will work with other agencies to achieve better management of the coast, particularly with regard to the use of recreational areas

(c) The Council will promote the following policies:
(i) prevent the development on the open parts of the coastline

(ii) guide development which requires a coastal location, including tourist facilities, to existing developed areas

(i) safeguard waterside sites in built-up areas, which have access to the water, from changes to uses which do not require such access
(ii) protect sites important for wildlife development
(iii) normally resist reclamation proposals
(iv) conserve buildings and sites of historic interest in an appropriate setting
(v) give high priority to conserving and enhancing the coastal landscape
(vi) resists the development of new marinas
(vii) prevent development in areas which are at risk from flooding or erosion;
(viii) improve access to the coastline, provided that it would not detract from the environment.

(d) The Council will:
(i) Co-operate with the authorities responsible to improve the quality of a strategy for sea defences and coast protection
(ii) Support efforts to survey and protect maritime archaeological sites and
(iii) Continue to acquire and manage coastal sites for conservation or informal recreation, when opportunities arise.

3.7.8 Hampshire Landscape Strategy

"The Hampshire Landscape: A Strategy for the Future" was published in August 2000 by Hampshire County Council and effectively sits beside the County Structure Plan and sets out the Councils ambitions for the way the countryside should be managed. It is essentially a strategic land management plan based on the 1993 county landscape assessment. The main aims are:

- To maintain and enhance the distinctive sense of place and great diversity of Hampshire's different landscapes;

- To support and complement the aims of the Biodiversity Action Plan for Hampshire;

- To support planning policies and guide policy decisions ensuring that new development recognises and respects the character of the landscape including scarce and irreplaceable landscapes.

The strategy describes 11 distinctive Character Areas each with its own particular sense of place, corresponding broadly with the Character Areas identified by the Countryside Agency in their landscape character assessment of England. It sets out issues and guidelines, with setting out a framework for action, and the mechanisms through which implementation can be achieved.

Issues in the plan have been split into three tiers, wider environmental issues, countywide issues and character area issues. Those of relevance are reproduced below:

Wider environmental issues

- Climate change – Hampshire's low lying coastal landscapes are likely to be increasingly at risk from rises in sea level and more frequent storm surges which may overtop some existing sea and tidal defences. The shingle bank at Hurst Spit which acts as a barrier protecting the western approach to the Solent and Keyhaven saltmarshes needed extensive reinforcement and restoration after severe storm damage during the 1990s.
- Soft coastal cliffs at Barton on Sea and Milford are also at risk from erosion.
- The County's internationally important coastal wetland landscapes, and their valuable wildlife habitats such as mudflats and saltmarshes are likely to be 'squeezed' between existing sea defences and rising sea water levels.

Character area issues identified include the following:

- Lack of appropriate management of coastal grazing marsh;
- Threats to mudflats, saltmarsh and other coastal habitats from development, sea defence works, recreational uses and climate change. There are other issues highlighted for the open and enclosed coastal plain relating to agriculture, woodland and trees and hedgerows.

The implementation of guidelines are set out in tabular form, There are four key guidelines that apply to the coast, one of which is particularly pertinent:

- Encourage the maintenance and for the overall diversity of character across the whole county and reinforce the distinctive sense of place of each character area and landscape type set out under the character area guidelines;

- Encourage the continuation of the natural processes of coastal erosion where practicable, including geological features such as cliffs and other coastal defence features, allowing the creation or extension of coastal habitats such as mudflats, saltmarsh and grazing marsh.

3.7.9 Dorset Biodiversity Strategy

A number of draft topic action plans have been produced for the Dorset Biodiversity Strategy including one covering marine and coastal management. The aim of the plan is to assess the extent and effectiveness of current work in enhancing biodiversity within marine and coastal issues, and to guide future action of the Dorset Biodiversity Initiative and other organisations.

Four issues have been identified affecting the biodiversity, notably:

- Pollution and contamination of the marine environment;
- Marine and coastal conservation (issue of coastal squeeze);
- Commercial fisheries;
- Sustainable development of the coastal zone.

Objectives and actions of relevance to the strategy are summarised in Table 3.5.

Table 3.5 Relevant Policies in Dorset Biodiversity Strategy

Issue	Objective	Action
Coastal and marine conservation	More proactive marine and coastal conservation	Target and promote agri-environment schemes to increase and establish new semi-natural habitats behind the high water mark and cliff line to mitigate coastal squeeze (especially cliff top grassland)
		Seek opportunities for coastal retreat to compensate for losses of intertidal habitat
	Increase Knowledge of marine habitats and species	Support the collation, interpretation and publication of seabed maps outlining topography and biotopes.
		Develop survey and monitoring programme for priority habitats and species to include maerl, seagrass beds, *Sabellaria* species.
	Increase marine awareness	Promote use of marine database and seabed maps as a planning tool by all sectors
Coastal development	Seek to minimise habitat loss and disturbance to wildlife	Seek to enhance biodiversity through the design of coastal defence schemes and developments by bringing biodiversity requirements into the early planning stage

3.7.10 Hampshire Coastal Biodiversity Action Plan

The Hampshire Coastal Biodiversity Action Plan was first published as an Introductory Document in 1998. The first edition of the Action Plan was published in 2000 and covers the period up to 2005, when it will be fully reviewed and updated. The Plan is one of many Habitat, Species and Topic Action Plans being prepared by the Hampshire Biodiversity Partnership. The Plan includes issues and factors affecting the habitats, and current actions relating to the following:

- Shingle and Sand-dunes
- Saltmarsh
- Coastal Wet Grassland
- Mudflats and Eelgrass Beds
- Saline Lagoons
- Maritime Cliffs
- Coastal

3.7.11 Towards a Geological Conservation Strategy for Dorset, 1998

The geological conservation priorities for coastal defence within this document are expressed as follows:

- Cliff exposures and geomorphological features should be maintained through erosional processes which fashion them;

- Natural cycles of sediment movement should be understood and respected;
- The naturalness of coastal features should be respected and conserved.

3.8 Statutory Local Government Level

The Local Plans prepared by individual Operating Authorities in Dorset and Hampshire are prepared in general conformity with the Adopted Policies and Proposals of the respective Structure Plans. The policies and proposals of each respective Local Plan develop the overall objectives of the Bournemouth, Dorset and Poole and the Hampshire Structure Plans respectively.

Whilst circumstances differ around the county, the general principles to conserve the coast and countryside and safeguard the environment apply throughout. Once a Local Plan is adopted, it will supersede all existing Local Plans within the district with the exception of the County Minerals and Waste Plan. It will also form part of the Development Plan for the area. The Development Plan for each local authority commonly will comprise the Structure Plan, the Minerals and Waste Local Plan and the Adopted Local Plan. Separate supplementary planning guidance is then adopted and issued to provide detailed clarifications and explanations of particular aspects of development guidance. The strategy has a role in providing specific advice for each local authority on future coastal defence needs and coastal development. This will amplify existing statutory policies and proposals where necessary. Equally so, the strategy results can be used to update or change existing policy should this be deemed applicable in the future.

3.8.1 Bournemouth District Wide Local Plan

The Bournemouth District Wide Local Plan covers the whole of the administrative area of Bournemouth Borough Council. The Borough is currently followed by three local plans;

- The Town Centre Local Plan (adopted August 1988)
- Boscombe Local Plan First Review' (adopted January 1995)
- Bournemouth Borough Local Plan' (adopted March 1995)

The Bournemouth District Wide Local Plan will supersede all these Plans and will form part of the development plan covering the Borough. This Plan runs in conjunction with the Dorset County Structure Plan and consequently has an end date of 2011. Only a small section of coastline is within Bournemouth Borough in this study area.

3.8.2 Christchurch Local Plan

The Christchurch Local Plan was adopted as a statutory document in March 2001 and initially covers the period up to 2011. The Plan has gone through various consultations and reviews since June 1995, when the first Consultative Draft was published for public consultation. There is a number of policies relevant to this Plan, the most important are summarised in Table 3.6.

Table 3.6 Relevant Policies in Christchurch Local Plan

Policy	Title	Description
ENV7	Flood Plain Dev., Protection and Sea Defences	Permission will not be granted for new development including the raising of land levels where dev. is likely to impede the flow of water or increase the risk of flooding.
ENV9	Coastal Planning & Management.	Within the coastal area development will only be permitted provided that the criteria outlined in the Local Plan are satisfied.
ENV11	SSSIs	Proposals for development likely to adversely affect an SSSI will not be permitted unless the reason for dev. Clearly outweighs the nature conservation or scientific interest of the site.
ENV12	SPAs, Ramsar sites, SAC's	Proposals for dev. that, either individually or in combination with other projects, are likely to have an adverse effect on potential or designated sites will not be permitted unless they meet the criteria outlined in the Plan.
ENV13	SPAs, Ramsar sites, SACs	Proposals for dev. on land supporting a specially protected species or its habitat will not be permitted unless the reasons clearly outweigh the need to safeguard the site.
ENV14	SNCIs	Development likely to have an adverse effect on a Site of Nature Conservation Interest (SNCI's) will only be permitted if it meets the criteria outlined in the Plan.
L1	Protection of Existing of Recreation, Open spaces and Public Open Spaces	A proposal for development that would lead to the loss of any or part of any public open space will not be permitted unless it meets the criteria outlined in the Local Plan.
L5	Highcliffe Coastal Park	The grounds of Highcliffe Castle shall remain as public open space maintaining the existing public access.
L17	Riverside and Harbour Public Access	Development of currently undeveloped riversides and harbour banks will not be permitted where it would be detrimental to the character and visual qualities of the waterside.
L18	Waterside Recreation	Proposals for new or extended boating facilities, moorings and jetties at Christchurch Harbour will not be permitted unless they meet the criteria outlined in the Plan.

3.8.3 Dorset Minerals and Waste Local Plan

The Dorset Minerals and Waste Local Plan was adopted in April 1999 and covers the area of three minerals and waste planning authorities; Dorset County Council, the Borough of Poole, and Bournemouth Borough Council. These three Councils

have recently published a 'pre-deposit consultation' on waste planning issues, which represents the first stage in the review of the waste section of the adopted Plan. The revised Plan will set out the land use policies and proposals for the handling, management and disposal of waste in Bournemouth, Poole and Dorset.

3.8.4 Hampshire, Portsmouth and Southampton Minerals and Waste Local Plan

The Hampshire, Portsmouth and Southampton Minerals and Waste Local Plan became operational in 1998 and replaced the Hampshire Minerals Local Plan, 1987. The purpose of the Plan is to set out detailed policies and guidance on minerals and waste development and provides a basis for the three Councils to make decisions on planning applications and a greater element of certainty regarding the future location of minerals and waste development.

3.8.5 New Forest District Local Plan

The New Forest District Local Plan is part of the statutory Development Plan for New Forest District and replaces previously adopted Local Plans that covered the District. The broad aims of the plan reflect the strategic policies of the Hampshire County Structure Plan (1993). The Plans three main elements are:

- Development restraint
- Meeting local needs
- Conserving and enhancing the environment.

3.9 Local Non-Statutory Level

In addition to statutory documents, the planning policy framework is complemented by a series of non-statutory plans giving further guidance on the development, or management of a particular coastal location or resource. Many such non-statutory plans have been prepared for Dorset and Hampshire. The plans relevant to the strategy are outlined in the sub sections below.

3.9.1 Local Environment Agency Plans

Three Local Environment Agency Plans (LEAPs) cover the study area. These are the Dorset Stour LEAP, the New Forest LEAP and the Hampshire Avon LEAP.

3.9.2 Dorset Stour LEAP

A consultation report was produced in January 1997, containing a detailed description of catchment use, activities and state of the environment. Issues were also identified in management of the catchment and options/actions for resolution of these issues determined. Following a period of consultation an action plan was produced in 1998, the progress of which has been reviewed on an annual basis. The second annual review reporting on progress from January 1999 to December 1999 reviews the 87 actions originally identified for the Dorset Stour in addition to the 55 new actions identified since initial production of the LEAP. Those of most relevance to this study are:

- Impact of sewage and sewerage on water quality

- Impact of development on urban rivers
- Contaminated land
- Maintaining our rivers and flood defences
- Potential effects of climate change on the environment
- Loss and decline in the value of riverine and floodplain habitat
- Protection of ecologically important habitats and species
- The development of recreation

3.9.3 Hampshire Avon LEAP

A Consultation Draft report was published in December 1998, which gave an opportunity for external organisations and the public to comment on environmental problems. Responses from that report were collated to produce the Plan for 2000 to 2005. Following the consultation period and a number of key initiatives, several changes have been made to the format of the LEAP. Each year the progress of the actions within the Plan are reviewed. The annual review also identifies additional actions needed to maintain progress. Those of actions of most relevance to this study include:

- Enhancing biodiversity
- Impact of public water supply abstractions on the Hampshire Avon
- Constraints on fish populations
- Loss or decline in the value of the floodplain habitat
- The potential impact of development on the environment
- Impact of sewage and sewerage on water quality
- The effect of nutrients on the catchment area
- The impact of land use of water quality
- Emergency response to fluvial and tidal flooding
- Need to protect features of archaeological interest
- Lack of recreational opportunity within the area
- Dealing with the potential effect of climate change on the environment

3.9.4 New Forest LEAP

This Plan is in the third stage in the process for the New Forest area and follows on from the Consultation Report published in April 1998. The Plan also sets out a programme of actions, which the Environment Agency and partner organisations intend to carry out over the next five years. Progress will be monitored and reported annually. Actions of most relevance to the study area include:

- Addressing Climate Change
- Enhancing biodiversity
- Managing Our Freshwater Fisheries
- Delivering Integrated River Basin Management
- Managing Water Resources

3.9.5 A Tourism and visitor management strategy for the New Forest District

Main attraction of the destination is the New Forest, however, the coast and Avon valley have considerable potential. "Unlocking the potential of the Avon Valley and coast and their role in providing an alternative to the New Forest are key themes of the strategy." The NFDC local plan contains detailed sections on tourism, which provided the planning framework and policies for this strategy.

3.9.6 New Forest District Coastal Management Plan

Although a non-statutory document, the policies and proposals of the New Forest District Coastal Management Plan are in harmony with those of local Agenda 21, the Hampshire County Structure Plan and the New Forest District Local Plan. Those policies of relevance are for zone 1 to 4 (listed blow) and state the District Council's proposed coast protection policy in each case.

- Zone 1: Naish Farm (extends from Chewton Bunny to the western end of Marine Drive West)

- Zone 2: Barton-on Sea (extends from Naish Farm Holiday Village to the eastern end of Marine Drive East)

- Zone 3: Barton Golf Club to Hordle Cliff (extends from eastern end of Marine Drive to western end of Hordle Clifff)

- Zone 4: Milford-on-Sea (extends from eastern end of Hordle Cliff to rock armouring at western end of Hurst Spit)

B1 Geology and natural processes - Issues:

EROSION – coast of the district is subject to considerable erosion particularly at Barton on Sea, the remaining cliffs around Christchurch Bay and at Hurst Spit where a permanent breach could cause extensive flooding inland and disrupt the tidal regime of the Solent.

Human activity – mining in the last century removed material that formerly broke the force of the waves. Coastal protection works also reduce the amount of material entering the system to replenish the spits and beaches and reduce coastal squeeze.

B1 Policies: The District Council will, where possible, work with English Nature to expose and maintain important geological features; and provide educational information about coastal geology;

Work with other agencies to investigate environmentally acceptable ways of reducing rate of saltmarsh loss.

3.9.7 Hengistbury Head Management Plan

Provides a detailed history of coast protection schemes from 1670 to 1994 and sets out a number of coast protection objectives, coastal policies and management options. Provides detailed information on environmental, archaeological and conservation issues within the plan area, putting forward objectives for each and required future management.

The Plan is divided into a number of working compartments, those of relevance being 1: Cliffs; 2: Beaches; 3: New Dunes; 4: Mudeford Sandspit; 10a: Barnfield; 10b: Double Dykes; 11: Warren Hill; 14: The Batters (Zone 1); 19: Westfield and 20: Whitepits.

3.9.8 Mudeford Sandbank Beach Management Plan (April 2001)

The plan provides a basis for maintenance of the defences at an appropriate standard for the next 50 years, providing a detailed description of activities likely to be necessary during the first five years. It sets out monitoring recommendations at several levels of detail, notably routine inspection, interim assessments, periodic surveys and unscheduled monitoring. Beach maintenance activities are also described, notably sand recycling from the tip of the sandbank, profile re-grading, periodic re-distribution or recharge of basement nourishment, control of windblown sand and maintenance of rock structures.

4 Consultation

Consultation undertaken as part of the Strategic Environmental Assessment involved:

(i) Written consultation with a range of statutory consultees and local stakeholders, summarised in Table 4.1; and

(ii) A written questionnaire in which consultees were asked what they thought were the main issues that needed to be taken into account when considering future coastal defence needs. A total of 29 responses have been received to date, summarised in Table 4.2 (respondents were invited to choose more than one answer). Other comments made on Questionnaire returns have been incorporated into Table 4.1.

Table 4.1 Summary of Responses to Written Consultation

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Associated British Ports	Rhona Fairgrieve	Y	No particular concerns or issues	None on interest	
Biodiversity Project Officer	Ms Leah Mathias	N			
Bournemouth Boating Services	Mr Vincent	N			
Bournemouth Surfing Centre	Mr Clarke	N			
Bournemouth University	Prof V May	Y	Changes in cliffs, beaches and estuarine systems Public Understanding of coastal change/management/CZM training	Training materials	More creative / innovative approaches to coastal defence Better understanding of seabed changes
BP Exploration	Mr Mason	N			
British Geological Survey	Mr Arthurton	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
British Institute for Geological Conservation	Mr Paul Clasby	Y	Preservation of the geological SSSI and international stratotype of the Bartonian division of geological time The egress from Christchurch Harbour (the run) is a critical factor. Examination of any appropriate map shows that discharge of water from the harbour is not 'out to sea' but aimed inland directly at Highcliffe/Barton coast. This came 'set in stone' with the construction of Mudeford sea wall in the 1960's when erosion suddenly accelerated. A training bank east of Mudeford is worth a study. It is impossible to consider CHB1&5 in isolation from CBY1,2,3,4 and 5	Refer to SMP. Text of the paper referred to gives as the reason for writing it in 1888, that the cliffs were becoming overgrown with vegetation, obscuring the stratigraphy and warranting a re-description before the section became inaccessible under the plants – so what caused the erosion?	Preservation of the geological SSSI and international stratotype of the Bartonian division of geological time
British Marine Aggregate Producers Association		N			
British Oceanography Data Centre	Mr Tabor	N			
British Telecom	Mr Fenn	N			
CEFAS	Mrs Fiona Vogt	Y	Effect of coastline activities on microbiological quality of shellfish	Maps of shellfish harvesting areas.	The maintenance and

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
			specifically the affect of sewage discharges on the quality of shellfish. Colleagues at CEFAS Burnham have other concerns.		development of healthy, productive shellfisheries.
Centre for Ecology and Hydrology		Y			
Christchurch Angling Club	Mr Richards	N			
Christchurch BC	Steve Woolard	Y	From Dorset / Hants border at Chewton Bunny, Highcliffe to Hengistbury Head. CBC policy is to 'Hold the Line'. A breach of Double Dykes on Hengistbury Head would endanger Christchurch Town.	Beach management plan in place on Mudeford Sandbank since completion of coastal defence scheme in 2000.	Christchurch Harbour is surrounded by SSSIs, saltmarshes and low lying properties, any future defence schemes within the locality should be carefully considered.
Christchurch Boardsailing Club	Mr Sotheran	N			
Christchurch Citizen's Association	J. White	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Christchurch Local History Society	MA Hodges	Y	Archaeology – including maritime archaeology and Christchurch Harbour history Tourism-sea side, main local economy. Risks of pollution from oil extraction. Erosion of coast at Nash Farm between Chewton Bunny and Barton on Sea is outflanking the sea defences at Chewton and Highcliffe. Whatever is done in Poole Bay moves east along the coast to effect Christchurch Bay. Dredging of Dolphin Bank effects Christchurch and Poole Bays.	Include Dorset Coast Forum in consultation Book entitle 'The Smuggler: No Gentleman' gives details of landing places in Poole Bay. Consult with Mudeford Fisherman's Assoc., Royalty Fishery (Avon), Throop Fishery (R Stour) and Salmon and sea trout	Tourism – main economic activity on this coast requires access and management. The latter is essential to preserve and protect the environment including archaeology. What happens to Hengistbury Head and what happens in Poole Bay affects Christchurch Harbour and Christchurch Bay
Christchurch Rowing Club	Mrs Fox	N			
Council for the Protection of Rural England	Mr Kent	N			
Country Land and Business Association	Mr Thompson	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Country Land and Business Association	Ms Busby	N			
Countryside Agency	Ms Fish	N			
Countryside Agency (SE)	Fiona Fraser Boulton	Y	The CA has no further comments to those made in 1998.	New Countryside and Rights of Way Act 2000 which may have a bearing on certain aspects of the Strategy. Leaflet enclosed. The CA is in the process of developing maps of all open countryside and registered common land. Draft maps of the SE Area are available for viewing, details on www.countryside.gov.uk. Character Area 131: New Forest (Volume 7 of Countryside Character Series). Can be obtained from Countryside Agency publications.	Unchanged from SMP Given that there is no AONB Joint Advisory Committee for the South Hampshire Coast AONB, close liaison with Hampshire CC and the respective District Council's over the more detailed aspects of the strategy is strongly urged.

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
CREST(Coastal Recreation, Environment and Shoreline Technology)	Angus Reith & Sarah Hams	Y	Need for a holistic approach. Risk assessment is needed and this. needs to be transparent and open	Can supply various academic studies on MOA's (Multi Purpose, Offshore Adjustable)	
Crown Estate Commissioners	Mr Morrison	N			
Defence Estate Organisation	Sir / Madam	N			
DEFRA	Mr George	N			
DEFRA	Mr Horne	N			
DEFRA	Mr Bushell	N			
DEFRA	Mr Render	N			
DEFRA	Mr Beard	N			
DEFRA	Mr Smith	N			
Dorset Archaeological Unit	Ms Pinder	N			
Dorset Bird Club		N			
Dorset Coastal Forum	Prof D Brunsden	Y	Understanding If the system is understood, loss and damage to natural environment should not be a problem		That decisions be based on a real knowledge and understanding of the systems

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Dorset County Council – Environmental Services Dept	Tim Badman	Y	• Retention of natural processes where possible. Holistic, long term view based on understanding of processes and geomorphological response. ALL issues but those listed in particular		Support implementation of Dorset Coast Strategy
Dorset CPRE	J.C.W. Lock	Y	Landscape Value Any proposed defences which affect the visual landscape		
Dorset Environmental Record Centre	Ms Steel	N			
Dorset Geologists Association	Mr JB Chaffey	Y	Geological exposures used on field trips and for teaching purposes Geomorphological features		Maintenance of existing exposures, particularly at Barton on Sea. Allowing natural features to evolve with as little human interference as possible. Monitoring of entrance to Christchurch Harbour and developments on

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
					Hurst Castle Spit.
Dorset Ramblers Association	Area Secretary	N			
Dorset Wildlife Trust	Bridgett Betts	Y	Intertidal and inshore regions	Dorset central marine database, providing species and habitat data is now located and managed at the Dorset Environmental Record Centre Dorset marine literature database provides references and locations of where documents are held – searchable database at www.dorsetcoast.com	More marine information needs to be taken into consideration. There is very little data available on Christchurch Harbour and Bay. This is something that needs to be addressed.
Engineering & Physical Sciences Research Council	Mr Lomas	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
English Heritage (South East Region)	Graham Steaggles	Y	The historic environment in its widest sense. Archaeological remains at the coast are poorly represented as limited archaeological survey has been undertaken in the coastal zone and many sites undiscovered. Soft coastlines of south and east and coasts of major estuaries are complex and vulnerable. Combined effects of SLR and salt marsh erosion are resulting in rapid loss of sites in such situations. Also loss of archaeological sites in cliff top locations, shipwrecks and hulks in intertidal / subtidal situations	Policy statement on Coastal Defence and the Historic Environment Contact at Swindon, Kemble Drive, Lindsay Jones 01793 414700	The coastal, intertidal and marine zones of Poole Harbour represents important prehistoric, roman and medieval, maritime cultural landscapes. Need to ensure adequate and properly interpreted information is integrated into all stages of the planning process. A detailed archaeological appraisal is the most appropriate response (see letter for details).
English Heritage (South West Region)	Duncan Coe	Y	Historic environment is clearly threatened by coastal erosion and the creation of coastal defences, however, understanding of historic trends and events can lead to a	Continuing development of datasets both for the terrestrial and maritime environment	The archaeological record contains a large amount of data about changing patterns

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
			better understanding of erosion activity. The Christchurch area contains some very important archaeological sites, including Hengistbury Head, one of the most important prehistoric sites in Southern England, which need to be assessed and where appropriate protected.		of activity (both natural and human) along our coasts. This data should be utilised in the development of future trend models and the strategies developed and address issues identified.
English Nature (Dorset Team)	Dr Susan Burton	Y	Hampshire EN team lead on Christchurch Bay so will feed any comments through them.		
English Nature (Hampshire Team)	Ms Bayliss	N			
Environment Agency	Mr Chase	N			
Farming and Wildlife Advisory Group	Mr Sheaves	N			
FPD Savilles	Sir / Madam	N			
Friars Cliff Resident's Association	Mr Jacobs	N			
Government	Ms Price	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Office for the South East					
Green balance	Mr Bates	N			
Hampshire & Isle of Wight Wildlife Trust	Dennis Garratt	Y	All aspects are of interest / concern to this Trust. In this area CBY7 is an area that will directly impact upon wildlife reserves / areas of high wildlife interest managed by the Trust and Hampshire CC. Public and 'commercial' understanding of the LT implications of SLR / coastal squeeze		The Trust is very much in favour of natural / managed retreat where possible / applicable

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Hampshire and IOW Trust for Maritime Archaeology	Garry Momber	Y	Maritime archaeology (see enclosed Annual report and cover letter) Importance of submerged • landscapes (coastline has been a preferred human occupation habitat for over 10,000yrs) • Recent work by trust has helped to locate a no of these landscapes • Similar deposits undoubtedly remain in Poole and Christchurch Bays (deposit l'd by Velegrakis (1999) near the mouth of Poole Harbour. Threat from development	A decade of diving, delving and disseminating (2001), Sparks B, Momber G and Satchell, J. Our changing coast: a survey of the intertidal archaeology of Langstone Harbour (2000). Contributor to Allen, M &Gardiner J. CBA Research Report 124. Drowned and deserted: a submerged prehistoric landscape in the Solent. I.J.N.A (2000) 29.1:86-89 Late Quaternary Evolution of the upper reaches of the Solent River, Southern England, based upon marine geophysical evidence (1999)Velegrakis, A.F; Dix, J.K; Collins, M.B. Journal of the Geological Society, London. 156: 73-87. European LIFE Project, Coastal change, climate and instability (1997-2000).	Responsibility for marine archaeology currently rests with Dept for Culture, Media & Sport. National Heritage Bill being considered by parliament would pass responsibility to English Heritage extending remit to 12 miles offshore. If this happened, consideration of underwater heritage likely to become mandatory

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Hampshire County Council	Mr Inder	N			
Hampshire County Council - archaeology	Ms Alessandra Holly	Y	No Comments		
Hampshire County Planning Office	David Hopkins	Y	Hurst Castle is a nationally important archaeological site and as such should be an important influence on the chosen approach to that stretch of coats. The advice and opinion of		
Hengistbury Head Warden	Mr Hollaway	N			
Heritage Coast Ranger	Mr Brokenshire	N			
Herpetological Conservation Trust	Mr Corbett	N			
Highcliffe Residents' Association	I.L Ewence	N			
Highcliffe Sailing Club	Mr Hand	N			
Hoburne Ltd	Mr Legge	N			
House of Commons	Mr Atkinson MP	N			
House of Commons	Mr Bruce MP	N			
House of Commons	Mr Chope MP	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
House of Commons	Mr Hughes MP	N			
House of Commons	Mr Swayne MP	N			
House of Commons	Mr Syms MP	N			
House of Commons	Mr Butterfill MP	N			
Hurn Sub Aqua Club	Mr & Mrs Holt	N			
Hydraulic Research Ltd (Wallingford)	Sirs	N			
Hydrographic Office	Mr RF Cavill	Y	Changes in alignment of coastline	Wreck information	To be kept informed of any changes in the alignment of the coastline.
ICE Library (London)	Sirs	N			
Joint Committee of Christchurch Residents' Associations	Mr West	N			
Longdown Management Ltd	SMJ Barker	Y	Hordle Cliff, Milford on Sea	No significant scientific data	Reduction of cliff erosion and loss of agricultural farm land

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Lymington and Pennington Town Council	Mr R .E. Jones	Y	East of Hurst Spit – Lymington river estuary. The Solent Forum and the Lymington Harbour protection committee do not appear to have been involved not NFDC coastal group. All work done to the west is bound to have an effect on the eastern end of the Solent.	The erosion of the saltmarshes at the Lymington Keyhaven end of the Solent. Surprised that Southampton Oceanography Dept has not been involved.	Hengistbury Head needs more protection in view of danger to Double Dykes and in view of the earlier removal of ironstone in the middle of the 19thC which affected the coast to the east. Where possible we favour a managed retreat – Barton in particular. Care needed for the preservation of saline lagoons east of Keyhaven, though mechanics for success is open to debate. No more infilling of holes with domestic waste.
Meteorological Office	Mr Hopkins	N			
Meyrick Estate	Mr Tullie	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Management Ltd					
Milford on Sea Parish Council	Brian S Giles	Y	From Hurst Spit to Barton golf club, also the village of Keyhaven. CBY 5/6 from Grid Ref 922 273 to Hurst Spit should be designated – 'Hold the Line,' from West Road, Milford on Sea going eastwards, residential properties exist along B3058	Refer to New Forest District Council	Unchanged from SMP
Milford on Sea Parish Council	Keith Metcalf	Y	From Hurst Spit to Barton golf club, also the village of Keyhaven. CBY 5/6 from Grid Ref 922 273	Refer to NFDC Record of wildlife frequenting Parish	Unchanged from SMP
			to Hurst Spit should be designated – 'Hold the Line,' from West Road, Milford on Sea going eastwards, residential properties exist along B3058		
Milford-on-Sea Historical Record Society	Mr Rees	N			
Mudeford & District Fisherman's Association	The Secretary	N			
Mudeford Sailing Club	Mr Collins	N			
Naish Chalet and Caravan	Mr Brown	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Owners Association					
National Environment Research Council	Sir /Madam	N			
National Farmers Union (South West Region)	Sirs	N			
National Farms Union	Mr Whitlock	N			
National Monuments Record Centre	Mr Steve Waring	Y	Effective management of the coastal archaeological resource with consideration given to marine as well as terrestrial archaeological remains as historic landscapes can extend seamlessly from dry land through the intertidal zone into subtidal areas	NMR centre holds data on coastal and terrestrial archaeology as well as giving archaeological advice on seabed developments and strategic plans	Wish to be consulted when coastal defence is being considered to advise on the archaeological potential of the area concerned. Especially when coastal erosion is taking place or managed retreat is being considered.
National Trust	Mr Jenkins	N			
New Forest District Council – Environment	Julia Norman	Y	Development in & near area at risk of coastal erosion Conservation of the natural	NFDC Local Plan First Alteration First Stage Deposit July, 2001) see	Conservation of the natural environment.

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Services			environment Coastal landscape Retention of Hurst Spit (as part of AONB/National Park and for flood protection) Public access to the coast	in particular amendment to policy DW-C5, section 13 (Coastal Erosion) attached.	Protection where possible of developed areas at risk (it will be important to know if there are situations where this is not possible). Enabling safe public access to the shore.
New Forest Ramblers' Association	Mr Purdy	N			
New Milton Town Council	A Gray	Y	Observations made in response to 1998 consultation still valid	No information	
Ocean Youth Trust – South	Ms Lack	N			
Ordnance Survey	Mr Christie	N			
Purbeck District Council	Mr St Pierre	N			
Purewell Resident's Association	Mr and Mrs Wickson	N			
Railtrack Property	Mr Gardner	N			
Ramblers' Association	John E Thackray	Y	Access to open land, footpaths and connections to inland networks.	Involved in the New Forest National Park	We would maintain that they will be

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
(Hants & New Forest Group)			Coastline paths and access, nature conservation and scenic quality. Linkage to New Forest NP. Potential loss of walking / cycling routes of great national and local importance. The need to improve these substantially in the next 5 yrs. With a 50yr horizon the possibility of purchase and lease back should be raised for discussion where development has taken place along the shoreline. Could be attractive to some owners as it would enable demolition and clearance in the long run.	designation process. CA intends to provide a designation order before the secretary of state in Feb 2002. RA have made submissions which request Christchurch Harbour-Hengistbury Head etc and the Baron-Milford gap should be included in the National Park. (even if they are now – after the public inquiry)	increasingly valuable ? to the NP and provide important recreational areas and 'breathing space'. Both areas of study forms a major link in a 'round the British Coast' walking route. They link the SW coast path at Swanage to the Solent Way. I personally led a group from Hengistbury Head to Emsworth (Hants/Sussex border) last yr and the route is heavily used. There are unsatisfactory places such as the lack of adequate path around Poole Harbour, along the whole of the east

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
					side of Christchurch Harbour, East of Highcliffe castle and at Naish Farm holiday camp. I would hop that over the 50 yr horizon for which you are planning you would seek to greatly improve access and through routes for walking (and possibly cycling). The social aspects of sustainability and the major contribution of free access to opportunities for quiet outdoor recreation and enjoyment very much need to be highlighted in your work.
Rempstone	Mr Ryder	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Estate					
Residents' Association	Mr Hughes	N			
Royal National Lifeboat Institution	Howard Richings	Y	Access to the sea for launch and recovery of lifeboats Access to beach and cliff areas for rescue from the sea An Atlantic 21 inshore lifeboat is housed on Mudeford Quay an d launches into the harbour via a dedicated slipway. At low water the boat, on its carriageway, may have to be pushed into the navigable channel. The RNLI are currently planning the rebuilding of this boathouse and this work will involve some localised remodelling of the beach line ion the western side of the quay area (just south of unit CHB5)		Maintenance of access for search and research operations
Royal Yachting Association	Jerry Eardley	Y	Use of the natural & developed coastline for water based recreation RYA is the national governing body for organised competitive forms of sailing & power boating, and the national representative body for informal sailing / power boating. Categorises the following as potential issues of concern:		Concerned that future defence plans take into account recreational needs, including interests of local clubs and marine businesses which are often

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
			• Risk of inundation or erosion of premises (e.g. clubhouses or marine businesses) which are located in an isolated or exposed location, on a shoreline which is not categorised as needing to be defended, • Risk of loss of informal facilities e.g. launching, landing places for small boats due to sea defences Erosion or loss of natural features e.g. low lying spits of land, shingle or mud banks which provide shelter for facilities e.g. moorings or opportunity for sheltered sailing for novices. Risk of substantial changes to riverine flow patterns and volumes should SMPs be put into effect. • Managed retreat could however, on some parts of coast, provide new opportunities for sustainable low-impact informal moorings for small boats.		located in vulnerable places close to the water margin. Effect of future erosion be anticipated and provided for where possible (e.g. launching facilities, moorings protected by low-lying spits etc)
RSPB (South West)	Mr Richard Archer	Y	Forwarded letter - response awaited		
SCOPAC	Mr McInnes	N			
Shellfish Association of Great Britain	Sir / Madam	N			
Solent	Mr Davies	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Protection Society					
South West Tourism	Malcolm Bell	Y	Effective conservation and management combined with the sustainable use for economic & employment i.e. tourism and leisure	Toward 2020 the SW Regional Tourism Strategy	We need to ensure a sensitive and sustainable commercial exploitation for economic and employment generation purposes
Southbourne Canoe Club	Ms Johnson	N			
Southern Sea Fisheries	Mr Ian Carrier	Y	The marine environment	There are 24 registered and licensed fishing vessels based in Mudeford (Christchurch). There are vessels based elsewhere that will occasionally visit Mudeford. There are also a number of charter/angling/diving vessels that operate from the harbour but precise numbers are difficult to quantify because these boats are not registered or	In line with other SFC's the aim of the committee is to manage, regulate, develop and protect the fisheries within the southern sea fisheries district to ensure the sustainability of the marine environment, both now and for future generations.

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
				licensed a s commercial fishing vessels. The Southern District supports a particularly rich and varied fishery with extensive nursery grounds which in turn supports large numbers of juveniles. Going on Defra 1998 landing figures, shellfish make up over 80% of the first sale value of landings into the Southern District. Nearly 60% by value of the District landings ate Crustacea (Crab and lobster). The majority of the \ Mudeford vessels are potters and fish for crab and lobster. A few vessels conduct netting, dredging and long lining	
Southern Tourist Board	Marguerite Driver	Y		Passed letter and documentation to Mr Peter Colling, Head of Research and Development Dept who	

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
				has details of past and present visitor numbers to the area, accommodation, key tourist attractions and visitor spending.	
Southern Tourist Board	Andrew Reid	Y	Does not see any conflict between the development of coastal protection measures and flood defences ensuring the areas continued attraction for visitors. Such defences would help tourism businesses liable to flooding and coastal protection would preserve the area for future generations. Concerns if the flood defences, or any re-designation of land resulting were to reduce visitor access to the bay and its shoreline. Physical appearance needs to be sympathetic to surroundings and not a visual intrusion on the landscape. The bays are important tourist attractions and provide leisure opportunities for beach activities, sailing, coastal walks and enjoyment of the landscape and natural environment.		Maintain and where appropriate improve visitor access to the bay and its shoreline. The economy of the bay and surrounding area is very reliant on visitors, restricting access or failing to develop the infrastructure to support visitors may result in falling visitor numbers. SEA needs to consider the impact of different schemes on visitors and the consequent

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
					implications for visitors and the local economy.
Southern Water Services Ltd		Y	Seem to think this is not within their area of jurisdiction		
Sports Council South West Region	Mr Drennan	N			
St Barbe Museum	Mr P Clasby	Y	Views remain largely unchanged since earlier consultation. Problems are attributable to incautious engineering work, particularly in the 1960s. Consequently a great deal more heed needs to be taken of changes in the pattern of erosion since the 1888 paper by Gardener et al.		
St Barbe Museum	Ms Close-Brooks	N			
Stanpit and Mudeford Residents Association	Mr Etherington	N			
SUSTRANS	Ms Smith	N			
The British Library	Sir / Madam	N			
The Grand Hotel	Sir / Madam	N			
The Pier Master	Mr Boorn	N			
The Pines Hotel	Mr Puddepha	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
University of Exeter	Dr Grainger	N			
University of Portsmouth	Ms Davis	N			
University of Portsmouth	Dr Malcolm Bray	Y	Coastal geomorphology, especially to ensure that the remaining “natural” landforms of this coast remain free to adjust and respond and that the processes that sustain them are maintained. Also development in areas of landsliding / erosion	Paper enclosed that details some coastal recession work completed for 1870-1993 covering Barton – Becton frontage	Previous comment relates to Naish Cliffs, Becton / Hordle Cliffs and Hurst Spit. All these sites are used for student field classes and we have used them for several international fieldtrips for visiting overseas scientists.
University of Portsmouth	Dr Hooke	N			
University of Southampton	Professor Collins	N			
Wareham St Martin Parish Council	Mr Holland	N			
Wareham Town Council	Mrs Tyrer	N			
Wessex Water Services Ltd	Sir /Madam	N			

Organisation	Name	Response Received (Y/N)	Interests / Concerns	Information Held / Available	Objectives
Whale and Dolphin Conservation Society	Sir / Madam	N			
Wildfowl and Wetlands Trust	Mr Pollitt	N			
Winkton Resident's Association	Mrs Harvey	N			

Table 4.2 Issues identified by Respondees to Written Questionnaire

Issues		Response
Coastal Processes	Understanding of Natural Processes	24
	Effects of sea level rise / climate change	23
	Importance of geomorphological features	15
	Need to monitor process behaviour	22
Natural Environmer	Damage to natural areas	17
	Loss of habitats e.g. saltmarshes	16
	Loss of species	10
	Landscape damage and environmental loss	23
Human & As-Built Environment	Access	16
	Public Safety	14
	Effects on tourism	14
	Identification and preservation of archaeological sites	9
	Water quality	12
	Fisheries	12
	Oil and gas exploration	6
	Sand dune trampling	4
Development in the coastal zone	Development in areas of flood risk	15
	Integration and conflict with other management plans	19
	Siltation affects on fishing interests	7
	Lack of Local Authority powers to control activities be LWM	11
Coastal Defences	Maintenance of natural defences	22
	Adequacy of existing structures	14
	Provision of effective flood warning service	5
	Beach / cliff erosion	23

5 Environmental Objectives

5.1 General Issues

In order to evaluate the environmental impact of a policy, plan, strategy, or programme, a Strategic Environmental Assessment establishes environmental objectives at the strategic level. In developing these objectives, it is important that any environmental regulations, good practice procedures, and environmental constraints are fully integrated. This way, sustainable flood management options may be developed and evaluated.

In the following section, a series of environmental objectives have been put forward for the Christchurch Bay study area to assist in the preparation of the strategic options and to present criteria against which the options can be tested. The objectives have been presented in two tables:

- A statement of general objectives and some of their implications in terms of specific sites and management policies (Table 5.1); and
- A table of objectives which specifically apply to individual management units (Table 5.2).

In formulating the objectives, account has been taken of the recommended policies in the following documents:

- Shoreline Management Plan (SMP) (Halcrow 1999);
- UK and international conservation regulations and objectives; and
- Structure, Local and non-statutory Plans.

Within the objectives, a distinction has been made between those that arise from legal obligations, including the Habitat Regulations and the Water Resources Act, (shown in ***bold italics)*** and other objectives which do not represent legal obligations.

5.2 Practicability, Sustainability and Economic Considerations

Objectives have been developed to take into account practical and well as legal constraints. Objectives have only been put forward where an initial screening indicates that types of actions required to meet them are likely to be technically feasible and environmentally sustainable, which as a minimum is taken to mean that:

- Over a 50 year timescale, interventions have a reasonable chance of success;

- Interventions would not interfere with natural processes in such a way as to bring about the loss or damage to other European sites or other internationally important features;
- There would not be a requirement for continued, excessive and increasing input of natural and financial resources.

It is considered that any actions that did not meet these requirements would be very unlikely to be implemented, even if they were a *prima facie* requirement under legislation, such as the Habitats Regulations. This is because they would probably not constitute a viable "alternative" and objections would be likely to constitute "over-riding reasons of public interest".

Further criteria that need to be met include economic justification. At the minimum, there should be a benefit/cost ratio exceeding one. However, in practice, a scheme would have to pass DEFRA priority scoring to be implemented. The criterion of economic acceptability is not applied to objectives that relate to protecting European sites, since DEFRA has announced grant aid in such cases will not be dependent on economic criteria being met.

5.3 Nature Conservation Objectives

Objectives for European nature conservation sites have been set to address the qualifying interests of the site as well as the formal conservation objectives that have been set by English Nature. In relation to the Site of Special Scientific Interest, the Countryside and Rights of Way Act introduced a number of amendments to the Wildlife and Countryside Act 1981 and these have been taken into account in formulating objectives.

Objectives for nature conservation assets have generally been framed in terms of habitats rather than species. This is for two reasons:

(i) The study is concerned with defining areas of land with respect to coastal and flood management. Consideration of interventions that relate to individual wildlife are therefore beyond its scope.
(ii) In relation to birds, which are highly mobile, it is a reasonable assumption that areas of suitable habitat will be rapidly colonised. However, it is recognised that this assumption is less applicable to invertebrates.

Where a management intervention is proposed that may be in conflict with an objective arising from the Habitat Regulations, it is likely that an Appropriate Assessment of the project/plan will be required. This would ascertain whether the intervention may constitute an adverse effect on the integrity of the site, in which case alternatives would have to be considered. Where conflicts may arise from non-

intervention, the strategy will identify the extent of losses anticipated and identify areas where replacement habitat may be created.

5.4 Cultural Heritage and Archaeological Objectives

Reference is made within objectives relating to cultural heritage and archaeology to economic criteria as a basis for decision-making. In the context of identified cultural assets, this may in some cases imply consideration of the costs of reconstruction or removal of the asset elsewhere, rather than open market value as used for other property assets. It is understood that there has been a recent case where such considerations were taken into account in deriving economic value of a Scheduled Monument for the defence of which DEFRA provided grant aid. Such considerations would only be likely to be used in relation to Scheduled Monuments or Grade I or Grade II* listed buildings. However, in relation to archaeological sites generally, the costs of excavation and recording may be taken into account in evaluating any economic case for their protection.

Table 5.1 General Environmental Objectives for Christchurch Bay

Legal obligations, including the Habitat Regulations, are shown in ***italics.***
Underlining identifies where there may be a conflict between an objective, or the implications of an objective.

Assets	Objectives	Specific Targets
Nature Conservation		
Candidate Special Areas of Conservation (cSAC)	***1. Subject to natural change, all qualifying cSAC habitats should be maintained in situ unless deemed technically inappropriate and environmentally unsustainable, in which case compensation habitat must be recreated elsewhere in accordance with the Habitat Regulations***	***1.1 Dorset Heaths*** • ***Hengistbury Head heathland and wetland habitats***
		1.2 Solent and Isle of Wight Maritime • ***Vegetated sea cliffs*** • ***Cordgrass swards*** • ***Atlantic saltmeadows*** • ***Estuaries*** • ***Reefs***
Special Protection Areas (SPAs)	***2. Subject to natural change, habitats that support qualifying SPA species should be maintained in situ. If technically impossible or environmentally unsustainable, compensation***	***2.1 Solent and Southampton Water*** • ***beaches and shingle supporting nesting little terns*** • ***intertidal mudflats and saltmarsh supporting wintering wildfowl***

Assets	Objectives	Specific Targets
	habitat will be re-created elsewhere in accordance with Habitats Regulations	***2.2 Dorset Heathlands*** • ***heathland supporting woodlark, nightjar and Dartford warbler***
		2.3 Avon Valley • ***lowland wet grassland supporting wintering wildfowl and waders***
Ramsar Sites	***3. Subject to natural change, habitats cited in or that support species cited in the Ramsar Site citation should be maintained in situ. If technically impossible or environmentally unsustainable, compensation habitat will be created elsewhere in accordance with Habitat Regulations***	***3.1 Solent and Southampton Water*** • ***saline lagoons*** • ***saltmarshes*** • ***estuaries*** • ***reefs*** • ***beaches and shingle supporting nesting little terns*** • ***intertidal mudflats and saltmarsh supporting wintering wildfowl***
		3.2 Avon Valley • ***chalk river*** • ***fens and mires*** • ***lowland wet grassland supporting wintering wildfowl and waders*** • ***woodland***
Sites of Special Scientific Interest (SSSI)	***4. Habitats cited in or that support species that are cited in SSSI citations should be maintained and where feasible enhanced, where environmentally sustainable and technically possible. Subject to natural change, geological exposures in SSSIs are to be maintained for access and study***	***4.1 Christchurch Harbour*** • ***Saltmarsh*** • ***Wet meadows*** • ***Dry grassland*** • ***Heath*** • ***Scrub and woodland*** • ***Sand dune***
		4.2 Highcliffe to Milford Cliffs • ***Geological and palaeontological exposures***
		4.3 Hurst Castle and Lymington River Estuary • ***shingle geomorphology and habitat*** • ***saltmarsh and mudflat protected by spit***

Assets	Objectives	Specific Targets
		4.4 River Avon • ***Chalk river and associated habitats***
Local Nature Reserves (LNRs)	5. Characteristic habitats and species should be maintained, subject to natural change, if technically possible, environmentally sustainable and consistent with other objectives, otherwise provision must made to recreate them elsewhere	5.1 Hengistbury Head • Range of habitats
		5.2 Stanpit Marsh • Grazing marsh
Sites of Nature Conservation Importance (SNCIs)	6. Characteristic habitats and species should be maintained, subject to natural change, if technically possible, environmentally sustainable and consistent with other objectives otherwise provision must made to recreate them elsewhere	6.1 Barton Common • Heathland
		6.2 Hengistbury Head • Sand dunes, gravel, shingle foreshore
		6.3 Mudeford Quay • Dry ruderal grassland
		6.4 Mude Valley • Woodland
		6.5 Chewton Bunny • Deciduous woodland
		6.6 Sturt Pond • Semi-natural coastal habitats
		6.7 Studland Common • Unimproved grassland
		6.8 Stanpit Marsh • Semi-improved grassland and fen
		6.9 Stony Lane Drain • Wet grassland and ditch
		6.10 Milhams Mead • Wet tall herb
		6.11 Becton Bunny • Heathland

Assets	Objectives	Specific Targets
Dorset and Hampshire Biodiversity Action Plan Habitats	7. The existing area of habitats covered in the BAP should be maintained within the study area if possible or otherwise elsewhere. Where feasible, the strategy should contribute to meeting BAP enhancement targets.	• Maritime cliff and slope (including cliff seepages and cliff-top grassland) • Coastal sand dunes • Coastal saltmarsh • Mudflats • Sheltered muddy gravels • Saline lagoons • Mud in deep water • Sublittoral sands and gravels • Lowland heaths and associated habitats • Rivers • Reedbed • Shingle • Coastal wet grassland • Intertidal mud and sandflats with eelgass (*Zostera*) beds
Protected Species	8. Subject to natural change, the existing area of habitats supporting rare and protected species should be maintained within the study area, where possible, or otherwise elsewhere, and where feasible a contribution should be made to meeting BAP enhancement targets	• Otter • Water vole • Reptiles • Amphibians • Nesting Birds
Geological Conservation Review (GCR) sites and Regionally Important Geological Sites (RIGS)	9. Subject to natural change, geological exposures in GCR sites and RIGS are to be maintained for access and study	9.1 Any defences constructed should not obscure exposures and should allow overtopping where necessary so that growth of vegetation does not obscure exposures
Landscape		
General	10. Maintain and, where appropriate, enhance the character of significant landscape elements	• Sandy beaches • Swanage seafront • Bournemouth seafront and pier • Undeveloped coastline of Poole Harbour • Undefended cliff frontages

Assets	Objectives	Specific Targets
Environmentally Sensitive Area	11. Support the continuation of traditional farming practices that have helped to create a distinctive landscape, wildlife habitat or historic features	
Area of Outstanding Natural Beauty	12. Maintain character of AONB and, where environmental sustainable and technically possible, enhance its character.	12.1 Avoid constructing any new coastal defences that would be detrimental to landscape character
Soil, Geology and Hydrogeology		
Contaminated Land	***13. Avoid pollution of controlled waters from release of landfill material or other sources of contamination***	***13.1 Maintain sea defences or remove contamination from known landfill sites if a "do nothing" or realignment policy is proposed.*** ***13.2 Investigate and if necessary remediate potentially contaminated sites prior to implementing any "do nothing" or realignment policy in these areas.***
Land Use		
Commercial and residential property	14. Protect property from erosion or flooding where environmentally sustainable, feasible and economic	
Agricultural land	15. Protect agricultural land of Grade 3 or above from erosion or saline flooding where environmentally sustainable, feasible and economic	
Fisheries and Navigation		
Commercial Fisheries	16. Maintain extent and distribution of habitats that support fish and shellfish populations	
Access to the Sea	17. Maintain access to the sea and moorings for commercial, recreational and safety vessels	17.1 Navigation through Christchurch Harbour 17.2 Access to slipways 17.3 Access to quays 17.4 Oïl pollution response points

Assets	Objectives	Specific Targets
Recreation and Tourism		
Public Rights of Way	18. Maintain and where appropriate enhance the coastal Rights of Way network	18.1 Provision should be made to re-route or replace any Public Rights of Way that are lost as a result of coastal erosion or set-back of flood defences
		18.2 Opportunities should be sought to create new Public Rights of Way in conjunction with appropriate flood management projects such as the construction of any flood embankments
Recreational assets	19. Protect significant visitor attractions and recreational resources in the coastal zone that are threatened by coastal change, where environmentally sustainable, and economic.	• Blue flag beaches • Hengistbury Head • Christchurch seafront • New Milton Seafront
Cultural Heritage		
Scheduled Monuments	20. Retain monuments *in situ* where feasible, sustainable and economic. Alternatively, provide for mitigation in the form of excavation and recording or in exceptional cases, consider relocation of building.	• Hengistbury Head • Hurst Castle
Non-scheduled known archaeological sites	21. Provide mitigation in the form of excavation and recording of known sites affected by coastal erosion, flooding or defence realignment, where appropriate.	
Undiscovered archaeology	22. Consider providing mitigation in the form of assessment, excavation and recording within areas of high archaeological potential potentially affected by proposed flood management schemes.	
Listed Buildings and Conservation Areas	23. Protect listed buildings and Conservation Areas from erosion or flooding where environmentally sustainable, feasible and economic	

Table 5.2 Specific Environmental Objectives for Christchurch Bay and Harbour

Note: Process Unit (named in capitals) objectives apply to all Management Units in that Process Unit

Unit Code	Process or Management Unit	Specific Objectives	Implications
CHB	***CHB Subject to natural processes, maintain existing areas and favourable condition of the following habitats within Christchurch Harbour SSSI, either in situ or (where that is not possible) by re-creation elsewhere in the Harbour: Saltmarsh; Wet meadows; Dry grassland; Heath; Scrub and woodland; Sand dune***		
CHB1	Harbour side of Mudeford Spit	CHB1.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	The adopted policy of Hold the Line meets objectives CHB1.1 but there is a potential conflict with objectives CHB0.1 and CHB2.2
		CHB1.2 Avoid interference with coastal processes acting on reedbed, shingle and sandy spit habitats	
CHB2	South side of Christchurch Harbour	CHB2.1 Subject to natural processes, ***maintain existing areas and favourable condition of saltmarsh and reedbeds within Christchurch Harbour SSSI*** ; identify opportunities for encouraging new saltmarsh and reedbed formation through estuarine sediment accretion where feasible	The adopted policy of Do Nothing, with Limited Intervention at Double Dykes, partially meets objectives CHB2.2 and CHB2.3, but may lead to reduction in areas of saltmarsh and reedbed as a result of rising sea levels. There is a potential conflict with objective CHB2.3, in the event that intervention becomes necessary to prevent release of landfill material.
		CHB2.2 Protect Hengistbury Head Scheduled Monument from loss to erosion or flooding, to the extent that this is technically possible and environmentally sustainable	
		CHB2.3 Protect Hengistbury Head as a recreational resource from erosion or flooding, to the extent that this is technically possible and environmentally sustainable	
		CHB2.3 Avoid pollution of controlled waters from release of landfill material or associated contamination associated with former waste disposal site	

CHB3	Stanpit and Grimbury Marshes	***CHB3.1 Subject to coastal processes maintain freshwater and saltwater grazing marsh in Christchurch Harbour SSSI from inundation by rising sea levels, or provide recreated habitat elsewhere***	Adopted policy of Do Nothing (short term) and selective retreat (long term) does not meet objectives CHB3.1 and CHB3.2. A strategy needs to be developed that incorporates either protection of the site along the existing or a setback alignment, or waste removal and habitat recreation.
		CHB3.2 Avoid pollution of controlled waters from release of landfill material or associated contamination associated with Stanpit waste disposal site	
CHB4	Mudeford Town frontage	CHB4.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	The adopted policy of Hold the Line meets objective CHB4.1
CHB5	Mudeford Quay	CHB5.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	The adopted policy of Hold the Line, with possible selective retreat in the long term, meets objectives CHB5.1 and CHB5.2 but <u>there is a potential conflict with objective CHB5.2</u>
		CHB5.2 Avoid interference with coastal processes acting on reedbed, shingle and sandy spit habitats	
CBY	**CHRIST-CHURCH BAY PROCESS UNIT**		
CBY1a	Hengistbury Long Groyne to tip of Mudeford Sandbank: cliff section	***CBY1a.1 Subject to natural processes maintain existing areas and favourable conditions of habitats within Dorset Heaths cSAC, Dorset Heathlands SPA and Christchurch Harbour SSSI or (to the extent that this is not possible), re-create such habitats on adjacent land: heathland; unimproved acid grassland; grass/sedge/heath mosaic***	The adopted policy of Limited Intervention envisages continued retreat of the cliff line, <u>which does not fully protect the assets that are the subject of objectives CBY1a.1, CBY1a.2 and CBY1a.3.</u> However, an alternative policy of Hold the Line is likely to prove technically difficult and of doubtful sustainability. ***Subject to coastal processes maintain freshwater and saltwater grazing marsh in Christchurch Harbour SSSI from inundation by rising sea levels, or provide recreated habitat elsewhere***
		CBY1a.2 Protect Hengistbury Head Scheduled Monument from loss to erosion or flooding, to the extent that this is technically possible and environmentally sustainable	
		CBY1a.3 Protect Hengistbury Head as a recreational resource from erosion, to the extent that	

		this is technically possible and environmentally sustainable	
		CBY1a.4 Maintain/manage dynamic coastal processes to maintain geological exposures at Hengistbury Head Cliffs for access and study	
CBY1b	Hengistbury Long Groyne to tip of Mudeford Sandbank: sand bank section	CBY1b.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	The adopted policy of Hold the Line meets objectives CHB1.1 but there is a potential conflict with objective CHB1b.2
		CHB1b.2 Avoid interference with coastal processes acting on reedbed, shingle and sandy spit habitats	
		CBY1b.3 Maintain high recreational value of beach	
CBY2	Mudeford sandbank to Chewton Bunny	CBY2.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	The adopted policy of Selectively Hold the Line is consistent with objectives CBY2.1 and CBY2.3 but there is a potential conflict with objective CBY2.2, depending on the type of structures used.
		CBY2.2 Maintain/manage coastal processes to maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study	
		CBY2.3 Avoid pollution of controlled waters from release of landfill material or associated contamination associated with former waste disposal sites	
CBY3	Chewton Bunny to start of defence at Barton on Sea	CBY3.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	It is not clear to what extent the adopted policy of Limited Intervention (short-term) and Selectively Hold the Line (long-term) meets these objectives. There is a likely conflict between objective CBY3.1 to protect property and objective CBY3.2 to maintain geological exposures.
		CBY3.2 Maintain/manage coastal processes to maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study	
CBY4	Start of defence at Barton on Sea	CBY4.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	The adopted policy of Hold the Line meets objective CBY4.2 but may not meet objective CBY4.1. There is a likely conflict between objective CBY4.1 to protect

	to Barton Golf Course	***CBY4.2 Subject to natural change, maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study***	property and objective CBY4.2 to maintain geological exposures.
CBY5	Barton Golf Course to Hordle Cliff	***CBY5.1 Subject to natural change, maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study***	The adopted policy of Do Nothing (short-term) and Limited Intervention (long term) is likely to be consistent with objective CBY5.1.
CBY6	Hordle Cliff to Hurst Spit	CBY6.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	The adopted policy of Hold the Line meets objective CBY6.2 but may not meet objective CBY6.1. There is a likely conflict between objective CBY6.1 to protect property and objective CBY6.2 to maintain geological exposures.
		CBY6.2 Subject to natural change, maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study	
CBY7	Hurst Spit	• ***CBY7.1 Subject to natural change protect the following habitats within Hurst Castle and Lymington River Estuary SSSI, Solent and Isle of Wight Maritime cSAC and Solent and Southampton Water SPA/Ramsar Site from loss to erosion or flooding, or (to the extent that this is not possible), re-create such habitats on adjacent land:Shingle beach; Saltmarsh and mudflat including area east of study boundary protected by Hurst Spit***	There is a conflict between objectives CBY7.3 and CBY7.4, which imply minimum intervention, and objectives CBY7.1 and CBY7.2, which require intervention as a result of the lack of material naturally reaching Hurst Spit. The adopted policy of Hold the Line meets objective CBY7.2 and partially meets objective CBY7.1 (protection of saltmarsh and mudflat). However, it may interfere with the shingle beach habitat (CBY7.1), require visually intrusive beach management structures (CBY7.2) and will not allow natural evolution (CBY7.4).
		CBY7.2 Protect Hurst Castle Scheduled Monument from loss to erosion or flooding, to the extent that this is technically possible and environmentally sustainable	
		CBY7.3 Avoid constructing any new coastal defences that would be detrimental to the landscape value of South Hampshire AONB	
		CBY7.4 Allow Hurst Spit to evolve under influence of natural processes	

6 Evaluation of Strategy Options

6.1 Introduction

This section considers the potential environmental impacts of all proposed defence options on the strategy area. Environmental appraisal plays a fundamental role in the development of these strategic options. Any schemes that involve replacement or upgrading of existing defences are likely to have both temporary effects associated with the construction phase and post construction impacts, both of which are assessed. The majority of mitigation measures should form part of the basic scheme design and good working practices to minimise impacts on the area.

6.2 Environmental Impacts and Opportunities Assessment

The strategic coastal defence policies for this frontage has been identified in the Shoreline Management Plan as being one of 'No active intervention', 'Hold the existing defence line' and 'Managed realignment.' There are, however, a number of ways in which the existing line of protection can be 'held'. A number of strategic options have been selected for further assessment. These options and the potential environmental impacts and benefits associated with each are described below, with consideration also given to the option of doing nothing.

6.3 Options Considered

There are four main strategic options for coastal and flood defence provision:

- **No active intervention** – where there is no investment in coastal defence assets or operations, i.e. no shoreline management activity
- **Limited intervention** – by working with natural processes to reduce risks while allowing natural coastal change. This may range from measures which attempt to slow down rather than stop coastal erosion and cliff recession, to measures that address public safety issues….monitor and maintain….lowest investment.
- **Retreat the existing line/Managed realignment** – by identifying a new line of defence and, where appropriate, constructing new defences landward of the original defences
- **Hold the existing defence line** – by maintaining or changing the standard of protection…where works or operations are undertaken in front of the existing defences (e.g. beach recharge, rebuilding the toe of a structure, the construction of off shore breakwaters etc... to improve or maintain the standard of protection provided by the existing defence line.

Each of these options is assessed for the strategy frontage which has been sub-divided into 13 coastal process units:

CHB1 Harbour Side of Mudeford Spit

CHB2 South Side of Christchurch Harbour
CHB3 Stanpit and Grimbury Marshes
CHB4 Mudeford Town Frontage
CHB5 Mudeford Quay
CBY1A & CBY1B Hengistbury Long Groyne to tip of Mudeford Sandbank
CBY2 Mudeford Sandbank to Chewton Bunny
CBY3 Chewton Bunny to start of defence at Barton on Sea
CBY4 Start of Defence at Barton on Sea to Barton Golf Course
CBY5 Barton Golf Course to Hordle Cliff
CBY6 Hordle Cliff to Hurst Spit
CBY7 Hurst Spit

The four strategic options for coastal and flood defence provision are assessed against the Table 5.2 Specific Environmental Objectives for Christchurch Bay and Harbour.

Options have been assessed against the objectives using the following outcomes:

Y - this option meets the objective
N - this option does not meet the objective
? - uncertain whether this option meets the objective or not

Objectives in bold italics arise from legal obligations, including the Habitats Regulations and Water Resources Act, otherwise the objectives do not represent legal obligations. A summary of the assessment of each strategic option suggested for that area against these objectives is provided in tabulated form at the end of each coastal process unit.

6.4 CHB1 Harbour Side of Mudeford Spit

Mudeford Sandbank forms an important natural coastal defence function against erosion and flooding of Christchurch Harbour. The inshore bank is currently suffering from attrition, threatening the integrity of the beach huts and defences. There are no defences protecting the beach huts on the distal end of the Mudeford Sandbank. Along the inshore face of Mudeford Sandbank the beach access road and beach huts are protected by a sandbank which is reinforced in places with a small rock armour revetment. The sandbank/ beach is deteriorating and the dunes are being lost which is threatening the beach huts and the rear of the seaward defences.

6.4.1 Selective Hold the Existing Line (short and long term)

Beach recharge

This coastal frontage is being held in unison with the preferred option to Hold the Existing Line policy for Management Unit CBY1, through recharge on the opposite side of the spit.

This policy is likely to be consistent with the objectives relating to protecting property and maintaining in favourable condition habitats within Christchurch Harbour SSSI. However whether coastal processes would be interfered with is uncertain, and reedbed, shingle and sandy spit habitats impacted on.

A recharge of sand on the opposite frontage would protect habitats within Christchurch Harbour by improving the coastal defence of the spit. This would lessen the impact of potential breaching of the sand spit.

Table 6.4.1 - CHB1 Harbour Side of Mudeford Spit Strategy Defence Options

Objectives	Strategic Option Selective Hold the Existing Line (short and long term)
CHB0.1 Subject to natural processes, maintain existing areas and favourable condition of the following habitats within Christchurch Harbour SSSI, either in situ or (where that is not possible) by re-creation elsewhere in the Harbour: • ***Saltmarsh*** • ***Wet meadows*** • ***Dry grassland*** • ***Heath*** • ***Scrub and woodland*** • ***Sand dune***	Y
CHB1.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	Y
CHB1.2 Avoid interference with coastal processes acting on reedbed, shingle and sandy spit habitats	Y

6.5 CHB2 South Side of Christchurch Harbour

This unit is completely undefended and undeveloped and for most of its length, with the exception of a 160m length of gabion wall protecting a section of access road and the Hengistbury Head centre to the east of Wick Hams. The area contains a wide range of habitats, of which the coastal habitats appear to be changing constantly with mirroring areas of accretion of reedbed and erosion of saltmash habitat (Stanpit Marsh – Historical Trends Analysis 2003). The Hengistbury Long Groyne is currently in a deteriorating state.

6.5.1 No active intervention (observe and monitor at Double Dykes) (short-term)

No action taken apart from fulfilling statutory health & safety requirements and monitoring and inspection to assist in the identification of accreting or eroding habitats.

No active intervention is likely to be consistent with the objectives for continued geological exposure of Hengistbury Head Cliffs. Erosion of the cliff face within this unit in the short term does not appear to be an issue and as such impacts associated with the no active intervention policy on Dorset Heaths cSAC, Dorset Heathlands SPA, Christchurch Harbour SSSI, are negligible.

6.5.2 No active intervention (limited intervention at Double Dykes) (long-term)

No action taken apart from fulfilling statutory health & safety requirements and limited defence works at Double Dykes in the long run..

In the long run no intervention is likely to cause a breach in the section of wall supporting the access road and at Double Dykes, which in turn would have a significant impact on Christchurch Harbour. Limited intervention at Double Dykes is thought to meets the objectives for protecting Hengistbury Head as a recreational resource and Hengistbury Head Scheduled Monument in so far that erosion along this coastline is considered to be negligible. Studies have shown that this section of coastline is naturally evolving with mirroring amounts of erosion and accretion.

Table 6.5.1 - South Side of Christchurch Harbour Strategy Defence Options

Objectives	Strategic Option	
	No active intervention (observe and monitor at Double Dykes) (short-term)	No active intervention (limited intervention at Double Dykes) (long-term)
CHB0.1 Subject to natural processes, maintain existing areas and favourable condition of the following habitats within Christchurch Harbour SSSI, either in situ or (where that is not possible) by re-creation elsewhere in the Harbour: • ***Saltmarsh*** • ***Wet meadows*** • ***Dry grassland*** • ***Heath*** • ***Scrub and woodland*** • ***Sand dune***	Y	Y
CHB2.1 Subject to natural processes, ***maintain existing areas and favourable condition of saltmarsh and reedbeds within Christchurch Harbour SSSI*** and identify opportunities for allowing/encouraging new saltmarsh and reedbed formation through estuarine sediment accretion where feasible	Y	Y
CHB2.2 Protect Hengistbury Head Scheduled Monument from loss to erosion or flooding, to the extent that this is technically possible and environmentally sustainable	Y	Y
CHB2.3 Protect Hengistbury Head as a recreational resource from erosion or flooding, to the extent that this is technically possible and environmentally sustainable	Y	Y

6.6 CHB3 Stanpit and Grimbury Marshes

This coastal process unit is undeveloped and undefended, consisting mainly of grazing marsh with some coastal erosion. The western areas of Stanpit Marsh

display an increase of reedbed habitat with an accretionary trend, whereas on the more exposed margins the shoreline is eroding. (Stanpit Marsh – Historical Trends Analysis 2003)

6.6.1 No active intervention (observe and monitor) (short-term)

No action taken apart from fulfilling statutory health & safety requirements and monitoring and inspection to assist in the identification of accreting or eroding habitats and the danger of leaching from landfill sites.

This policy is likely to be consistent with the objectives to maintain existing areas and favourable habitats within Christchurch Harbour SSSI. Studies have shown that the harbour area is in constant change and losses of saltmarsh are being balanced by the growth of salt marsh/reedbed. (Stanpit Marsh – Historical Trends Analysis 2003). In the short term the erosion of habitats surrounding Stanpit waste disposal sites are slow enough that breaching and contamination is thought not to be an issue.

6.6.2 Selective Retreat the existing line (subject to future survey results) (long-term)

This policy is likely to be consistent with the objectives to avoid pollution from Stanpit waste disposal site, and to maintain existing areas and favourable habitats within Christchurch Harbour SSSI.

In the long run no active intervention will bring about contamination and breaching of the landfill, therefore selective retreat would protect Stanpit waste disposal sites from breaching and contamination. Those areas of frontage where contamination is not an issue would be left to natural and coastal processes.

Table 6.6.1 – CHB3 Stanpit and Grimbury Marshes Strategy Defence Options

Objectives	Strategic Option	
	No active intervention (observe and monitor) (short-term)	Selective Retreat the existing line (subject to future survey results) (long-term)
CHB0.1 Subject to natural processes, maintain existing areas and favourable condition of the following habitats within Christchurch Harbour SSSI, either in situ or (where that is not possible) by re-creation elsewhere in the Harbour: • ***Saltmarsh*** • ***Wet meadows*** • ***Dry grassland*** • ***Heath*** • ***Scrub and woodland*** • ***Sand dune***	Y	Y
CHB3.1 Subject to coastal processes maintain freshwater and saltwater grazing marsh in Christchurch Harbour SSSI from inundation by rising sea levels, or provide recreated habitat elsewhere	Y	Y
CHB3.2 Avoid pollution of controlled waters from release of landfill material or associated contamination associated with Stanpit waste disposal site	Y	Y

6.7 CHB4 Mudeford Town Frontage

This coastal process unit includes the developed frontages of Mudeford and Stanpit that are defended by privately owned seawalls and embankments along much of its length. These properties are predominantly residential, although include holiday accommodation as well. The frontage is managed by the Environment Agency.

6.7.1 Hold the Existing Line (short and long term)

The Environment Agency plan to improve and raise the height of existing seawall/embankments where possible, taking into account sea level rise and predicted increase in winter rainfall.

This policy is likely to meet with the objective of protecting property. However there may be environmental impacts between holding the line and maintaining

natural processes so that habitats within Christchurch Harbour SSSI are maintained and kept in favourable conditions.

This stretch of coastline supports minimal amounts of saltmarsh and reedbed habitat and so affects on the SSSI brought by the proposed policy, although not direct, are thought to be negligible. There may be the opportunity here for re-creation of habitat elsewhere in the harbour to mitigate against the loss of habitats within Christchurch Harbour SSSI caused through coastal squeeze.

Table 6.7.1 – CHB4 Mudeford Town Frontage Strategy Defence Options

Objectives	Strategic Option
	Hold the Existing Line (short and long term)
• ***CHB0.1 Subject to natural processes, maintain existing areas and favourable condition of the following habitats within Christchurch Harbour SSSI, either in situ or (where that is not possible) by re-creation elsewhere in the Harbour: Saltmarsh; Wet meadows; Dry grassland; Heath; Scrub and woodland; Sand dune***	Y?
CHB4.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	Y

6.8 CHB5 Mudeford Quay

This frontage is managed by the Environment Agency and comprises of a low-lying sea wall approximately 1m in height, which provides some protection to Mudeford Car Park.

6.8.1 Hold the Existing Line (short and long term)

The Environment Agency plan to improve and raise the height of existing seawall/embankments where possible, taking into account sea level rise and predicted increase in winter rainfall.

This policy is likely to be consistent with the objectives to protecting property and avoiding interference with coastal processes, however there are likely to be environmental impacts between holding the line and maintaining natural processes so that habitats within Christchurch Harbour SSSI are maintained and kept in favourable conditions.

There may be the opportunity here for re-creation of habitat elsewhere in the harbour to mitigate against the loss of habitats within Christchurch Harbour SSSI caused through coastal squeeze.

Table 6.7.1 – CHB5 Mudeford Quay Strategy Defence Options

Objectives	Strategic Option Hold the Existing Line (short and long term)
• ***CHB0.1 Subject to natural processes, maintain existing areas and favourable condition of the following habitats within Christchurch Harbour SSSI, either in situ or (where that is not possible) by re-creation elsewhere in the Harbour: Saltmarsh; Wet meadows; Dry grassland; Heath; Scrub and woodland; Sand dune***	Y?
CHB5.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	Y
CHB5.2 Avoid interference with coastal processes acting on reedbed, shingle and sandy spit habitats	Y

6.9 CBY1A & CBY1B Hengistbury Long Groyne to tip of Mudeford Sandbank

This frontage is largely undeveloped and is defended along much of its length with revetments and groynes, also sand beaches have been recharged to provide additional flood protection. This area is managed by Christchurch Borough Council, and it is likely that the existing Beach Management Plan and method will be adopted by the strategy along with continued monitoring using surveys and aerial photos. The Hengistbury Long Groyne is currently in a deteriorating state.

6.9.1 CBY1A Hengistbury Long Groyne to tip of Mudeford Sandbank: cliff section

No active intervention (observe and monitor)

No action taken apart from fulfilling statutory health & safety requirements and monitoring and inspection to assist in the identification of ground movements in the cliff face.

This policy is likely to be consistent with the objectives for continued geological exposure of Hengistbury Head Cliffs, which would supply material to the spit. Monitoring of the erosion rates would highlight any potential breach in Hengistbury Head, although rates are thought to be relatively slow which would suggest any negative impacts would be negligible with the no active intervention policy on Dorset Heaths cSAC, Dorset Heathlands SPA, Christchurch Harbour SSSI, Hengistbury Head as a recreational resource and Hengistbury Head Scheduled Monument.

6.9.2 CBY1B Hengistbury Long Groyne to tip of Mudeford Sandbank: sand bank section

No active intervention (observe and monitor)

No action taken apart from fulfilling statutory health & safety requirements and monitoring and inspection.

This policy is likely to be consistent with the objectives for avoiding interference with coastal processes; however with this option the objectives to protect property and maintain the recreational value of the beach are not met. Also without intervention of some type along this frontage, it leaves it open to wave action with a breach along the long groyne, followed by potential damage to habitats in Christchurch Harbour. Therefore this policy is no longer a viable option.

Hold the Existing Line (short and long term)
Beach recharge

The injection of shingle at this point would have the effect of slowing down the erosion rate.

The objectives relating to protecting property and maintaining the high recreational value of the beach can be met through holding the existing line through beach recharge. However whether coastal processes would be interfered with is uncertain, and reedbed, shingle and sandy spit habitats impacted on.

Table 6.9.1 - CBY1A & CBY1B Hengistbury Long Groyne to tip of Mudeford Sandbank Strategy Defence Options

Objectives	Strategic Option		
	1a	1b	
	No active intervention (observe and monitor)	No active intervention (observe and monitor)	Hold the Existing Line (short and long term)
• ***CBY1a.1 Subject to natural processes maintain existing areas and favourable conditions of habitats within Dorset Heaths cSAC, Dorset Heathlands SPA and Christchurch Harbour SSSI or (to the extent that this is not possible), re-create such habitats on adjacent land: Heathland; Unimproved acid grassland; Grass/sedge/heath***	Y?	-	-
CBY1a.2 Protect Hengistbury Head Scheduled Monument from loss to erosion or flooding, to the extent that this is technically possible and environmentally sustainable	Y?	-	-
CBY1a.3 Protect Hengistbury Head as a recreational resource from erosion, to the extent that this is technically possible and environmentally sustainable	Y?	-	-
CBY1a.4 Maintain/manage dynamic coastal processes to maintain geological exposures at Hengistbury Head Cliffs for access and study	Y	-	-
CBY1b.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	-	N	Y
CHB1b.2 Avoid interference with coastal processes acting on reedbed, shingle and sandy spit habitats	-	Y	Y?
CBY1b.3 Maintain high recreational value of beach	-	N	Y

6.10 CBY2 Mudeford Sandbank to Chewton Bunny

This frontage is managed by Christchurch Borough Council. The area around Mudeford Quay is low-lying and is undefended with a steel sheet piled wall which is in poor condition. The reminder of the management unit is cliffed and includes the frontages of Highcliffe and Friars Cliff. Concrete walls, revetments, timber and rock groynes extend along this cliffed section, apart form the section fronting Highcliffe Castle which is undefended and eroding. CBY2a is between the 'run' to Steamer Point and CBY2b is between Steamer Point and Chewton Bunny.

6.10.1 CBY2a - Selectively Hold the Existing Line (short and long term)

A. Sand recharge, with upkeep and repair of sea wall

There will be a reduction in the accumulation of sand in the future due to the management of adjacent coastal frontages. A recharge of sand at this point will protect defence structures already present and prolong their life to some extent, with works to the seawall on a rolling programme on a ten year basis.

The objectives relating to protecting property and the former waste disposal sites can be met through holding the existing line through beach recharge.

B. Leave sea wall to collapse, then build a new wall when necessary, as well as shingle/sand recharge

There is uncertainty as to whether the objectives of protecting property and former waste disposal sites van be met with this option as the process would be uncontrolled in the short term. To allow the existing sea wall to deteriorate is likely to increase the threat to property damage and the potential pollution of waters from the release of landfill material or associated contaminants. There would be a loss of beach material associated with an increase in wave action which would be increasingly detrimental to the flood defence structures along this coastline.

C. Replace the existing timber groynes with rock groynes

Christchurch Borough Council is looking to replace some of the existing timber groynes with rock groynes to protect the wall and hold the beach.

This option would meet the objective of protecting property and former waste disposal sites. However there would be Health and Safety issues associated with the rock groynes on an amenity beach.

6.10.2 CBY2bi - No active intervention (observe and monitor)

A. No action taken apart from fulfilling statutory health & safety requirements and monitoring and inspection to assist in the identification of ground movements in the cliff face.

This policy is likely to be consistent with the objectives for Highliffe to Milford Cliffs SSSI in maintaining the geological exposure of the cliff faces.

6.10.3 CBY2bii - Limited intervention

A. Survey and monitor frontage with the possibility of a top up of revetment in year 50 if over topping becomes an issue with sea level rise

This policy is likely to be consistent with the objectives for protecting property along the frontage. The objective of maintaining the geological exposure of Highliffe to Milford Cliffs SSSI is met in the short term, but in year 50 when a top up of the revetment could take place, the objective is not met. There may be considerable environmental impacts with potential damage to the SSSI as well as the natural coastal process in maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI halted and the cliff face not being allowed to retreat naturally.

B. Shortening groynes to the east by removing rock so as to allow an increase in long shore sediment transport

This is seen to be no longer a technically viable option as the shortening of the rock groynes proves to be too expensive. In addition the removal of the groynes is seen to be politically unacceptable.

Table 6.10.1 - CBY2 Mudeford Sandbank to Chewton Bunny Strategy Defence Options

Objectives	Strategic Option					
	2a			2bi	2bii	
	Selectively Hold the Existing Line (short and long term)			No active intervention (observe and monitor)	Selectively Hold the Existing Line (short and long term)	
	A	B	C	A	A	B
CBY2.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	Y	N	Y	-	Y	x
CBY2.2 Maintain/manage coastal processes to maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study	-	-	-	Y	Y in the short term	x
CBY2.3 Avoid pollution of controlled waters from release of landfill material or associated contamination associated with former waste disposal sites	Y	N	Y	-	-	-

6.11 CBY3 Chewton Bunny to start of defence at Barton on Sea

This coastal process unit comprises undefended eroding cliffs fronting a caravan park and a residential area.

6.11.1 Retreat the Existing Line

A. Shingle recharge (short term)

The injection of shingle at this point would have the effect of slowing down the erosion rate.

The objectives relating to protecting property can be met in the short term through retreating the existing line from shingle recharge, as long as outflanking at unit boundary limits does not occur. The objective to maintain the geological exposures to Highcliffe to Milford Cliffs SSSI is also met as this option would still allow the continued exposure of the geological aspects of the SSSI.

B. Siphon Drains could be installed if required later along the cliff top (long term)

The siphon drains would slow down the rate of retreat even further, by reducing ground water effects, inconjuction with shingle recharge.

The objective of protecting property can be met by this option and is likely to meet with the objective of maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI.

The geological features of the cliff face would still be allowed to retreat naturally but at a substantial slower rate.

6.11.2 Selectively Hold the Existing Line (long term)

A. A rock revetment along the frontage

This option would meet the objective of protecting property. However there are likely to be conflicts between holding the line and maintaining the value of the Highcliffe to Milford Cliffs SSSI. To maintain the existing line would result in not meeting the objective of maintaining the geological exposures of the SSSI and potentially damaging this geological feature.

The design life of this option would be approximately 50 years, so the wall would have to be replaced in year 50 increasing the environmental impact of this option.

B. A sea wall along the base of the cliff

This policy is likely to meet with the objective of protecting property, however there are likely to be major environmental impacts between holding the line and maintaining the value of the Highcliffe to Milford Cliffs SSSI. To maintain the existing line would result in not meeting the objective of maintaining the geological exposures of the SSSI.

The design life of this option would be approximately 50 years, so the wall would have to be replaced in year 50 increasing the environmental impact of this option.

Table 6.11.1 - CBY3 Chewton Bunny to start of defence at Barton on Sea Strategy Defence Options

Objectives	Strategic Option			
	Retreat the Existing Line		Selectively Hold the Existing Line (long term)	
	A (short term)	B (long term)	A	B
CBY3.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	Y	Y	Y	Y
CBY3.2 Maintain/manage coastal processes to maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study	Y	Y	N	N

6.12 CBY4 Start of Defence at Barton on Sea to Barton Golf Course

This section of the coast line forms the frontage to Barton-on-Sea, inparticulary Cliff House Hotel and Barton Court. A rock revetment and rock groynes have been constructed, with extensive cliff stabilisation measures put in place, including re-profiling of the cliff slope and the installation of sheet pile cut-off walls and drainage.

6.12.1 CBY4a Barton to Cliff House Hotel

Hold the Existing Line (short and long term)

A. Revetment fronting cliff toe

The design life of this option would be approximately 50 years, so would need to be built twice in 100 years.

This option would meet the objective of protecting property. However there are likely to be conflicts between holding the line and maintaining the value of the Highcliffe to Milford Cliffs SSSI. To maintain the existing line would result in not meeting the objective of maintaining the geological exposures of the SSSI.

B. Dynamic toe

This shingle embankment would meet the objective of protecting property and is likely to meet with the objective of maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI.

The toe will slow down the rate of retreat due to ground water effects by acting as a ‘stop’ for the slipping cliff face. The geological features of the cliff face would still be allowed to retreat naturally but at a slower rate.

C. A sea wall along the base of the cliff

This policy is likely to meet with the objective of protecting property. However there are likely to be conflicts between holding the line and maintaining the value of the Highcliffe to Milford Cliffs SSSI. To maintain the existing line would result in not meeting the objective of maintaining the geological exposures of the SSSI.

The design life of this option would be approximately 50 years, so the wall would have to be replaced in year 50 increasing the environmental impact of this option.

Limited Intervention

A. Regrading the cliff to a point where it would be stable

This work could be left until year 10 at the earliest, and undertaken such that the cliff face is stable. A 15m strip of land would be left inbetween the regarded cliff top and the sea road.

This policy is likely to meet with the objective of protecting property, however there are likely to be considerable environmental impacts between this option and maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI. The

geological feature would be covered as the cliff retreat would be controlled and would effectively be held and not allowed to retreat naturally.

B. Siphon drains installed along the road

The siphon drains would slow down the rate of retreat due to ground water effects.

The objective of protecting property can be met by this option in the short term. The objective of maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI is likely to be met as long as the cliffs are not directly affected by the works. A number of siphon drain options are to be assessed with varying degrees of impacts to the SSSI. The geological features of the cliff face would still be allowed to retreat naturally but at a substantial slower rate.

6.12.2 CBY4b Cliff House Hotel to Barton Court

The Cliff House Hotel is close to the edge of the retreating cliff. Current recession rates indicate that to maintain the 15m intervention line south of the hotel, works would be required within 10 years.

Hold the Existing Line (short and long term)

A. A new sea or retaining wall to protect the cliff from retreat

This option would be difficult to construct and its design life would be limited by the instability of the cliffs.

This policy is likely to meet with the objective of protecting property, however there are likely to be conflicts between holding the line and maintaining the value of the Highcliffe to Milford Cliffs SSSI. To maintain the existing line would result in not meeting the objective of maintaining the geological exposures of the SSSI.

Limited Intervention

A. Regrading the cliff to a point where it would be stable

This policy is no longer an option as there is a lack of space inbetween the cliff top and properties for a stable face to be constructed.

B. Siphon drains installed on the seaward side of the Hotel, most likely in the cliff.

The siphon drains would slow down the rate of retreat due to ground water effects, to allow 10 to 15 years of warning for the exit strategy, which would be developed with the Hotel owners. The existing land drains further down the cliff would need to be maintained if possible.

The objective of protecting property can be met by this option in the short term. The objective of maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI is likely to be met as long as the cliffs are not directly affected by the works. A number of siphon drain options are to be assessed with varying degrees of impacts to the SSSI.

The geological features of the cliff face would still be allowed to retreat naturally but at a substantial slower rate.

6.12.3 CBY4c Barton Court

This section of the frontage is similar to that of the Cliff House Hotel to Barton Court section in that space between the cliff top and properties in very limited.

Hold the Existing Line (short and long term)

A. A new sea or retaining wall to protect the cliff from retreat

This option would be difficult to construct and its design life would be limited by the instability of the cliffs. The existing cut off wall will eventually fail.

This policy is likely to meet with the objective of protecting property, however there are likely to be conflicts between holding the line and maintaining the value of the Highcliffe to Milford Cliffs SSSI. To maintain the existing line would result in not meeting the objective of maintaining the geological exposures of the SSSI.

Limited Intervention

A. Regrading the cliff to a point where it would be stable

This policy is no longer an option as there is a lack of space inbetween the cliff top and properties for a stable face to be constructed.

B. Siphon drains installed around Barton Court and drain to a collector drain running along the road to the rear.

Estimates implies that a shallow and a deep siphon would be needed every 4m If the properties along this frontage were abandoned then the strategy could consider running siphon drains landward of these properties.

The objective of protecting property can be met by this option in the short term. The objective of maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI is likely to be met as long as the cliffs are not directly affected by the works. A number of siphon drain options are to be assessed with varying degrees of impacts to the SSSI.

The geological features of the cliff face would still be allowed to retreat naturally but at a substantial slower rate.

6.12.4 CBY4d Eastern Extent of Barton Court to Golf Course

Although retreat along this frontage is slow, it is likely that it will increase with time.

Limited Intervention

A. Regrading the cliff to a point where it would be stable. Works would be implemented when the 15m intervention line south of the coast road becomes ‘active’, which is considered to be year 20 at the earliest. Regrading would be undertaken such that the cliff face is stable. A 15m strip of land would be left inbetween the regarded cliff top and the road running seaward of the properties.

This policy is likely to meet with the objective of protecting property, however there are likely to be considerable environmental impacts between this option and maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI. The

geological feature would be covered as the cliff retreat would be controlled and would effectively be held and not allowed to retreat naturally.

B. Siphon drains installed along the road.

These works would not be considered until year 20 at the earliest, to slow down the rate of retreat due to ground water effects. Estimates imply that a shallow and a deep siphon would be needed every 4m.

The objective of protecting property can be met by this option in the short term. The objective of maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI is likely to be met as long as the cliffs are not directly affected by the works. A number of siphon drain options are to be assessed with varying degrees of impacts to the SSSI.

The geological features of the cliff face would still be allowed to retreat naturally but at a substantial slower rate.

Table 6.12.1 - CBY4 Start of Defence at Barton on Sea to Barton Golf Course Strategy Defence Options

Objectives	Strategic Option												
	4a					4b			4c			4d	
	Hold the Existing Line (short and long term)			Limited Intervention			Limited Intervention		Hold the Existing Line (short and long term)	Limited Intervention		Limited Intervention	
	A	B	C	A	B	A	A	B	A	A	B	A	B
CBY4.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	Y	Y	Y	Y	Y	Y	N	Y	Y	N	Y	Y	Y
CBY4.2 Subject to natural change, maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study	N	Y	N	N	Y	N	N	Y	N	N	Y	N	Y

6.13 CBY5 Barton Golf Course to Hordle Cliff

This unit lies between Barton-on-Sea and Milford-on-Sea. There are no artificial defences, although the Beckton Bunny outfall to the east of this management unit behaves in a similar way to a groyne.

6.13.1 CBY5a Golf Course to Beckton Bunny

Do Nothing (observe and monitor) (short term) and Selective Retreat the Existing Line (long term)

No action taken apart from fulfilling statutory health & safety requirements and monitoring and inspection to assist in the identification of ground movements in the cliff face.

This policy is likely to be consistent with the objectives for Highliffe to Milford Cliffs SSSI in maintaining the geological exposure of the cliff faces.

6.13.2 CBY5b Hordle Cliff

Do Nothing (observe and monitor) (short term)

No action taken apart from fulfilling statutory health & safety requirements and monitoring and inspection to assist in the identification of ground movements in the cliff face.

This policy is likely to be consistent with the objectives for Highliffe to Milford Cliffs SSSI in maintaining the geological exposure of the cliff faces. It is possible that cliff top footpaths may be lost in the long-term to cliff failure. Archaeological artefacts have been recorded along this section of the frontage, and with the continued erosion processes other archaeological material may continue to be liberated.

Table 6.13.1 – CBY5 Barton Golf Course to Hordle Cliff Strategy Defence Options

Objectives	Strategic Option	
	5a	5b
	Do Nothing (observe and monitor) (short term) and Selective Retreat the Existing Line (long term)	Do Nothing (observe and monitor) (short term)
CBY5.1 Subject to natural change, maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study	Y	Y

6.14 CBY6 Hordle Cliff to Hurst Spit

This unit includes a small section of Hordle Cliff with the frontage of Milford-on-Sea. The coastline is defended throughout with both coast protection and sea

defence structures comprising groynes, revetments and seawalls. The coast land towards the east of this unit is mainly low-lying and undeveloped.

6.14.1 Hold the Existing Line (short and long term)

Maintain and upkeep the timber groynes and recharge area between groynes to protect the sea wall. The timber groynes would need to be refurbished initially and then replaced in years 30 and 60. Shingle recharge would be placed between the refurbished timber groynes.

This policy is likely to meet with the objective of protecting property, however there are potential conflicts between holding the line and maintaining the geological exposure to the Highcliffe to Milford Cliffs SSSI.

If new timber groynes are only to replace those that require refurbishment, and shingle recharge is to be between the groynes then negative environmental impacts to the SSSI could be minimised.

6.14.2 Do Nothing (observe and monitor) (short term)

No action taken apart from fulfilling statutory health & safety requirements and monitoring and inspection to assist in the identification of ground movements in the cliff face.

This policy is likely to be consistent with the objectives for Highliffe to Milford Cliffs SSSI in the west of this section, in maintaining the geological exposure of the cliff faces, however it does not meet the objective of protecting property. To allow the existing timber groynes to deteriate is likely to result in damage to the sea wall with a substantial loss of shingle material with an increase in wave action. A number of public amenities along this frontage may potentially be loss, with eventually damage to properties. Archaeological artefacts have also been recorded along this section of the frontage, and with the continued erosion processes other archaeological material may continue to be liberated.

Table 6.14.1 – CBY6 Barton Hordle Cliff to Hurst Spit Strategy Defence Options

Objectives	Strategic Option	
	Hold the Existing Line (short and long term)	Do Nothing (observe and monitor) (short term
CBY6.1 Protect property along frontage from coastal erosion and flooding where technically feasible, environmentally sustainable and economic	Y	N
CBY6.2 Subject to natural change, maintain geological exposures in Highcliffe to Milford Cliffs SSSI for access and study	Y?	Y

6.15 CBY7 Hurst Spit

Hurst Spit has evolved through natural processes and protects areas of saltmarshes and mudflats in the western Solent. In recent years the spit has been reinforced with groynes and shingle recharge as a result of defence construction within Christchurch Bay causing less shingle transport. These defences are monitored and maintained by New Forest District Council (NFDC) under the Hurst Spit Beach Management Plan.

6.15.1 Hold the Existing Line (short and long term)

A. Shingle Recharge with monitoring

The existing Beach Management Plan developed by the NFDC (2001) concluded that the continuation of the current management strategy would be the most appropriate option. This would involve shingle recycling between Hurst Spit and North Point, and also from the leeside slope within areas that are currently accumulating, combined with beach, wave and tide monitoring.

The objectives relating to protecting habitats within Hurst Castle and Lymington River Estuary SSSI, Solent and Isle of Wight Maritime cSAC and Solent and Southampton Water SPA/Ramsar Site, and protecting Hurst Castle Scheduled Monument are met by the option of hold the line through the input of beach material.

There are potential conflicts between holding the line through shingle recharge and the objectives relating to South Hampshire AONB and allowing Hurst Spit to evolve naturally. However any option to protect habitats and monuments from coastal erosion will entail an adverse effect on the landscape value and natural process.

This option minimises those impacts to the AONB and Hurst Spit in that the shingle recharge is to use local material and the spit only added to, and natural processes, in this case erosion, will still occur but at a slower rate.

B. Rock Revetment

A revetment fronting the spit would protect the integrity of the spit and the Western Solent.

This policy is likely to meet with the objectives of protecting habitats within Hurst Castle and Lymington River Estuary SSSI, Solent and Isle of Wight Maritime cSAC and Solent and Southampton Water SPA/Ramsar Site, and protecting Hurst Castle Scheduled Monument.

However there would be considerable environmental impacts associated with its construction and effect on natural processes and the landscape. The objective associated with protecting the value South Hampshire AONB and allowing Hurst Spit to evolve under natural processes would not be met. Hurst spit may be damaged potentially, as well as natural coastal process drastically reduced.

Table 6.15.1 – CBY7 Hurst Spit Strategy Defence Options

Objectives	Strategic Option	
	Hold the Existing Line (short and long term)	
	A	B
CBY7.1 Subject to natural change protect the following habitats within Hurst Castle and Lymington River Estuary SSSI, Solent and Isle of Wight Maritime cSAC and Solent and Southampton Water SPA/Ramsar Site from loss to erosion or flooding, or (to the extent that this is not possible), re-create such habitats on adjacent land: • **Shingle beach** • **Saltmarsh and mudflat including area east of study boundary protected by Hurst Spit**	Y	Y
CBY7.2 Protect Hurst Castle Scheduled Monument from loss to erosion or flooding, to the extent that this is technically possible and environmentally sustainable	Y	Y
CBY7.3 Avoid constructing any new coastal defences that would be detrimental to the landscape value of South Hampshire AONB	Y	N
CBY7.4 Allow Hurst Spit to evolve under influence of natural processes	Y	N

7 Monitoring, Mitigation and Compensation

7.1 Environmental Monitoring

The purpose of environmental monitoring is to ascertain whether the predicted environmental effects occur and to assess the effectiveness of mitigation measures. In relation to this strategy, the key monitoring requirements are:

7.1.1 Salt marsh extent

The objective is to arrest and reverse the net loss of salt marsh. Hold the existing line although not directly effecting saltmarsh habitat, may lead to its loss caused through rising sea levels followed by coastal squeeze. Loss of habitat may be created by either managed realignment or abandonment. In the former case, this should be commissioned as part of the project, whereas in the case of abandonment it should be undertaken through the strategy.

7.1.2 Contamination

Where there is the likelihood of contamination either within or protected by sea wall, monitoring should be undertaken to detect any contamination of the surrounding waters due to embankment failure or leaching through embankments. Under current legislation, contamination is the responsibility of the natural or legal person who caused it. Monitoring should aim to determine whether any harm is occurring as a result of pollution of controlled waters, and if such evidence is found, then remedial action such as waste removal or reinforcement of defences would be needed.

7.1.3 Where no active intervention is the adopted policy

Monitoring will be undertaken where no active intervention might lead to pollution from release of landfill material or associated contamination, and a risk assessment carried out before it is implemented. This may involve sampling and analysis of the material to assess the threat it poses to the environment. If necessary, material may have to be removed before defences can be abandoned.

If no active intervention may lead to hazards to public safety then mitigation will be required, either to control the process of defence failure or to exclude the public from areas at risk of failure.

If non-intervention or abandonment would lead to the loss of existing Public Rights of Way then the Environment Agency and Essex County Council Highways Authority should provide for re-routing of the footpath before the defences fail.

If non-intervention or abandonment would lead to he loss of legally protected freshwater or terrestrial habitat (SSSI, SPA or Ramsar Site), then re-creation elsewhere will be required.

8 Conclusions and Recommendations

The strategy area which is administered by Christchurch Borough Council and New Forest District Council (NFDC), with the Environment Agency managing areas of Christchurch Harbour, comprises significant local, national and international nature conservation designations, in addition to geological and landscape designations. The area is important for commercial fishing, as well as numerous tourism and recreational activities. There are 13 scheduled monuments, as well as a number of Grade I and II Listed Buildings. Areas of potential land contamination through landfill sites also exist within the strategy area.

This report which will be presented to the Stakeholders for consultation in February 2005, include DEFRA, EA, NFDC, Christchurch Borough Council, Hampshire County Council and Bournemouth Borough Council. After consultation any responses will be reviewed, and the final version of the SEA completed in spring 2005.

The strategy plan will put forward firm proposals for flood defence measures; holding the existing line, realignment and no intervention, with monitoring to inform knowledge gaps for the first five or ten years. These short-term proposals will be set in the context of a 100-year strategy, which will provide a baseline for a more sustainable way to develop coastal and flood management options, whilst meeting the strategic objectives of the natural, human and built environment. All monitoring works in the short term will then be subject to detailed scheme appraisal, taking on board the requirements for further site investigation and study presented in this SEA.

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