

SECTION 4

NATURAL ENVIRONMENT

4 NATURAL ENVIRONMENT

4.1 Key Environmental Issues

The following issues, which have been identified as being of particular importance, are examined within this section.

- Ecology, There are **25** Sites of Special Scientific Interest (**SSSI**) within the Isles of Scilly covering approximately **50%** of the land area and much of the coastal zone. The islands have also been designated as a Voluntary Marine Nature Reserve and there is a candidate Special Area of Conservation (**SAC**). The Scillies are an internationally renowned area for migrating birds.
- Landscape. The Isles of Scilly have been designated an Area of Outstanding Natural Beauty (**AONB**) and defined as a Heritage Coast. The islands have also been designated as a Conservation Area.

Archaeology. The Isles of Scilly contain a wealth of archaeological remains dating back to neolithic times. Many of the sites have been designated as Scheduled Ancient Monuments (**SAMs**) some of which are of international importance.

Tourism and Recreation. The economy of the Scillies very much depends on the income it receives from the many visitors who come to enjoy the unique scenic beauty of the islands and the wildlife.

- Land Use and Sea Use. The small scale of the islands mean that much of the population lives in close proximity to the coast. Agriculture is also of great importance to the islands' economy particularly in respect of bulb production - the **Soleil d'Or** narcissus is internationally renowned.

Planning policy and legislation of relevance to the shoreline on the Scillies have been taken into account to ensure that further development should avoid the risk of flooding, erosion, land slips and rock falls. The policy stresses that new development should not generally be permitted in areas which would need expensive engineering works, either to protect developments on land subject to erosion by the sea or to defend land which might be inundated by the sea. They then make the point that there is also the need to consider the possibility of such works causing a transfer to risks to other areas. They point out that policies should be developed which would restrict development in a number of high risk areas, including land close to eroding cliffs or other eroding coastlines.

There are a number of other planning instruments and designations of relevance.

- The entire area of the Isles of Scilly is covered by the Heritage Coast and Area of Outstanding Beauty (AONB) designations (1976). These seek to safeguard the intrinsic value and setting of the Isles.

The Isles of Scilly are designated as a Conservation Area (see also Section 5.4.4). This designation requires that the planning authority pay particular attention to "... the desirability of preserving, or enhancing, the character or appearance ..." of the existing environment (Planning Policy Guidance Note PPG15: *Planning and the Historic Environment*). In conservation areas there are greater restrictions on development. Trees within conservation areas are also given special protection.

In the Isles of Scilly there are 23 Sites of Special Scientific Interest (SSSIs) and a proposed Special Area of Conservation (SAC). SSSIs are of national importance and are provided with special protection under the Wildlife and Countryside Act (1981). SACs are of international importance and defined under the Habitats Directive (1995).

- The Isles of Scilly Marine Park is a non-statutory designation aimed at protecting and conserving the marine environment and was established in 1989. It is defined as the area within the 50 m submarine contour and is managed by the Isles of Scilly Environmental Trust. As stated in the Structure Plan (1990)⁽¹⁾ the Isles of Scilly Trust "has a key role to play in acting both as an environmental watchdog and actively conserving the islands' landscape, terrestrial and marine habitats, and archaeological and historic remains."
- The UK government's international treaty obligations with respect to maintaining or enhancing biodiversity are stated in PPG 9: Nature Conservation. The overall goal of the government is to conserve and enhance biological diversity within the United Kingdom and to contribute to the conservation of global diversity through all appropriate mechanisms. However, it is also "important to note that environmental objectives set as part of an SMP are attainable and do not increase the risks to people and important assets."⁽²⁾

(1)

The Isles of Scilly Structure Plan: Proposed 1st Alteration, Council of the Isles of Scilly, July 1990

(2)

Shoreline Management Plans, A Guide for Coastal Defence Authorities, PB2197, Ministry of Agriculture, Fisheries and Food, London. 1995

- PPG 16: Archaeology and Planning** requires that the archaeological assessment of proposed developments should be carried out "prior to determination of the application" and that the archaeological resources should be conserved *in situ* or by record. It also places an emphasis on the need to include policies for the protection, enhancement and preservation of sites of archaeological interest and their settings in development plans.

Sea defences fall under Schedule 2 of the Town and County Planning (Assessment of Environmental Effects) Regulations 1988 (as amended). This means that planning applications for sea defence works which may have significant environmental effects by virtue of their nature, size or location must be accompanied by an Environmental Statement. It should be noted that all the coast defences constructed on the islands post 1992 have had Environmental Statements produced for them as a matter of policy.

4.2 Ecology

4.2.1 Introduction

This section of the SMP provides a strategic framework for incorporating ecological principles and nature conservation considerations into decisions for the Isles of Scilly coastal defences. The SMP is principally concerned with the five inhabited islands, Bryher, Tresco, St Martin's, St Mary's and St Agnes. All ecological resources of international, national or county importance are considered and key species noted by English Nature are shown in Tables 4.1 - 4.5 and priority species and associated habitats identified by the Royal Society for the Protection of Birds (RSPB) shown in Table 4.6.

The study area of the SMP encompasses terrestrial habitats (directly adjacent to or indirectly influenced by processes along the coastline), intertidal and subtidal zones. The evolution of these zones, resulting from natural and human changes, is predicted. A list of consultees is provided in Appendix 6.

4.2.2 Existing Resources, Terrestrial Ecology - general description of notable habitats

The ecologically notable terrestrial coastal habitats of the Isles of Scilly, as identified by the Isles of Scilly Environmental Trust in the Isles of Scilly

Management Plan (1988)⁽³⁾, are dunes, maritime grassland, thrift turf, *Armeria maritima*, and heathland. These habitat types are briefly described below.

- Dunes

A number of dune systems have developed along the coastline of the Isles of Scilly. Marram grass *Ammophila arenaria* is the dominant species over the foredunes. Sand sedge *Carex arenaria*, a very resilient species tolerant of salt spray and blown grit, is also an important species providing a level of stability in a very dynamic environment. Behind the foredunes, where conditions are more stable and sheltered, dune grassland typically develops and is maintained by the grazing action of rabbits. The nationally rare shore dock *Rumex rupestris* is found amongst the dunes.

The Pentle Bay/Appletree Banks are of Tresco, which has been designated a Site of Special Scientific Interest (SSSI), is the most notable extensive sand dune habitat on the Isles of Scilly. Great Bay on St Martin's, which is also an SSSI, is another notable dune system. Smaller dune systems have formed on many of the other islands, including Tean, Bryher, St Agnes and St Mary's.

- Maritime grassland

Where conditions are more stable, such as the rear of dune systems or above rocky cliffs, bands of maritime grassland have formed. Exposure to sea spray, strong winds and grazing by rabbits results in short, herb-rich turf. Certain species on the Isles of Scilly including the scarce orange bird's-foot *Ornithopus pinnatus* and the nationally rare dwarf pansy *Viola kitaibeliana* are recorded over the more notable examples of maritime grassland such as on the island of Tean connecting the dune grassland of East and West Porth.

- Thrift turf

Thrift turf is a variant of maritime grassland habitat where thrift is the predominant species. The most notable example, possibly in the British Isles, of thrift turf is found on Annet. Species' diversity is very limited over Annet as a consequence of its exposed location, receiving no shelter from other isles from the westerly winds blowing from the Atlantic. Most of the northern half of the island is covered by thrift, which has grown into large hummocks. Other notable areas of thrift turf are found on the north-west coast of St Helens and the southern end of Great Ganilly.

⁽³⁾

Isles of Scilly Management Plan. Isles of Scilly Environmental Trust, Hugh Town, 1988

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- **Heathland**

Heathland varies over the Isles of Scilly from a thrift/heather mixture, such as on Annet, to near pure stands of stunted heather referred to as waved heath. The latter is most notably represented by Shipman Head Down at the northern end of Bryher, and by Chapel Down at the north-east of St Martin's, both of which are designated SSSIs. The heathland is typical of nutrient poor soil.

4.2.3 Existing Resources, Marine and Intertidal Ecology - general habitat description

The numerous islands and rocks which comprise the Isles of Scilly archipelago (see Figure 1.1) extend over a relatively small area (approximately 16 km east-west and 13 km north-south). However, the length of coastline and hence intertidal habitat, is in excess of 110 km. The sublittoral zone, which is bound by the 50 m depth contour and the intertidal zone amounts to some 106 km². Consequently the extent of the combined intertidal and sublittoral environments of the archipelago is quite extensive. The environmental conditions of the sublittoral and intertidal zones are summarised below.

- **Bathymetry**

The close alignment of the 50 m contour to the outer shores of the island ring, with shallower water and considerable intertidal areas in the centre is a conspicuous characteristic of the Isles of Scilly bathymetry which reflects itself in the distribution of marine habitat types in the archipelago.

- **Wave action**

The most severe wave impacts are felt by those south and west-facing shores of the outer face of the island ring which are directly exposed to the prevailing wind and swell and are close to deep water. Significant wave action is also experienced by north-facing outer shores. East-facing shores which experience infrequent strong winds are reasonably sheltered. Within the island ring calm conditions prevail as wave energy is dissipated by diffraction, shoaling and wave breaking on the outer island shores and by the shallower water offshore. However, larger waves do occasionally migrate through the deeper channels and impact on the otherwise sheltered shores.

- **Residual currents**

Residual currents are responsible for distributing water masses and their contents (such as planktonic larvae and pollutants) throughout the Isles of

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Scilly. The principal input of water to the islands consists of water masses derived from the Atlantic Ocean and the Irish Sea.

- ***Tidal streams***

The waters of the archipelago are continually mixed by the tidal stream. Water velocities are greatest outside the main island ring (4 knots off the north coasts) and to the south-west of **Annet** (2- 2.5 knots) and least (0.5 knots) within the ring where the waters are shallow.

- ***Water temperature and salinity***

The western English Channel's surface water temperatures vary from 9.5°C to 16°C. However, the tidal stream mixing of surface waters within the Isles of Scilly brings deeper, colder water to the surface, probably reducing summer surface water temperature by about 1-2°C below those for the region as a whole. Salinity levels of surface and bottom waters is approximately 35.2 parts/1000 in both summer and winter.

4.2.4 Intertidal Habitats

- ***Rocky shores***

The granite bedrock of the Isles of Scilly has weathered to produce distinctive block-like structures, resulting in a stepped appearance to many of the shores. Crevices and rock pools, characteristically associated with more friable rock, are largely absent from the Isles of Scilly and consequently fauna associated with these habitats is limited.

Where erosion of the granite or the presence of old field walls has resulted in boulder shores, typically in the more sheltered coves within the island ring, intertidal fauna is much more diverse (see Tables 4.1 - 4.3 and 4.6). Underboulder communities on the Isles of Scilly are regarded as being particularly notable, supporting a variety of crustaceans, bivalve molluscs and many kinds of worms.

The outer south-westerly facing shores of the archipelago are very exposed receiving the full impact of wind driven waves and swell. Conditions along a number of shores are regarded as more vigorous than the most exposed mainland shores. The intertidal communities which inhabit these super exposed shores are considered to be of special note.

The Isles of Scilly rocky shore communities are characteristically southern, particularly with respect to algae species. However, certain intertidal fauna common or widely distributed throughout south-west Britain are notably absent or rare in the Isles of Scilly. This is probably a consequence of

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residual water currents around the archipelago approaching from the open Atlantic, therefore not favouring recruitment of larval forms from the mainland.

• **Sediment shores**

The most biologically productive areas of intertidal sediment in the Isles of Scilly are found within the shelter of the island ring. The four principal areas of extensive intertidal flat are:

- the Samson Flats, east of Samson;
- the Tresco Flats, in the southern part of the Bryher-Tresco channel;
- flats adjacent to Old Grimsby, Tresco;
- the St Martin's Flats, to the south-west of St Martin's.

The sediments are predominantly granitic particles mostly coarse in nature but grading to medium and fine sands in some areas. Despite being sheltered from significant wave action the sediments are nevertheless quite mobile, with the sands of the Tresco Flats in particular responding to the vigorous tidal streams in the Bryher-Tresco channel.

Relatively pollution free conditions and limited freshwater runoff contribute to the richness of the *infauna* (benthic organisms that dig into the sea bed or construct tubes or burrows) of these flats. The flats of Old Grimsby support extensive beds of eel grass *Zostera marina*. Many of the flats are traversed by old field walls and shallow rocky reefs which enhance the structural and consequently species diversity of these primarily sedimentary areas.

Following the Ratcliffe⁽⁴⁾ criteria for the ecological evaluation of habitat, an evaluation of the sediment shores of the Isles of Scilly is presented in the Isles of Scilly Management Plan. The findings are summarised below.

- Size. Approximately 11 km of shoreline around the Isles of Scilly is predominantly sandy. The intertidal flats in the north-west, encompassed by the island ring, cover an area of approximately 2.5 km².

(4)

A Nature Conservation Review, J. Ratcliffe, Cambridge University Press, Cambridge, 1977

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- Diversity. The variety of intertidal sedimentary habitats is limited, being predominantly coarse-grained. Fine sands are found in only a few sheltered embayments. Silt and mud shores are absent as there are no estuaries on the Isles of Scilly.

Variations in current flow, shelter and water depth at high tide do, however, enhance community diversity. Species diversity is limited for many areas of sedimentary shore. However, the presence of Eel Grass over many areas of the intertidal flats, and intrusive hard substrata such as rocky reefs and old field walls, significantly enhance species diversity.

- Naturalness. With the exception of Town Beach, St Mary's and where field boundaries have become submerged, the sediment shores of the Isles of Scilly are relatively natural.

Rarity. The coarse-grained sediments of the sheltered fields encompassed by the island ring are unusual in that such a composition is usually associated with more exposed shorelines. They are particularly notable for hosting the urchin *Spartangus fasciata* which is nationally rare. The Isles of Scilly provide the notable example of this community in southern Britain.

The dense beds of eel Grass on the Tresco and St Martin's flats are of regional and possibly national significance because of the numbers and diversity of fauna which they host.

- Fragility. Sediment shore and sand flat communities are also vulnerable to disturbance resulting from bait digging and educational activities.

Pollution by oil, oil-spill dispersants and other toxic chemicals would significantly impact upon sediment communities.

Any beach replenishment programmes would require careful consideration. Usually beach feeding projects utilise sediment derived from local sources. However, this should not be at the cost of depriving accreting systems of essential supplies. The coastal shelf falls steeply a short distance off the coast of the outer ring of the Isles of Scilly. Consequently dredging sediment for beach replenishment around the outer island ring would not be feasible. Any extraction of sediment from shallower waters within the island ring, such as St. Martin's Flats, would adversely impact upon the intertidal

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flats and beaches. As a consequence of these constraints any sediment used in possible beach replenishment programmes should be imported (a costly process). The natural configuration of the Isles of Scilly coastline, with its numerous enclosed bays would inhibit tides and waves from redistributing sediment from replenished beaches elsewhere. Notable and fragile strandline flora could be damaged if sediment is deposited carelessly.

- Typicalness. The marine sediments within sheltered localities of the Isles of Scilly are atypical in that they are predominantly of a **coarse-grained** nature.
- Position in an **ecological/geographical** unit. The sediment shores of the coastal embayments and of the extensive sediment habitats of the intertidal flats of the Isles of Scilly form an integral part of the marine environment of the **area**.
- Potential value. The sediment shores and intertidal flats are predominantly natural and thus there is no requirement for rehabilitation.
- Intrinsic appeal. The large areas of intertidal flats of granite sand are aesthetically pleasing.

4.2.5 Sublittoral Habitats

A description and evaluation (using the Ratcliffe criteria⁽³⁾) of the ecology of the sublittoral habitats is provided in the Isles of Scilly Management Plan and is summarised as follows.

- **Size**
The 108 km² of sublittoral seabed shallower than 50 m consists of a wide diversity of habitats and communities.
- **Diversity**
The diversity of habitats and communities is very high varying from bedrock Britain, to locations where rock extends to deep water but wave action is infrequent, and from the stable large boulders near to the coasts to plains of pebbles, mixed substrata and sediments of different types.
- **Naturalness**
Nearly all sublittoral communities present in the Isles of Scilly are natural communities only moderately affected by the activities of man. Shipwrecks

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can be the exception although it appears that the species associated with them are similar to those on surrounding rocks.

- **Rarity**
Rare communities include those associated with extremely exposed rocks to the west of the archipelago and some found on or in sediments amongst the islands.
- **Fragility**
Many of the exposed coast communities are very resilient to the high degree of natural disturbance. Some of the shallow sediment communities between the inner islands are subject to some disturbance by storms, and are vulnerable to anchoring and the establishment of moorings.
- **Typicalness**
Many of the habitats and communities present in the Isles of Scilly are good examples of types found elsewhere around the coast of south-west Britain. The impoverishment of species which occurs in many of the annual groups detracts from this feature in many habitats/communities. This faunal impoverishment is, however, typical of isolated islands and archipelagos.
- **Position in an ecological/geographical unit**
Many of the sublittoral areas are adjacent to intertidal locations of high scientific interest and form a continuation of those communities.
- **Potential value**
As almost all the sublittoral communities/habitats are natural there is no potential to enhance their ecological conservation value.

4.2.6 Existing Resources - designated sites for nature conservation

- **National designations**
SSSIs are designated by English Nature as being of special interest by reason of flora, fauna, or geographical or physiographical features. There are 23 Sites of Special Scientific Interest (SSSIs) on the Isles of Scilly. In addition three more SSSIs will shortly be notified.

All the SSSIs, and those areas shortly to be designated as SSSIs, are briefly summarised in Tables 4.7 - 4.12. Boundary maps and full citations are presented in Appendix 7. Coastline habitat is encompassed within nearly all of the SSSIs. Where it is not, the SSSIs are sufficiently close to the coastline to be of interest to the SMP.

The Isles of Scilly is also a voluntary Important Area for Marine Wildlife.

- **International designations**

The Isles of Scilly is a proposed Marine Special Area of Conservation (SAC) (see Appendix 8) under the European Commission's Habitats Directive. An SAC contains habitat types and/or species which are rare or threatened within a European context. The Isles have been highlighted as a potential SAC because of the notable range and variation of subtidal sandbanks, which host varied sediment communities, and bio-diverse intertidal sandflats.

The Isles of Scilly has also been proposed as a Special Protection Area (SPA) under the European Commission's Birds Directive due to the high populations of breeding and wintering seabirds. There is as yet no draft SPA citation.

4.2.7 Invasion of Bracken and Scrub

The encroachment of bracken is a significant threat to the floral diversity of species rich maritime grassland throughout the Isles of Scilly where soils are deep or rich enough to sustain its growth. Bracken is also becoming increasingly predominant over areas of coastal heathland and thrift turf.

Bracken has largely over-run the maritime grassland and coastal heath of Browarth peninsula on St Agnes and has spread significantly over the thrift turf on Annet. The invasive and persistent grass, Yorkshire fog *Holcus lanatus* is also a problem in the central area of the northern part of Annet.

Western gorse and bramble scrub are proliferating over certain ecologically notable coastal habitats such as maritime grassland and heath.

The Environmental Trust is working to control invasive plants and has had considerable success on St Agnes, St Mary's, St Martin's, Samson and Annet.

4.2.8 Current and Predicted Future Trends - human coastal change

A number of human activities are or may result in changes to certain terrestrial, intertidal and sublittoral habitats. These activities are summarised as follows.

- **Trampling of vegetation**

Plant species such as marram grass reduce the erosive impact of wind and rain on dunes, while also trapping wind blown sand thus leading to accreting

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systems. Their roots help to bind the sand beneath the surface providing a level of stability in what is a very dynamic environment. Despite being very resilient to harsh edaphic and climatic conditions, dune plant species are very vulnerable to trampling by humans. The consequent loss of vegetative cover results in the erosion of the sand dunes.

Continued high levels of recreational pressure on the dune systems of the Isles of Scilly will result, if uninhibited, in a decrease in the extent of this fragile habitat.

- **Tangle netting**
Tangle nets are deployed extensively around the Isles of Scilly. The long term impact of these on target crustacean shellfish and non-target species is unclear.
- **Dredging and bottom trawling**
Dredging and bottom trawling would be extremely detrimental to the sediment communities of the inner-island ring if they were to take place in the area.
- **Bait digging**
The current state of bait digging is limited. However, the potential for causing unacceptable levels of disturbance to intertidal flats should be considered should the activity become common, and especially if it were operated on a commercial scale.
- **Spearfishing**
The damage, both in terms of mortality and disturbance, to long-lived residential fish species, the main focus of attention by spearfishermen, has potential for reaching unacceptable levels in such an isolated archipelago.
- **Souvenir collection by divers**
The collection of sea fans *Eunicella verrucosa* by divers poses a long term threat to this slow-growing species. This is also true of corals and other sedentary organisms.
- **Introduction of alien species**
The presumably accidental introduction of the marine plant species **japweed** *Sargassum muticum*, which may well become established on the intertidal flats on sheltered shores within the island ring will be detrimental to native species. Of particular concern is its potential impact on the eel grass beds of the intertidal flats.

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- ***Sand and gravel extraction***

The extraction of sand and gravel from intertidal and subtidal areas could have a detrimental impact upon marine communities such as the Eel grass beds on the north of the island ring, the pebble bottom communities of St Mary's Road and St Mary's Sound and the bottom communities of Smith Sound.

- ***Anchoring and mooring***

The use of anchors on the intertidal flats and shallow sediments supporting the eel grass communities could be detrimental over the long term to the species. Fixed moorings are less likely to damage the substratum and are a preferable solution to the seasonal demand of visiting vessels. It is likely that the creation of fixed moorings will safeguard the eel grass.

- ***Disposal of sewage and waste water***

St Mary's disposes of its untreated, macerated sewage into the sea through a discharge pipe at Morning Point. There are reports of sewage occasionally being carried back ashore from this discharge. No signs warning of the outfall are posted although swimmers have been noted nearby from time to time.

4.2.9 Objectives

- ***General considerations***

The preservation of critical natural capital should be a principal objective of an SMP. English Nature describe critical natural capital as "those elements of the natural environment whose loss would be serious or which would be irreplaceable, or which would be too difficult or expensive to replace in human timescales"⁽⁵⁾. The preservation of critical natural capital is essential to achieve environmental sustainability, a fundamental requirement of an SMP.

The criteria for the identification of critical natural capital in SMPs⁽⁴⁾ are as follows:

- the site (or population of species) is of national or international importance;

⁽⁵⁾

Draft Nature Conservation Objectives in Shoreline Management Plans, English Nature, Peterborough, 1995

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- the site (or population of species) is essentially irreplaceable within the **lifespan** of the SMP (25-50 year timescale), whether because of technical or economic considerations, or both.

Ecological assets which do not meet this criteria are termed 'constant natural assets'. These may cover designated sites or species population of international, national, county or local importance. The SMP should aim to conserve, and where appropriate, enhance the total stock of these assets overall, but not necessarily in their current locations. It is the possibility of moving an ecological asset to other locations which makes irreplaceability a fundamental criterion in distinguishing critical natural capital.

4.2.10 Critical Natural Capital

English Nature considers that all **SSSIs** are nationally important in that they form part of a national network of such sites. They should therefore all be considered to be Critical Natural Capital. Particular elements of critical natural capital which require protection by future shoreline management **are** as follows:

- **Terrestrial habitats**

- **Castle Down SSSI (Tresco)**

This nationally important site, composed predominantly of waded maritime heathland, is considered unrecratable due to its diverse lichen flora, containing several internationally scarce species.

Proposed objectives:

to adopt a strategy of non-intervention as the most notable ecological features are not affected by coastal erosion.

Great Pool SSSI (Tresco)

This nationally important site is the largest freshwater habitat on the **Isles of Scilly** and is important for breeding and migrant birds. It is regarded as unrecratable.

Proposed objectives:

monitor stability of natural coastal defences which are the narrow sandbank at **Abbey Farm** to the west and wider sand dunes to the east. Non-intervention so long as natural coastal defences are stable.

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- **Plains and Great Bay (St Martin's)**
This nationally important site is a mosaic of habitats including a classic succession of coastal communities from embryo dunes to dune scrub. It is regarded as unrecreatable.

Proposed objectives:

to establish a strategy of non intervention, as the sand-dune system appears to be accreting.

Chapel Down (St Martin's)

This nationally important site predominantly consists of waved maritime heath. The coastal cliffs support the largest Scillonian colony of breeding Kittiwake. It is regarded as unrecreatable.

Proposed objectives:

to follow a strategy of non-intervention, minimizing disturbance to the Kittiwake colony and allowing natural coastal processes to take their course.

Peninnis Head (St Mary's)

This nationally important site, which includes maritime heath and grassland habitats is considered unrecreatable. Due to the extreme oceanic conditions a rich lichen flora has developed over the cliff, tor and heathland habitats.

Proposed objectives:

to follow a strategy of non-intervention, natural coastal processes should be allowed to take their course.

- **Shipman Head and Shipman Down (Bryher)**

This nationally important site largely consists of maritime heath and grassland and also includes an important seabird colony. It is considered an unrecreatable site.

Proposed objectives:

to follow a strategy of non-intervention, natural coastal processes should be allowed to take their course;
to avoid disturbance of the seabird colony.

Rushy Bay and Heathy Hill (Bryher)

This nationally important site consisting of sand dune and dune grassland habitat is regarded as unrecreatable as it supports scarce

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and nationally rare plants including dwarf pansy *Viola kitaibeliana* a plant which grows on the Isles of Scilly and nowhere else in Britain.

Proposed objectives:

natural coastal processes of erosion and accretion, which both occur along different sections of this coastline, should not be inhibited.

Pentle Bay, Merrick and Round Islands (Tresco)

This nationally important site is notable for its transition from dunes to lichen-rich heathland. The site also incorporates a number of small islands which support important breeding seabird colonies. It is regarded as unrecreatable.

Proposed objectives:

to protect this unique site for its ecological value. Any coastal defences should not inhibit sediment supply to the beaches, which are both accreting and eroding along different sections of the coastline, or disturb the breeding seabird colonies.

Higher Moors and Porth Hellick Pool (St Mary's)

This nationally important site contains the largest area of open water on St Mary's and a diversity of other habitats supporting notable flora. The site is considered unrecreatable.

Proposed objectives:

to oppose coastal defence projects which would inhibit sediment supply to shingle and sand bar separating Porth Hellick Pool from the coastline, which is accreting.

Big Pool and Browarth Point (St Agnes)

This site of national importance is regarded as being unrecreatable. Big Pool and surrounding wet grassland support a variety of flora including many rarities. The beaches are among the most important on the Isles of Scilly for wintering waders.

Proposed objectives:

to improve existing coastal defences at the rear of the beaches thus conserving Big Pool and the wet grassland habitat. Any works should minimise disturbance to birds in particular wintering waders. A scheme to protect this area has recently been constructed (July 1996).

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- **Marine habitats**

- The Samson Flats, east of Samson.
These nationally important intertidal sediment flats are rich in **infauna**.
They are regarded as unrecreatable.

Proposed objectives:

to protect these important habitats. Any coastal defence works should not inhibit the supply of sediment to these flats.

The Tresco Flats, in the southern part of the Bryher-Tresco channel
These nationally important intertidal sediment flats are rich in fauna.
They are regarded as unrecreatable.

Proposed objectives:

to protect these important habitats. Any coastal defence works should not inhibit the supply of sediment to these flats.

Flats adjacent to Old Grimsby, Tresco

These nationally important intertidal sediment flats are rich in **infauna**.
They are regarded as unrecreatable.

Proposed objectives:

to protect these important habitats. Any coastal defence works should not inhibit the supply of sediment to these flats.

St Martin's Flats, to the south-west of **St** Martin's

These nationally important intertidal sediment flats are rich in fauna.
They are regarded as unrecreatable.

Proposed objectives:

to protect these important habitats. Any coastal defence works should not inhibit the supply of sediment to these flats.

Pool of Bryher and Popplestone Bank

The recreatability of this nationally important site is questionable as insufficient is known regarding its complexities particularly with regard to the degree of percolation through the seaward barrier and overtopping frequency. It consists of a brackish lagoon separated

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from the sea by a narrow highly mobile storm beach backed by a small dune system.

Proposed objectives:

a sea defence scheme was constructed at this site in **1995**;

to ensure that any further coastal defences do not affect sediment supply to the storm beach and dune system.

4.2.11 Constant Natural Assets

- **Terrestrial habitats**

- Wingletang Down (St Agnes)

This site of national importance is considered as being recreatable. The site is predominantly waved maritime heath.

Proposed objectives:

to adopt a strategy of non-intervention, natural coastal processes should be allowed to take their course. Digging on the backdune should be prohibited.

Lower Moors (St Mary's)

This site of national importance is considered as being recreatable. The site exhibits a range of wetland habitats.

Proposed objectives:

as the site supplies the majority of the island's fresh water supply, the beach may need to be raised to prevent breaching and consequent contamination by salt water of the wetland.

4.3 Landscape and Visual Assessment

4.3.1 Introduction

The unique landscape character and scenic beauty of the Isles of **Scilly** is undisputed. The designation of the entire archipelago as Heritage Coast as well as an Area of Outstanding Natural Beauty (AONB) testifies to the value placed on such scenery at a national level. The spirit and purpose of these designations reverberates through local planning policies, the conclusions of previous environmental and economic studies, and the objectives of the historic landscape assessment and management plan recently commissioned by the Duchy of Cornwall. All of these underline the need to maintain,

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conserve and enhance the unique and unspoilt character of the islands not only for the benefit of the local inhabitants, but also to sustain its appeal to the visiting tourist, upon which the island's economy now so heavily depends. The various land uses of the islands are shown in Figures 4.1 - 4.4.

The Duchy of **Cornwall** is the majority freeholder of the islands. It is one of largest private landed estates in the country and, on the Isles of Scilly, is predominantly an agricultural estate. The various farm business and resident lands are let under lease, tenancy and licence agreements which define the differing responsibilities of the occupiers. The no-farmed unenclosed "headland" area around each of the inhabited islands and all of the uninhabited islands, together with all the foreshore is let to the Isles of **Scilly** Environmental Trust.

Fundamental to the scenic appeal of the islands is the interface between land and sea. Due to the scale, low-lying topography and configuration of the islands, the area from which the shoreline is visible encompasses practically the entire archipelago along with its immediate airspace and surrounding navigable waters. Only perhaps when one is immersed in the sub-tropical vegetation of Tresco Abbey gardens, or walking along the inland country lanes of St Mary's does the dominance of the seascape subside. The visual significance of the shoreline must therefore be a central concern for the SMP when considering coastal defence options for any given management unit.

4.3.2 Aim and Approach

This chapter sets clear landscape objectives against which coastal defence options can be evaluated. The objectives are distilled primarily from an analysis of the information sources listed below. This has been augmented by an examination of the emerging archaeological and geomorphological studies undertaken as part of the SMP, discussions with those concerned with the planning, land-use and ecological aspects of the study, and with representatives of key organisations with a statutory or non-statutory interest in conserving the Scillonian landscape. From this, a clear understanding has been developed of the value placed on the visual resource, the broad characteristics and components which make up the landscape, and the forces for change, whether through natural processes or human influence, which may affect the shoreline landscape in the future.

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4.3.3 *Information* Sources

A great number of documents have been published on the landscape of the islands. The key documents consulted included *Exploration of a Drowned Landscape*⁽⁶⁾, *A Landscape Charter for the Isles of Scilly*⁽⁷⁾ and *The Isles of Scilly Comprehensive Land Use and Community Development Project*⁽⁸⁾. The landscape has been assessed primarily using guidance notes published by the Countryside Commission⁽⁹⁾. A full list of sources is contained in Appendix 9.

4.3.4 Consultations

consultations regarding landscape and visual character have taken place with the Countryside Commission, the Isles of Scilly Environmental Trust and the Council of the Isles of Scilly planning department.

Each person was contacted by telephone in order both to identify relevant sources of information, and provide an opportunity for any particular issues for concern to be raised which are not covered in the information sources.

Further comments were received following the circulation of the first draft of the SMP including the Duchy of Cornwall and other groups representing local landscape interests, so that a consensus has been reached concerning the landscape objectives for the SMP. Further comment in due course may be expected from the consultants currently involved in preparing the historic landscape assessment and management plan for the Isles of Scilly on behalf of the Duchy. Other comments will no doubt be received in the future and will be incorporated in due course into what is to be a "living" document.

4.3.5 The Landscape Resource

Analysis of existing data reveals many attempts to capture the essence of the Scillonian landscape in words. From these descriptions, a number of key

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- (6) *Exploration of a Drowned Landscape: Archaeology and History of the Isles of Scilly, C. Thomas, 1985*
- (7) *A Landscape Charter for the Isles of Scilly. Prepared for the Council of the Isles of Scilly, Jellicoe & Coleridge, Architect-Planners, May 1965*
- (8) *The Isles of Scilly Comprehensive Land Use and Community Development Project, Graham Moss Associates, 1984*
- (9) *Landscape Assessment Guidance, CCP 423, Countryside Commission, 1993*
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landscape characteristics and aesthetic qualities emerge. Some of these apply to the islands in general, others apply to specific landscape types. For the purpose of developing strategic objectives for the SMP, it is considered useful to define the general characteristics and qualities which it is desirable to conserve. These can then be used as criteria against which to evaluate coastal defence options.

- Dominance of nature

Despite the islands being inhabited since the Neolithic period 4,000 years ago, the forces of nature firmly remain the architects of the landscape. In 1965, Jellicoe⁽⁶⁾ emphasised this quality: "On both land and sea the primitive struggle with nature is manifest and easily observed. Rocks, storms, and above all, wind, remain unchanged, continually contrasting violence with tranquillity. Every few hours the scene changes with the rise and fall of the tide."

Jellicoe recognised the appeal of such a wild and unspoilt place, contrasting it with a "prosperous and overbuilt" England "grappling with the invasion of cars, caravan, pylon and road". Implicit in this sentiment is the recognition that the scale of human influence on the Scillonian landscape is in balance, rather than conflict, with the environment. This is echoed in the Environmental Management Plan (Section 1.2.4)⁽²⁾ which stresses that "very little of the coastline is developed and must remain so".

- Proportion and scale

Because the islands lie low in the water, the scattered land masses sometimes appear almost squashed horizontally between expansive Atlantic skies and the sea. Structures can potentially conflict with these proportions, particularly those which break the strong horizontal outline of the land viewed across water.

- Exposure

The proportions described above create a feeling of openness and exposure along the coast. This is emphasised by the strong winds experienced on the islands which naturally limit the coastal vegetation types to the most hardy. In contrast, the cultivated areas rely heavily on protection from the wind afforded by stone walls ("Cornish hedges"), hedges ("fences") and shelterbelts.

- Colour and texture

Certain landscape elements are highlighted in the information sources as of a distinct colour or texture. The description of the Isles of Scilly in the AONB directory tells of "white quartz sand beaches with jewel-green

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shallows ... dunes and sheer rugged cliffs ... sub-tropical gardens, brilliant with rare trees and flowers, [contrasting] with the low bare inland heather plateaux." The palate of colours and textures already existing in the landscape should guide the form of any visual change in the shoreline zone.

- ***Quality of the natural environment***

The exceptional marine ecology, ornithology, and coastal flora are considered essential characteristics of the Scillonian landscape. Significant visual creatures and plants such as seals and puffins, shellfish and thrift all contribute to the visual experience of the landscape.

- ***Quality of built elements***

Built elements adjacent to the shoreline, including walls, quays, jetties, and buildings, are largely in scale and character with their setting, and are constructed from traditional materials such as slate, timber and granite. Since the islands are entirely within a Conservation Area, planning policies seek to conserve and enhance the character and appearance of such features.

- ***Local distinctiveness***

Reference is made in the information sources to the distinctive appearance of each of the inhabited islands. Whilst existing sources do not specifically define these subtle differences in character, we understand that this is one of the objectives of the historic landscape assessment and management plan. In due course, these distinctions could be translated into this study to guide the evaluation of coastal defence options, dependent on the final definition of management units.

- ***Intervisibility***

As discussed previously, the area from which the shoreline is visible encompasses practically all the land, sea and airspace of the Scillies. The visual impact of coastal defence options will therefore need to take account of the existing intervisibility within and between these elements.

- ***Archaeological, historic and cultural***

A strong visual component of the Scillies is the rich legacy of archaeological, historic and cultural sites which often form prominent landscape elements visible within or adjacent to the shoreline (see locations of Scheduled Ancient Monuments in Figure 4.5). This includes cairns, castles, hut circles and field systems.

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- ***Peacefulness, tranquillity and remoteness***

These are much valued characteristics of the Scillonian landscape, largely governed by the mood of the sea, and the perception of a certain timeless quality of the islands where nature is constant, and the stresses and strains of modern life as experienced on the mainland seem far away. These qualities are cited as reasons for many tourists visiting the islands.

It is hoped that through the ongoing consultation process of the SMP, a consensus of opinion will be reached as to the appropriateness of these characteristics and qualities and how they should be applied to a coastal defence strategy.

As management units are defined, it may be considered appropriate to further define the landscape character of the Scillies by identifying separate landscape character areas. Graham Moss Associates have already identified three such categories for the landward side of the shoreline, and has mapped these broadly¹⁷. To the categories of "wild land", "domestic land" and "built environment" defined by Moss, it may be appropriate to add "intertidal zone" and "seascape", defining for each these the specific qualities and characters which are of relevance to the SMP.

4.3.6 Current and Predicted Future Trends

Since the landscape is essentially a visual product of many other aspects of the environment, an identification of the current and predicted forces for change which may affect the shoreline landscape depends upon the conclusions of other chapters in this study. At the time of writing, only a partial picture has emerged, which is summarised below.

- ***Geological and geomorphological trends***

Rising sea levels, increased storminess and the reworking of sediment in the coastal zone are considered to be the key processes influencing coastal stability within the Scillies. The inundation of the sea over the land has obvious undesirable connotations in that scenery would simply be lost over time. However, the dilemma which must be discussed is whether a hard solution to the question of sea encroachment would spoil the very scenery which it aims to protect. The dominance of nature has been highlighted as perhaps the most important single quality of the Scillonian landscape, and it could be considered futile and inappropriate in the very long term to defy such powerful natural forces.

Evidence of coastal erosion exists throughout the islands. On St Martin's, cultivated fields have been truncated by the receding shoreline, and have




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been abandoned and overtaken by gorse and bracken, leading to a change in landscape character and, it might be argued, a degradation of landscape quality.

- ***Tourist pressure***


Tourists can create pressures on the shoreline landscape in many ways if they are not managed. Direct physical disturbance to shoreline vegetation through trampling may lead to destabilization of dune systems for example, or erosion of coastal paths which may become unstable and unsightly. Increasing problems of waste disposal are apparent, and solutions are being sought for the dumping of waste in the coastal zone.

- ***Built environment***



Some buildings have been allowed to deteriorate and fall out of use. Concern has been expressed because of the contribution such buildings make to the landscape and built environment. Some such buildings contribute to the coastal scenery, such as traditional barns and former greenhouses of the horticultural industry. The Duchy and Council jointly initiated a full condition survey of all (some 490) farm barns, in particular those which are listed, in order to prepare a long term strategy for their management, repair and re-use. The Duchy is also pursuing with English Heritage an application to participate in a Conservation Area Partnership with expectations of financial assistance in the special management of these traditional farm buildings.

- ***Land management***



Land management and the need to conserve landscape character are issues which are being addressed separately by the historic landscape assessment and management plan currently being prepared on behalf of the Duchy of Cornwall. A key concern is the question of cultivated areas which are not being farmed as meticulously as before because agriculture is less economic than it was, with resultant encroachment by gorse, bracken and bramble, and the lack of maintenance of "hedges", "fences" and shelter belts which create the vital microclimate essential for cultivation. These characteristic traditional landscape features are fundamental to the coastal scene.

The majority of land adjacent to the shore is managed by the **Isles of Scilly** Environmental Trust under a 1985 Management Plan. The Trust has within its lease most of the foreshore down to Mean Low Water Springs and almost all of the land leased to the Trust is covered by management agreements: with English Nature for SSSIs (Reserve Enhancement Scheme) and MAFF for non-designated land (Countryside Stewardship - not yet in place but due to be backdated to October 1996).

4.3.7 Landscape Objective

To ensure that coastal defences should conserve the general characteristics and visual qualities of the Scillonian landscape.

The characteristics and qualities referred to are defined in Section 5.2. Particular reference should be paid to ensuring that coastal defence measures recognise the dominance of wind and sea, the existing scale and quality of built form, the degree of exposure and openness and of inter-visibility, the colour and texture of nearby features, and the importance of the historic and natural environment.