

## SECTION 5

# THE HUMAN AND BUILT ENVIRONMENT, LAND AND SEA USE

## 5 THE HUMAN AND BUILT ENVIRONMENT, LAND AND SEA USE

### 5.1 Introduction and Methods

This section focuses on those areas on the Isles of Scilly where people live or which are important to the islands' economy and social well-being. These include residential areas, commercial and industrial property, infrastructure and transport, navigation, agricultural/horticultural land, fisheries, and water resources. Development proposals are also considered in this section. Tourism and recreation (Section 5.3) and cultural heritage (Section 5.4) have been examined separately because of their special importance.

The study area encompasses the foreshore and the hinterland beyond the shore which may require, or be affected by, coastal defences. Information has been collected by means of desk study and consultations with the Council of the Isles of Scilly<sup>(1),(2),(3),(4),(5)</sup>

### 5.2 Existing Resources

#### 5.2.1 Population

Some 2,000 people inhabit the islands, of whom over 1,600 live on St Mary's<sup>(3)</sup>. The remainder live on St Agnes, St Martin's, Treasco and Bryher. The population of the islands doubles in summer with an influx of tourists from the mainland (see Section 5.3, Tourism and Recreation). The population has increased by 10.5% since 1981 mainly as a result of immigration but it is anticipated that there will not be a significant rise in resident population in the future (see Section 5.2.8 below).

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- (1) *The Isles of Scilly: Comprehensive Land Use and Community Development Project, Graham Moss Associates (GMA), 1984*
  - (2) *Isles of Scilly Rural Strategy: Incorporating the Rural Development Programme, Cornwall County Council, 1991*
  - (3) *Isles of Scilly: Sustainable Economic Development Strategy, Atlantic Consultants, 1995*
  - (4) *Isles of Scilly: Sustainable Economic Development Strategy 1995 and Beyond, Atlantic Consultants, 1995*
  - (5) *Report on Existing Sea Defences and Proposals for Remedial and Additional Work, DHV Burrow-Crocker, 1992*
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### 5.2.2 Land Division

Land on the five inhabited islands can broadly be divided into three main uses - urban/residential, agricultural and non-agricultural, uncultivated land (see Figures 4.1 - 4.4 and Drawings 4, 5, 6, 7 and 8). The five inhabited islands cover a land area of 1,405 ha<sup>6</sup>. Recreational and tourist land uses tend to be in urban areas or are of an informal nature (see Section 5.3).

- **Urban/residential**

Hugh Town is the only large settlement on the islands and it provides the administrative and commercial centre for the **Scillies**. Hugh Town lies on an isthmus connecting the Garrison with the main body of St Mary's and is exposed to the sea on two sides. Other smaller settlements include Old Town and Porth Loo on St Mary's; Higher Town, Middle Town and Lower Town on St Martin's; New Grimsby and Old Grimsby on Tresco; and The Town on Bryher. All of these settlements are within 500 m of the coast. Otherwise there are numerous scattered dwellings and other properties within close proximity to the coast. According to the Isles of Scilly Agricultural Land Classification<sup>6</sup> only 3.4% of the land area on the five inhabited islands is urban.

Urban areas vulnerable to flooding include Hugh Town, Porth Loo and Old Town on St Mary's, and the area near the Pool on Bryher where houses and a hotel are in close proximity to the sea.

- **Agricultural/horticultural land**

Approximately 40% of the land area of the Scilly Isles is farmed<sup>6</sup> under full Agricultural Tenancy Agreements (some 50 separate holdings) imposing detailed liabilities and responsibilities. The islanders take advantage of the relatively mild climate on the islands to grow flowers for sale in winter on the mainland. New potatoes are also grown and there is some land under pasture. Generally, agricultural land lies on higher ground beyond the coast (see Drawings 5, 6, 7 and 8). There is no Grade 1 land, very little Grade 5 and some 33% of the total land area on the five inhabited islands is Grade 2 or 3 (i.e. with minor limitations for farming).

There are several locations where agricultural land is exposed to the sea and vulnerable to flooding; Porth Minick on St Mary's, near Big Pool on St Agnes; The Brow north of Samson Hill on Bryher; arable land at Higher

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<sup>(6)</sup> *The Isles of Scilly Agricultural Land Classification*, Ministry of Agriculture, Fisheries, and Food, 1983

Town Bay and south of Lower Town on St Martin's; and land between Plumb Hill and Appletree Point on Tresco.

- ***Uncultivated land***

Approximately **57%** of the land area on the five inhabited islands is uncultivated. This land type (mainly consisting of heath and scrub) lies primarily in the coastal hinterland with the farmed land lying beyond on higher, more sheltered ground. It is therefore the area most at threat from erosion or flooding. Uncultivated land is under long-term lease to the Isles of Scilly Environmental Trust and they are responsible for the repair, maintenance and safekeeping of the areas concerned. The reintroduction of livestock would enable the Environmental Trust to manage the uncultivated land with a traditional system more recently replaced by costly mechanical maintenance. Livestock would enhance the visitor experience and provide a valuable form of farm diversification for the management of break crops.

### **5.2.3 Fisheries**

There are only small scale fisheries around the islands with shellfish (primarily lobster, crab and crawfish) accounting for two-thirds of the total catch in 1994<sup>(3)</sup>. The landing of Demersal fish and other unidentified species account for the remainder of landings. There are no landings of Pelagic fish on a commercial basis.

According to the Isles of Scilly Fishermans Association (personal communication) all the waters around Scilly are fished -there are no specific locations. A number of small boats fish close to shore and during spring tides mullet is caught from rowing boats just off the shore. There are no fish farms or hatcheries and aquaculture is considered unviable due to occasional severe weather and the lack of suitably sheltered locations. An attempt to cultivate oyster beds between Bryher and Tresco failed after bad weather destroyed much of the crop.

### **5.2.4 Transport**

Visitors to Scilly either come by plane, helicopter or on the *Scillonian III* which docks at Hugh Town harbour. The airport is located 1 km east of Hugh Town and is managed by the Council of the Isles of Scilly.

Movement between the islands is almost entirely by boat and the harbour at Hugh Town is the main point of access by sea to St Mary's and the Isles of Scilly in general. Other harbours and quays are located at Porth Conger and Periglis on St Agnes; The Town on Bryher; Southward Carn and Higher

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Town Bay on St Martin's; and New Grimsby and Old Grimsby Harbour on Tresco. The Duchy of **Cornwall** is the Harbour Authority for St Mary's and also has responsibility as Freeholder of all the Off-Islands for the off-island quays and roads. Responsibility for public highways on the **Isles of Scilly**, which are only to be found on St Mary's, lies with the Council.

The harbour at Hugh Town was dredged in **1993/94** to provide materials for works to the quay. However, dredging is not normally carried out. Several quays have been damaged by storms: the Old Quay on St Martin's and the quays at New Grimsby and Old Grimsby on Tresco. The Duchy report that they are currently (May **1997**) undertaking a **study** of all the off-island quays and roads in order to establish a management and repair strategy.

### 5.2.5 Mineral Extraction

Sand has been extracted from Bar Point on St Mary's in the past, formerly from the sand pit behind the beach which is now abandoned. While sand extraction no longer takes place there is now a long term, secure business lease to extract stones from Bar Point. The stone is crushed and used as aggregate for construction. Ram, a traditional building material on the islands, is also extracted on a small scale from Normandy Down, St Mary's and on Bryher. It has been reported that there is some unregulated removal of materials from beaches on the off-islands.

### 5.2.6 Development Proposals

At the present time there are no proposals for major residential, commercial, industrial or tourist developments anywhere on the islands. The planning authority prefers the conversion or extension of existing property rather than new building. The Council of the **Isles of Scilly** Council has considered the construction of a new waste treatment works near Old Town on St Mary's but no planning application has been submitted. The developments which would have the most impact on the shoreline are the coastal defence works themselves.

### 5.2.7 Water Resources

There is a fragile balance between water supply and demand for island communities, particularly those such as the **Isles of Scilly** with a reliance on tourism which creates peak demands during periods of lowest supply. The water resources of the island rely on shallow wells and boreholes with annual replenishment of aquifers reliant on rainfall. There are no surface water resources available for domestic supply on the islands, although

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limited resources are available for irrigation. The groundwater is connected with fissures of the granite underlying the sands and silts. There are limited records of hydrological or hydrographic details and understanding of the water resource characteristics is based upon the experience and knowledge reported by the islanders and Council officers.

The limited resources are currently managed by allocation and controlled pumping but some wells and boreholes throughout the islands have become vulnerable to yield reduction and increased salinity due to over-abstraction. Limited groundwater supplies are also supplemented by rainwater collection tanks. Supplies on St Mary's are supplemented in the summer peak demand by desalination.

With regard to coastal defence, water resources that would be affected by coastal erosion were advised by the Chief Technical and Environmental Health Officer (EHO) to be as follows for each of the inhabited islands.

- **St Mary's**

The main water catchment areas for St Mary's are Lower Moors and Higher Moors. Lower Moors is reasonably well protected by the concrete sea wall at the head of Old Town Bay and also the embankment at Porth Loo although work is envisaged in the next two years to provide greater protection to the embankment on Porth Loo Beach. Higher Moors has always been subject to overtopping of the shingle bank at the head of Porth Hellick Beach. This has not been too great a problem in the past as the water has flowed into the pool and out again to sea through a leat. However, any further erosion of this shingle bank could lead to the sea gaining access to the Higher Moors area and polluting the fresh water catchment area.

- **Bryher**

The main catchment area for the Council operated mains water supply on Bryher is close to Great Popplestones but this has been the subject of recent coast protection work which is anticipated to provide protection to this area for several years.

- **Tresco**

The water catchment areas for Tresco are in the middle of the island and are not at risk from any coastal erosion. However, increased summer demand is met by pumping from Big Pool, which is at risk from inundation by sea water via management units T5, T6 and T7.

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- **St Martin's**

The water supply on St Martin's is served by many private boreholes, none of which are on low ground that would be affected by coastal erosion. However, one of the boreholes serving the **St Martin's Hotel** was contaminated last year by saline intrusion although this was not due to coastal erosion but was due to over pumping by the Hotel.

- **St Agnes**

The existing water supply resources are just sufficient for the demand within the current operating regime, which is finely balanced and **relies** on controlled pumping and availability. Two sources, Fred Smith's **borehole** and Periglis Well, could become vulnerable to saline intrusion, and this would be significant for such a resource strategy. Coastal defence works are now in place which will maintain the protection of Big Pool from further saline ingress and retain the integrity of the current water resources.

### 5.2.8 Current and Predicted Land Use Trends

National and local planning policies and legislation provide severe restrictions over new development. Furthermore, the Duchy of Cornwall, which owns much of the land, generally opposes further development and other limitations are imposed by the lack of water resources on Scilly for the support of a larger population or a significant expansion in the tourist trade. There is therefore unlikely to be any significant development in the coastal zone. Smaller scale, piecemeal development is more likely; the Council prefers conversion of existing buildings rather than new-build. As stated above, the main developments affecting the shoreline are likely to be the coastal defence works themselves.

Agricultural land is in danger of inundation in some locations as identified in Section 5.2.2 above. Saline intrusion can cause soil degradation which, local farmers inform the writers, can take several years to remedy. However, over the last 30 years there has been a decline in the amount of land in agricultural use as a result of the decline in the value of Scilly produce caused by increasing competition from local and international markets. This trend is likely to continue in the future if produce becomes less competitive<sup>i3'</sup> with marginal farmland likely to be put out of production and returned to its **unfarmed/open** space status; some land has already been added to the lease of the Isles of Scilly Environmental Trust.

There have been some concerns expressed over the possibility of the abandonment of large areas of farmed land, however, there is no existing data on the quantity or location of land which has or may be abandoned; the

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lower quality agricultural land tends to be located near the coast. As the economic value of agricultural land decreases the benefits gained from its protection for that purpose alone may be reduced. A recent study has recommended the diversification of agriculture land use throughout the islands<sup>(3)</sup>. Some specialisation of Scilly crops has already taken place with concentration on products like the *Soleil d'Or* narcissus. Trenoweth Research and Development Station on St Mary's fills an important role in support of the horticulture industry on the islands.

The flooding of urban areas and individual properties is of great concern. The centre of Hugh Town lies little more than 4 m above Ordnance Datum (AOD) and Old Town on St Mary's has been subject to flooding in the past. Other vulnerable areas, as identified above, include Porth Loo on St Mary's and the *Island Hotel*, Treco.

### 5.2.9 Strategic Objectives

Within the broader aims of maintaining the special qualities of the Scilly environment and the vitality of the islands's economy, the following objectives have been devised with respect to land and sea use:

- to identify areas liable to suffer flooding or significant coastal erosion and where no further development should be permitted. To identify those areas which should be left unprotected or which should be subject to some form of protection;
- to protect agricultural land where economically viable;
- to protect residential, commercial and industrial property where economically viable;
- to minimize impacts of coastal defence works on the environment.

## 5.3 Tourism and Recreation

### 5.3.1 Introduction

These two subjects may reasonably be considered together because the resident population of just over 2,000 generates little recreational activity in itself which is of strategic significance. In summer the population can almost double at any one time, as there are about 1,750 visitor bed spaces available in holiday accommodation. The total number of visitors for 1994, which is the latest year for which figures are available, was 111,908.

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The main source of statistical information has been the report prepared for a consortium headed by the Council for the Isles of Scilly by Atlantic Consultants<sup>(3),(4)</sup>. Where appropriate, **1995** figures have been provided by the Tourism and Development Officer.

### **5.3.2 Existing Resources**

The Isles of Scilly have an advantage over much of southern England in that they are physically isolated and have a low density of population. They are thus able to offer to holiday-makers peace and tranquillity, and so cater for a market which values these assets. Indeed, the high proportion of repeat visits (reported at **25%** by the Tourist Information Centre in a **1989** survey) bears this out.

The islands' natural beauty is also a considerable asset, although the Atlantic Consultants' reports<sup>(3),(4)</sup> did refer to certain aspects of the landscape which are relevant to this plan, notably:

- lack of management of natural vegetation in as much as it prohibits access around the islands;
- the need for the development of more coastal paths;
- the desire for a cleaner coastline.

Although the rich archaeology and historic heritage of the islands is visited and appreciated by visitors, historic sites have never featured as the main reason for visiting the islands. The islands have always interested academics in the archaeological and historical fields and now, with increased leisure time and today's increased awareness of historic heritage, particularly amongst the socio-economic groups that have been traditionally attracted to the Scilly, there is believed to be tremendous potential for study tours and field trips.

The most popular historic sites are the Garrison on St Mary's, which is suffering erosion particularly near the Morning Point, Lower Benham and King Charles' Batteries, and Cromwell's Castle on Tresco which is popular with artists and photographers and which is similarly suffering from coastal erosion. The need to protect specific historic sites from coastal erosion or to record them prior to their damage or destruction by erosion, has to be defined by archaeologists.

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The Atlantic Consultants' reports<sup>(3),(4)</sup> make no reference to the importance of bird-watchers to the tourism economy, although it does indicate that the season for visitors is relatively long compared with mainland destinations, running from late March through to late October. The islands' Tourism Officer believes that the presence of bird-watchers during the spring and autumn migrations enhances the tourism economy by extending the season by anything up to six weeks. It is not possible to subscribe dependence to this tourism market, but St Agnes, in particular, relies to a significant degree upon bird-watchers and its economy is more fragile than St Mary's. Many bird watchers stay on St Mary's and day-trip to St Agnes giving a significant bonus to the holiday trade on the principal island. It is therefore important to ensure that the habitats which support unusual or migratory birds should be conserved for socio-economic reasons as well as those related to conservation.

There are many attractive sandy beaches on the islands, and these are cited as being a significant reason for visiting. The most important, in terms of usage, are Porth Cressa, Porth Melion and Old Town. These are on St Mary's and owe their popularity to easy access for both day visitors and local residents. St Mary's not only has the largest population (**1, 600**) but also **80%** of the accommodation stock. Consequently, the off-island beaches, although they are often much better in both sand quality, beauty and isolation, are less well used.

There are footpaths and tracks at or close to the coast of all the major islands and they are vital to tourism. The size and nature of the islands means that the main recreational pursuit (apart from boating to each island) is walking and exploring by foot. The Isles of **Scilly** Environmental Trust manages and has within its lease **97%** of all footpaths within the Scillies with the exception of Tresco. All footpaths are "permissive" and are not "rights of way".

Recreational sailing is important to the Scillies although there is only one sailing club, the Scillonian Sailing and Boating Club, on St Mary's, which has about **100** members, the majority being dinghy sailors. Several new **Toppers** and **Lasers** and a safety boat were provided in **1996** through a large grant from the Lottery Sports Fund, creating increased sailing opportunities for Scillonians. However, the islands attract many visitors. There are special visitors' moorings in Tresco Channel and by St Martin's Hotel on Crown Estate **Fundus** by the lessees of Tresco and St Martin's Hotel respectively, and St Mary's Harbour (38 deep water moorings) by the Duchy of **Cornwall** as the Harbour Authority. The licensing for all such moorings throughout the islands is the responsibility of the Duchy of Cornwall.

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Many of the local sailing boats are dinghies and it is therefore important to ensure good access to ramps and slipways. There are no problems gaining access on the off-islands and there are slipways which allow access to the harbour area on St Mary's by the **Mermaid Public House**, by the **Atlantic Hotel**, the Rechabite Slipway on the Strand and at Porth Mellon Beach. The present creation of sea defences at Porth Cressa has enabled a new slipway to be built at the eastern end of Porth Cressa Bay. These slipways are also important for the launching of gigs. The gig races between communities on the islands are not only part of Scillonian heritage, but also attract large numbers of visitors.

The islands are popular with visiting sub-aqua divers, largely because of the presence of many wrecks in the surrounding waters. No other water or coastal recreation activities are of strategic significance. However, it should be emphasised that facilities for landing passengers are essential for the ferrying of tourists between the main islands, and for sight-seeing trips to the off islands, including those islands where no stops are made.

### 5.3.3 Current and Predicted Future Trends

This section analyses trends in tourism numbers and activities and considers how these might be affected by the present rate of coastal erosion.

The Atlantic Consultants' reports<sup>(3),(4)</sup> emphasise the importance of tourism to the economy. Around 85% of the working population is employed either directly or indirectly in tourism. Therefore, any threat to tourism is likely to affect the socio-economic well-being of the islands as a whole. Over the last ten years the average number of visitors to the islands (based on numbers of passengers carried by sea or air and not including sailing holiday-makers) has averaged about 115,000. There was a significant fall in numbers in 1992 to 92,108 but numbers have subsequently risen rapidly to 111,908 in 1994 and an estimated 115,000 in 1995, based on information up to the end of October 1995. This increase reflects the rising state of the tourism economy in UK as a whole and takes account of the compensation of the decline of the traditional summer seaside fortnight by an increase in off-season short breaks. Nevertheless, those people staying on the Isles of Scilly have a longer average length of stay of 9.1 days in 1994, compared with a figure of 7.8 days for mainland Cornwall.

Day visitors are an important sector of the tourism market, representing 39% of visits in 1994. Many of these visitors are people who are on holiday in Cornwall. The proportion of visitors is considered unlikely to rise

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significantly because of the relatively high cost of a day trip to Scilly, despite strong marketing campaigns by the transport operators.

There is a long tourism season compared with mainland destinations, running from late March through to late October and the trend is to extend the season in either direction into the so-called "shoulder" periods. Nevertheless, June, July and August remain the peak months, with occupancy levels of over 90% in the self-catering sector in that time. Despite that figure, however, there is no pressure to increase the stock of accommodation. Moreover, there are such severe environmental constraints that major tourism proposals would not be well received. Indeed, there have been some informal discussions about the creation of a marina on St Mary's reflecting the desire of many mainlanders to visit the islands and moor at a safe anchorage. However, there was and remains over-riding environmental pressure against the proposal which runs contrary to the Local Plan. The recent increase in deep-water mooring availability led to the a first year increase in some 500 yachts over the previous year.

As the peace and tranquillity of the islands are among the major reasons for visitors coming to Scilly, it is unlikely that any major new tourism attractions will proceed. The only major facility which visitors would like to see provided is a swimming pool. It is therefore unnecessary that land will be set aside for other tourism uses. There has been no long-term monitoring of potential threats from the sea of major tourism attractions or accommodation. However, past storms have jeopardised the following locations:

- the recent extension to the hotel north of Porth Mellin Carn on Tresco;
- time share development on Tresco;
- Abbey Hill/Appletree Banks area, Tresco;
- New Grimsby Quay and Old Grimsby Quay, Tresco;
- St Martin's Flats area.

Hell **Bay** Hotel on Bryher was threatened but has now been protected (May 1995 completion). Island **Hotel on** Tresco is threatened by erosion and work is expected to take place in 1998.

Only Bar Point, of the beaches on St Mary's, has been significantly eroded in recent years. There is some natural erosion of the beach, which may have been made worse by sand extraction by local builders, and has resulted in severe degradation of what once was a very sandy beach. Clearly, the rate of erosion still needs to be monitored. It may prove advantageous to consider beach replenishment, especially if it proves to be still eroding, to

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enhance the site's appearance, subject to financial and environmental criteria. However, this cannot be considered while extraction is still permitted.

As mentioned earlier, the island's coastal footpaths are important. Although there is no public rights of way system as such, there is considerable freedom to use coastal paths and tracks. There is inevitably some loss of such paths where erosion is severe. The two areas presently suffering particularly from such erosion are both on St Mary's; the stretch between Doctor's Key and Barrel of Butter, on the western side The Garrison, to the west of Hugh Town, and Stoney Porth on the eastern side of Porth Cressa.

The responsibility for the upkeep of footpaths alongside public roads only, is held by the Council of the Isles of Scilly. The paths in rural areas (in fact 97% of all footpaths except Tresco) are the responsibility of the Environmental Trust. Resources should be set aside to ensure that footpaths are not impeded by fences or vegetation and for the replacement of footpaths (including surfacing, waymarking and surfacing) if they are lost to the sea. It is not recommended that any stretch of coast on the Isles of Scilly should be protected for its footpath alone, but a mechanism should be set in place, adequately funded, to ensure appropriate replacement. The Environmental Trust complains that it does not have sufficient core funding to implement these elements of its management plan.

It is likely that tourism numbers, doubling the resident population in summer months, will not rise rapidly over future years because of the limit in bed spaces and the physical impossibility of bringing greater numbers of day visitors. Any significant rise in numbers would "kill the goose that lays the golden egg" and would cause a reaction and a consequent drop in visitor numbers. However, the relative importance to the economy may rise due to the lack of opportunities in other sectors of the economy, principally agriculture and because of marketing initiatives to extend the season and to attract visitors from the higher socio-economic groups.

### **5.3.4 Objectives**

This section indicates the strategic objectives of coastal defence in as much as it relates to tourism. It is important to ensure that this section is read in conjunction with that on landscape (Section 5<sup>(3)</sup>) because the tourism economy depends to a considerable degree on retaining the attractive character of the islands. The main objectives are to:

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- pay immediate attention to the appropriate relocation of coastal footpaths on the western side of The Garrison and to the east of Porth Cressa (some have already been relocated);
- set up a mechanism to replace coastal footpaths when they are lost to the sea;
- ensure that coastal defence works do not prevent access to the coast either by foot or car, including access to slipways;
- consider the opportunities for increasing access to the coast when constructing coastal defence works. Particularly consideration should be paid to the opportunities for providing access for disabled persons and for parents with children in pushchairs;
  - a monitor the quality and amount of sand on major tourist beaches to measure not only the loss of material on erosion rates but also its effect on visitor numbers;
- instigate beach replenishment schemes where necessary. Bar Point should be the subject of particular study although cannot be considered for replenishment when extraction is still permitted;
- protect those habitats which attract bird-watchers in significant numbers to view unusual and migratory birds;
  - a protect the main areas of tourism accommodation, principally, but not exclusively, in Hugh Town.

## 5.4 Historic Environment

### 5.4.1 Introduction

The compilation of this section has involved the examination and analysis of the key sources of information on the historic environment of Scilly. namely:

- **Isles of Scilly Sites and Monuments Record** - a computerised database of all known archaeological and historic sites in the islands, housed at Cornwall Archaeological Unit's Truro office;

Isles of Scilly Archaeological Constraint Maps - 1:10,000 map sheets showing all the archaeologically sensitive areas, produced by Cornwall

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Archaeological Unit (CAU) for the Planning Department of the Council of the Isles of Scilly;

- information on Scheduled Ancient Monuments (SAMs) which includes
  - the published Schedule for Scilly
  - recent SAM notifications
  - SAM location maps housed at CAU and attached to the recent SAM notifications;
- information on wrecks which includes
  - the maritime record for Scilly compiled by the Royal Commission on the Historic Monuments of England (RCHME)
  - Richard Larn's publication *Shipwrecks of the Isles of Scilly*;
- the Department of National Heritage's List of Buildings of Special Architectural or Historic Interest;
- published information on the archaeology and history of Scilly, particularly that relating to sea level change,<sup>7</sup> and recent work at coastal sites around Scilly (see publications by Ratcliffe *et al* in Appendix 9).

Twelve years' experience of CAU's most capable archaeologist on the Scillies, including the compilation of an archaeological management plan<sup>8</sup> and the recording and monitoring of cliff and intertidal sites suffering the effects of coastal erosion, has been used in collecting and analysing the above information and producing objectives for the historic environment,

#### 5.4.2 Significance and Need for Consideration of the Historic Environment

The historic environment of the Isles of Scilly is of national and international importance. The variety, abundance and preservation of archaeological and historic remains, representing over four thousand years of occupation, is remarkable. There are unique concentrations of certain types of monument such as Bronze Age entrance graves and post-medieval fortifications. Not just individual sites but whole historic landscapes survive and much of the built environment is also historic in character. Most archaeological and

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(7) *Exploration of a Drowned Landscape: Archaeology and History of the Isles of Scilly*, A.C. Thomas, B.T. Batsford Ltd., London, 1985

(8) *The Archaeology of Scilly: an Assessment of the Resource and Recommendations for its Future*, (2nd edition of the 1980 Management Plan), J. Ratcliffe, 1989

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historic sites are located on or near the coast and remains also survive on the beach and intertidal sand flats. In addition, numerous wrecks have been recorded in the marine areas between the islands. Many sites have statutory protection either as Scheduled Monuments, Listed Buildings or Designated Wreck Sites. Owing to its abundance, coastal location and importance, Scilly's archaeological and historic environment has been a central consideration defining the objectives for the shoreline.

### **5.4.3 The Existing Resource**

#### Summary of the Historic Resource

There are 1,800 separate entries in the Isles of Scilly Sites and Monuments Record. About 250 of these refer only to artefact sites but the remaining 1,550 describe structural remains. These features of the historic environment include: prehistoric houses, field systems and ritual and burial monuments; a Roman altar and shrine; a medieval castle and early Christian religious establishments; post-medieval administrative buildings, churches, cottages, barns, fields, windmills, kelp pits, gigsheds, lighthouses, coastguard and lifeboat stations, quays and slipways, and fortifications spanning four hundred years from the mid-16th century to World War II.

Many post-medieval structures were specifically located on the coast for functional or strategic reasons, and many earlier monuments, if not originally adjacent to the sea, now have a coastal location as a result of a gradual rise in sea level since prehistoric times. The latter has also resulted in the unusual phenomenon of archaeological remains surviving below high water. Submerged stone remains (such as prehistoric field walls, round houses and cist graves) have been documented since the 18th century and in recent years intertidal peat deposits have been recognised. These peaty soils can be radiocarbon dated and can thus reveal when the locations at which they have been found were areas of boggy land rather than marine beach. In addition they contain pollen which provides evidence of the surrounding vegetation. Auguring has revealed as many as five successive phases of peat formation on the same beach, with the different phases of peat being separated by layers of sediment. Together with the peats, these sediments are the key to understanding sea level change in Scilly.

As sea levels continue to rise, erosion around the edges of Scilly's existing islands continually exposes archaeological structures and layers in the low cliff face. Though ultimately having a destructive effect, this process provides cross sections through many sites, some of which may otherwise have remained undiscovered. Where remains of prehistoric settlements are

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exposed, a great deal of information can be obtained by small scale recording and sampling work aimed at identifying structural, artefactual, animal and plant remains. As well as providing information about individual sites, work of this nature has increased knowledge of the early settlement pattern, economy and environment of Scilly as a whole.

Records of maritime sites are less well developed than land-based ones but, according to the RCHME and Richard Larn (1993), 600-700 wrecks have been recorded for the waters around Scilly. Only a small number of these (51) can be exactly located, the remainder being historical accounts of ship losses rather than known wrecks. Ships continue to come to grief on the Scillies, creating new wreck sites, the most recent being in March 1997.

### **5.4.4 Historic Designations**

- **Scheduled monuments**

Statutory protection is extended to archaeological sites and historic structures by scheduling. Under the Ancient Monuments and Archaeological Areas Act 1979 (as amended for England by the National Heritage Act 1983) the Secretary of State for National Heritage is required to compile and maintain a schedule of monuments considered to be worthy of protection because of their national importance. At present there are 120 Scheduled Ancient Monuments (SAMs) in Scilly. Some of these designations refer to individual monuments, but others cover large areas of moorland or whole islands and the actual number of monuments scheduled is in excess of 500. The schedule does not reflect the full range of sites and monuments considered of national importance in Scilly. Such scheduling imbalances exist throughout the country and work aimed at correcting these, entitled the Monuments Protection Programme (MPP), is currently being carried out. In Scilly it is expected that this work will result in a further significant increase in the number of scheduled monuments. A list of SAMs (up to date at the time of writing) is provided in Appendix 10. Eleven of the SAMs are Properties in Care, monuments in the guardianship of the Secretary of State and managed on his behalf by English Heritage.

- **Listed buildings**

The Secretary of State is required to compile lists of buildings of special architectural or historic interest for the guidance of local planning authorities. There are 122 listed buildings in Scilly (four Grade I, eight Grade II\* and 110 Grade II). Around half of these are located in or around the main settlement of Hugh Town. Several listed buildings are located right on the coast. Development proposals which affect the settings of listed buildings, as well as those for the buildings themselves, require special listed building consent.

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- **Designated wreck sites**

Under the Protection of Wrecks Act 1973, the Department of National Heritage designates areas of seabed for protection because they contain historic shipwrecks.

There are two designated wreck sites in the waters around Scilly. Located on the Bartholomew Ledges in St Mary's Sound and Tearing Ledge south of the Bishop Rock Lighthouse, these sites are shown in Figure 4.5.

### 5.4.5 Current Trends

- **Historic evolution of the coastline**

An archaeological model exists for the submergence of Scilly<sup>(7)</sup>. This uses the vertical positions of broadly dated submerged archaeological sites to calculate sea level change since 3000 BC. The assumption is that these sites were originally located just above the contemporary shoreline. The resulting sea level curve indicates that around 3000 BC sea level was almost 17 m below that of today and that since then there has been an average yearly rise of 2.1 - 2.6 mm. The curve for Scilly is much steeper than that for Newlyn or the Bristol Channel, the suggested explanation for this is a very localised downward displacement of Scilly's laccolith in addition to a more general isostatic movement. However, perhaps more controversial is the suggestion that today's islands did not finish forming until relatively recent times. It is postulated that until the end of the Roman period all of them (except St Agnes, Gugh and Annet) were joined together at high water, and that as recently as the 11th century AD the position was still the same at low water and that separation was not complete until the early Tudor period. The distribution of Cornish and English coastal and shore placenames is used to support this hypothesis - the early pre-16th century Cornish forms are restricted to the outer coasts and rocks of today's islands, while the later English names populate their inward facing shores.

- **Current erosion of archaeological and historic remains**

There are numerous archaeological and historic sites around Scilly's present coastline which are threatened by coastal erosion. It affects not only sites perched on the cliff edge or exposed in the cliff face, but also those located within the intertidal zone - around 130 sites ranging in date from the Neolithic to the 20th century. Both cliff and intertidal sites are concentrated around those stretches of coast characterised by low earth cliffs or dunes and extensive sand flats, but cliff-edge/cliff-face sites also occur where the foreshore is more rocky and cliffs higher and more precipitous.

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It is only in very recent years that any systematic monitoring of coastal erosion at archaeological sites has been carried out in Scilly (see publications by Ratcliffe in Appendix 9). As a result of this work some information is now available about the nature and extent of this erosion, for example:

- the erosion patterns of intertidal and cliff sites differ - intertidal remains are not only exposed by wave action but also sometimes re-covered (and therefore to an extent protected) by sand, while cliff-edge/cliff-face sites are inevitably progressively destroyed by coastal erosion; stone remains in the intertidal zone appear to remain relatively stable despite being periodically exposed as a result of shifting sand (though as yet unknown factor is the degree of vertical movement which these remains may experience as a result of sand or sediments being scoured from beneath them); in contrast, intertidal peat deposits and sediments are much more vulnerable to the effects of wave action and, once exposed, surfaces quickly begin to break up and will erode away completely unless they become re-covered with sand;
- as a general rule the lower and softer the cliff face and the archaeological deposits exposed in it, the greater the rate of erosion, and even when archaeological remains are underlain by several metres of periglacial head (*ram*), if the base of the cliff is not formed by rock, undercutting and eroded cavities in the ram can result in the collapse of the overlying archaeology; the rate of erosion at any given site is not necessarily constant - this is particularly true of cliff sites which, apart from very slight erosion, may remain stable for a number of years (especially if the cliff face is protected by a mat of overhanging vegetation), but then become severely eroded as a result of a single winter storm, after which they may either stabilize again or erode at a greater rate than before.

- ***Current protection and mitigation measures***

Coastal protection schemes specifically designed to protect archaeological remains are restricted to four locations in Scilly;

- Nornour; a low concrete and stone bank was constructed at the top of the beach in front of the excavated prehistoric settlement and Romano-British shrine on the south side of this small island (built in 1988 by Royal Marines for the Isles of Scilly Environmental Trust);
- The Garrison; English Heritage's Historic Properties Restoration (HPR) workforce in Scilly have carried out coastal protection work to prevent erosion of two of the post-medieval gun

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batteries on The Garrison (part of the Property in Care). At Lower Benham Battery a mortared granite wall has been built immediately in front of the outer face of the original batter wall. Below King Charles' Battery concrete-filled sacks have been used to **infill** cavities in the cliff face resulting from undercutting by the sea; Cromwell's Castle; concrete and stone has been used to **revet** the causeway which provides access from the land and to **infill** cavities undermining walling at the base of the castle (work at this Property in Care has been carried out by **HPR**).

The more common response to coastal erosion at archaeological sites has been to record and sample the exposed remains in advance of their subsequent destruction.

From 1989-1993 English Heritage funded small-scale recording and sampling of early settlement remains visible in the cliff face and submerged peat deposits exposed in the intertidal zone. As well as recording these remains before they were destroyed, the aim of this work was to assess their palaeoenvironmental potential. In both cases this proved to be high.

Cliff-face recording has not only taken place at early settlement sites. After severe winter storms in January 1990 erosion of Civil War batteries on The Garrison led English Heritage to fund emergency recording work here, and later the same year a rapid examination was made of most of the coastline around Scilly to assess the degree of erosion to all coastal sites whatever their date.

The effect on the historic environment of coastal protection measures not specifically designed to protect archaeological remains has been considered as part of the environmental statements of two site specific schemes in Scilly - on Bryher and at Porth Cressa on St Mary's. Recommendations for safeguarding known archaeological sites and recording any remains exposed by trenching works were attached as planning conditions. An archaeological watching brief will also shortly be carried out during the construction of a temporary sea defence at the southern end of Tresco.

#### **5.4.6 Predicted Future Trends**

- **Predicted future erosion**

It is expected that erosion will continue to occur at archaeological sites around Scilly's coast. There is no reason to believe that the rate of erosion

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will decrease. In fact, in the light of global warming, an ever rising sea level and more erratic weather patterns one would expect that it may increase.

- ***Predicted future protection and mitigation measures***

As far as coastal protection schemes are concerned there are currently no plans for more work at Nornour, but English Heritage intends to continue protecting for as long as possible those sites which are under **its** direct care, and has specific plans to:

- continue its protection work on The Garrison, at King Charles' Battery and Lower Benham, but also begin work at Colonel Boscawen's battery (infilling cavities in the cliff face) and at other batteries as the need arises;
- continue protecting Cromwell's Castle (including extending inland the causeway's retaining wall and piling up boulders in front of it).

There are no immediate plans for the construction of coastal defence works at other sites, and whether such work takes place or not will be very much dependent on the availability of funds.

There are proposals to continue recording and sampling sites in advance of their destruction by coastal erosion, with the emphasis on those sites which are most threatened by **and/or** have the highest archaeological potential. For example:

- English Heritage aims to continue recording the eroding 17th century earthworks on The Garrison;
- CAU hopes to carry out further work at early cliff-face settlement sites and intertidal peat deposits, and a project to comprehensively survey all intertidal remains is at the planning stage.

The historic environment will continue to be an important consideration when coastal protection schemes are designed, and as well as being included as an issue in associated environmental statements, may result in archaeological recording work being carried out during the construction phase of such schemes.

#### ***5.4.7 Objectives***

- ***To protect archaeological and historic sites from coastal erosion***

This protection may be achieved by designing schemes specifically to protect such sites (as has been done at Nornour, The Garrison and Cromwell's Castle) or adapting more general schemes for this purpose (as

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was recently constructed at Porth Killier on St Agnes). Financial limitations mean that it will not be possible to protect all sites threatened by coastal erosion, and in many cases the nature of the coastline or the location of the site itself may make protection infeasible. The following sites are currently considered candidates for protection because of their archaeological importance (either in terms of their potential to provide more information or their value for amenity and interpretation) and because protection of some sort is thought to be practical:

- Nornour (Eastern Isles) - well known prehistoric settlement and Romano-British shrine (protection to be increased at this site);
- The Garrison (St Mary's) - post-medieval batteries which are part of an internationally important military complex (protection to be continued here);
- Cromwell's Castle (Tresco) - distinctive 17th century castle which is one of Scilly's best-visited historic sites (protection to be continued here);
- Halangy Porth (St Mary's) - Iron Age settlement remains exposed in the relatively low (3-4 m high) cliff face and which apparently extend at least some distance inland;
- East Porth (Tean) - a late Roman-early medieval midden exposed in the very low (0.5 m high) cliff face, part of an important multi-period (Roman-18th century) domestic and ecclesiastical site;
- Pendrathen (St Mary's) - extensive but as yet little understood prehistoric settlement remains in the dune-covered cliff-face;
- Porth Cressa (St Mary's) - Bronze Age settlement and Romano-British cist grave remains in the 3-4 m high cliff face.

- ***To safeguard archaeological remains from destruction by works associated with non-archaeological coastal protection schemes***

This is an important objective given the density of archaeological and historic sites around Scilly's coastline. Sites can be threatened in three ways:

- by trenching work associated with the actual construction of a sea defence;
- by offloading of materials and movement of vehicles and machinery during the construction work;
- by the visual impact that the completed scheme has on the historic environment.

In the case of trenching work, the priority should always be to preserve the archaeological remains and there may be grounds for redesigning coastal protection schemes to ensure that such preservation is possible. However,

in some cases it may be more appropriate for a programme of archaeological recording to be carried out as mitigation against destruction.

Disturbance caused by construction work can normally be avoided by making contractors aware of the existence of and need to preserve archaeological remains in the vicinity of the scheme and by marking out these remains on the ground so that they can be easily avoided during the construction operation. Such provisions for safeguarding the archaeology should be integrated in the environmental statements, planning permissions and contractual arrangements of coastal protection schemes.

The visual impact of a scheme is also an important consideration, particularly within built environments where historic buildings and structures may exist in close proximity to the coastal protection site. The design of any scheme should be such that it accords with or enhances the visual character of the historic environment.

- ***To record archaeological remains to be destroyed by works associated with coastal protection schemes***

This applies both to schemes aimed at protecting archaeological sites and non-archaeologically specific schemes aimed at protecting the coast for other reasons. Where the location and design of a scheme makes destruction of archaeological remains inevitable it is imperative that a well planned and carefully executed programme of recording work takes place prior to this destruction. The exact nature and extent of the work required will depend on the design of the scheme and the nature of the archaeological remains (their character, location, date, state of preservation etc.). The environmental statement produced for each scheme is the appropriate place for the recording requirement to be specified. As a general guideline it is likely to involve all or some of the range of tasks listed below:

- making a plan of the archaeological site;
- making a full photographic record of the remains;  
cleaning up, recording and environmental sampling of the cliff face (and repeating this process if new features are revealed by trimming back of the face);  
sampling intertidal peat deposits and other submerged layers;  
auguring and geophysical (or other) survey to establish the inland extent of cliff-face remains or the existence of buried deposits in the intertidal zone;
- partial or complete excavation of archaeological remains;
- archiving and analysis of fieldwork results (including specialist study of artefacts and environmental evidence and radiocarbon dating);

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- production of a report of the results of the recording work.
- ***To carry out general recording and monitoring of coastal sites***

The aim here is to continue the valuable work funded by English Heritage in recent years, particularly that focused on early settlement remains exposed in the cliff face and submerged peat deposits and stone remains. Further work at these sites will increase knowledge of the early environment and settlement pattern of **Scilly** and advance understanding of the process of sea level change and the evolution of the coastline. Such an understanding is important not just for archaeologists and historians, but also for all those involved in the present day management of the coastline.

It should be noted that the above objectives for the historic environment will need to be periodically reviewed in the light of new evidence and any changes in thinking regarding the best way to manage it.

### 5.5 Implications for Management Units

The coastline of each of the inhabited islands has been divided into a series of management units for which specific coastal defence measures will be developed (see Section 7). Section 7 also includes a matrix for each of these management units, showing the major environmental factors which will affect both the prioritisation for coastal defence measures and their type. These factors include the land use and the infrastructure within the unit.

For example, unit **M1** on St Mary's contains the main tourist facilities and urban structure for the islands. In economic terms alone, this area would merit a high priority for protection from flooding or erosion. Coastal defence measures would be likely to reflect the strong urban character and the materials used in the many listed buildings in Hugh Town. At the other extreme, the land use of unit **A2** on St Agnes is primarily heath and thus the economic case for defences is low. If defences were to be created, however, they would need to reflect the unit's rural character.

Note that other environmental factors, such as ecological and archaeological features also influence the strategy chosen for a management unit.

### 5.6 Conclusion

This section has emphasised the importance of agriculture to the economy of the islands and Section 5.3 indicates that tourism is also a significant employer. It is therefore not surprising that protection of the resources which support these two industries has been identified as strategic objectives in Section 5.2.9. The

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protection of urban facilities has also been highlighted, because that is more likely to bring a cost-effective return on investment in coastal defences than works to protect isolated farms or small groups of housing. The descriptions of the management units provide guidance as to the type of land use within a specific unit.