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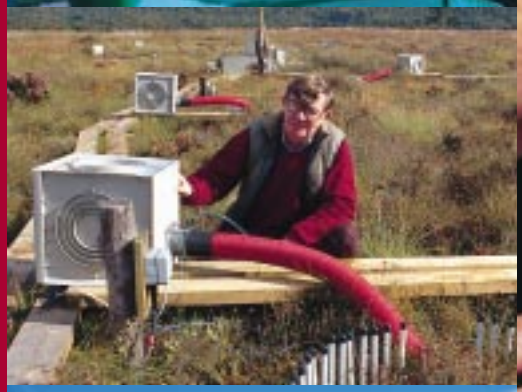

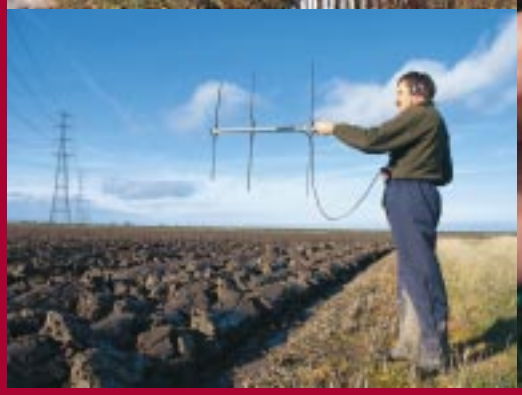

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Coastal biodiversity opportunities in the South West Region

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Foreword

This study was commissioned by English Nature to identify environmental enhancement opportunities in advance of the production of second generation Shoreline Management Plans (SMPs). This work has therefore helped to raise awareness amongst operating authorities, of biodiversity opportunities linked to the implementation of SMP policies. It is also the intention that taking such an approach will integrate shoreline management with the long term evolution of the coast and help deliver the targets set out in the UK Biodiversity Action Plan. In addition, Defra High Level Target 4 for Flood and Coastal Defence on biodiversity requires all operating authorities (coastal local authorities and the Environment Agency), to take account of biodiversity, as detailed below:

Target 4 - Biodiversity	**By when**	**By whom**
A. Ensure no net loss to habitats covered by Biodiversity Action Plans and seek opportunities for environmental enhancements	Continuous	All operating authorities
B. In consultation with English Nature, review **Water Level Management Plans** for all priority[(1)] SSSIs that are in unfavourable condition, and submit to the Environment Agency a costed action plan of flood management measures to achieve favourable condition	1 April 2007	All relevant operating authorities
C. In consultation with English Nature, assess the **flood management measures** necessary to achieve the PSA target for SSSIs not covered by WLMPs[(2)] and submit to the Environment Agency a costed action plan of flood management measures to achieve favourable condition	1 April 2006	All relevant operating authorities
D. Report to the Environment Agency (i) flood and coastal erosion risk management measures taken that contributed to PSA target for SSSIs (ii) all losses and gains of habitats covered by UK Biodiversity Action Plans resulting from flood and erosion risk management operations	Annually by 1 April	All operating authorities
E. Environment Agency to report to Defra on the collated information from B, C and D above	Annually by 1 July	Environment Agency
F. Create at least 200 hectares of new Biodiversity habitat per annum as a result of flood management activities, of which at least 100 ha should be saltmarsh or mudflat[(3)]	Annually	Environment Agency

[(1)]Priority sites are those as identified in *Achieving the PSA Targets for SSSI: A review of the contribution of Water Level Management Plans.* Defra & English Nature, September, 2004.
[(2)]Including creating new habitat to offset the effects of coastal squeeze where that is the reason sites are in unfavourable condition.
[(3)]This target has been agreed as a key target and performance measure in the Environment Agency Corporate Plan. It is included here for clarity to indicate a minimum contribution to environmental targets that Defra expects the Agency to deliver annually in relation to its flood risk management programme funded by Defra Flood Defence Grant in Aid.

(Source: www.defra.gov.uk)

This report collates the outcomes of the facilitated workshops that were used to gather information about biodiversity opportunities and provides a breakdown of the biodiversity opportunities in the Natural Areas. The workshops were attended by staff from English

Nature and also by key stakeholder groups involved with conservation in the coastal environment (Appendix 1 provides a workshop participation list).

The aim of the workshops was to identify and discuss ideas for environmental enhancement opportunities ranging from large-scale realignment schemes to small scale habitat management projects that could implement both national and local Biodiversity Action Plan targets in the short and long term.

It is important to note that the proposals that have been put forward by attendees, and that are discussed in this report, have not been subject to detailed investigation. Each proposal has been briefly considered within the context of the current SMP policy and suggestions for revising the policies have been included, where appropriate. It is acknowledged however that biodiversity gain is just one part of the SMP process and that other social, economic and sustainability factors will need to consideration in the selection of the preferred coastal defence policy promoted by the operating authority.

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Identifying Biodiversity Opportunities
English Nature
April 2005

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Summary

A study has been undertaken to provide a conservation 'vision' through the identification of biodiversity and geological conservation opportunities along in the South West coast region. The primary project driver was the upcoming review of the first generation of Shoreline Management Plans and the opportunity to influence future policies in order to realise coastal environmental gain. Understanding where opportunities exist now and when they might be delivered within the next 100 years, was key in determining potential changes to existing SMP policy that may enable these opportunities to be realised. Links were also made to potential biodiversity and geological gain within existing coastal designated sites and contributions that could be made toward maintaining and/or improving these sites were identified. Additionally, potential biodiversity opportunities where contributions towards national and local Biodiversity Action Plan targets for coastal habitats and species could be made were identified. The primary means of gathering information about biodiversity and geological opportunities was from environmental interest groups and other key stakeholders at two facilitated workshops.

Contents

1. Introduction

1.1 The aims of the project

Royal Haskoning were commissioned by English Nature in September 2004 to identify coastal biodiversity opportunities within the South West region (defined as between Durlston Head, Dorset and Minehead, Somerset). Opportunities for environmental enhancement were investigated through two facilitated workshops involving a wide range of organisations actively engaged in coastal conservation activities. The output from the workshops, in terms of the potential environmental enhancement opportunities identified, will enable English Nature and other coastal groups to make a positive contribution to the second generation of Shoreline Management Plans (SMPs). An awareness of conservation opportunities that might be associated with potential coastal management measures will also enable English Nature to identify opportunities for the delivery of the coastal Habitat Action Plan targets published by the UK Biodiversity Group (UK Biodiversity Group 1999).

This report provides a summary of the potential opportunities identified at the workshops and relates them to the coastal defence options available to the SMP process. However, biodiversity opportunities that are not exclusively related to coastal defence objectives are included, for example, restoration of coastal grazing land habitat. It should be noted therefore, that the means of realising such opportunities may not be possible within the next generation of SMPs, and that other mechanisms for realising such biodiversity gain may need to be enacted.

It is acknowledged that there are various social, economic and sustainability factors that need consideration in the selection of the preferred coastal defence policy. It is important to stress that it is the purpose of this research study to identify alternative coastal defence policies to those currently recommended by SMPs. This is to promote environmental enhancement opportunities through the SMP process in accordance with Department for Environment Food and Rural Affairs (Defra) High Level Target for Flood and Coastal Defence, Target 4 - Biodiversity that requires all operating authorities to:

- avoid damage to environmental interest;
- ensure no net loss to habitats covered by Biodiversity Action Plans; and
- seek opportunities for environmental enhancement.

1.2 Methodology

The project was undertaken principally through two facilitated workshops involving representatives of organisations closely involved with habitat creation and management issues within the South West. Appendix A provides a list of the organisations that participated in the workshops which were held on 8 and 9 November 2004.

The aim of the workshops was to identify and discuss ideas for environmental enhancement opportunities ranging from large-scale realignment schemes to small scale habitat management projects that could implement both national and local Biodiversity Action Plan targets in the short and long term. It is important to note that the proposals that have been put forward by attendees, and that are discussed in this report, have not been subject to detailed investigation. Each proposal has been briefly considered within the context of the current

SMP policy and suggestions for revising the policies have been included, where appropriate. Although the aim of the project was to look at biodiversity opportunities within the coastal zone, opportunities within the adjacent terrestrial areas and fluvial corridors were also considered.

For each of the enhancement opportunities identified the following information was discussed during the workshop:

- potential BAP gains;
- constraints, such as presence of infrastructure or BAP losses;
- stakeholders at each site, ie landowners or site managers;
- existing studies carried out at the site; and,
- recommendations for further work.

During the workshops, the information was recorded on a series of data capture sheets which were later entered onto a MS Access database. This database has been provided to English Nature as part of the outputs of this project to enable the results to be interrogated.

In addition to the workshops, this project has included a desk study of existing information including:

- National Biodiversity Targets;
- Local Biodiversity Targets;
- English Nature's Natural Area descriptions;
- JNCC Coastal Directories;
- Futurecoast;
- Coastal Habitat Management Plans; and,
- Shoreline Management Plans.

1.3 Biodiversity targets

The South West coastline is covered by a number of Biodiversity Action Plans (BAPs) of national, regional and local scale. Biodiversity targets have been set by English Nature specifically for the Natural Areas as part of the UK Biodiversity Strategy. However, it should be noted that as further survey and monitoring work is undertaken to determine the status and distribution of habitats the targets set for the Natural Areas can be subject to amendment (see www.english-nature.org.uk/baps/targets). As part of this project, these biodiversity targets have been reviewed and these have been used to inform the identification of biodiversity opportunities.

The biodiversity targets for the Natural Areas have similar criteria for each habitat, which are summarised below:

- maintain the current extent of habitat;
- improve by appropriate management the quality of habitat;

- consider opportunities to create habitat;
- reinstate and rehabilitate habitats where appropriate; and,
- aim to maintain the free functioning of coastal processes.

1.4 Shoreline Management Plan policies

The purpose of this study is to review the possibilities for biodiversity opportunities in the context of the production of second generation SMPs. The review of the work on the second generation of SMPs prepared by Defra clearly indicates that, in identifying the most appropriate policy, it is 'essential that due account is taken of the environmental implications'.

The 2001 DEFRA guidance (DEFRA 2001) identifies five key shoreline management defence options for the SMP revision namely:

- hold the existing defence line;
- advance the existing defence line;
- managed realignment;
- limited intervention; and,
- no active intervention.

1.5 Report structure

This document summarises the relevant background information and the opportunities identified at the workshops. This section introduces the project and explains the methodology utilised. Section 2 details the biodiversity opportunities identified at the workshops. Section 3 summarises the findings and makes recommendations for their implementation.

2. Environmental enhancement opportunities

2.1 Introduction

This section presents an overview of the biodiversity opportunities that have been identified by members of conservation organisations and local authorities at the workshops. The full records of the data are presented in Appendix B. It should be noted that although these opportunities have been identified and constraints discussed, detailed investigations have not been undertaken to assess the financial and technical feasibility of the proposals.

2.2 Opportunities for environmental enhancement

Over 85 locations for environmental enhancement opportunities were identified as a result of the workshops. A list of these with a brief description is presented in Table 2.1. The approximate location of each opportunity is indicated in Figures 2.1 to 2.3. A number of these opportunities are related to shoreline management policies; however, many are not related to SMPs but offer the opportunity to contribute to BAP targets within the region.

The opportunities that were identified have the potential to enhance a range of coastal and marine habitats such as saltmarsh, sand dunes and mudflat. Provided in Table 2.2 is a list of the habitats and the number of enhancement opportunities that have been identified for each of these. The habitats for which most opportunities exist are saltmarsh, sand dunes and grazing marsh. Significant opportunities also exist for reedbeds, mudflat, maritime grassland and heaths and saline lagoons.

Table 2.1 List of locations where either coastal environmental enhancement opportunities exist (marked in green) or there is potential loss of coastal biodiversity (marked in red) as identified during the workshops

No.	Biodiversity opportunity	Location	Description of opportunity
1	Threat of coastal defences in the future	Durlston Bay	This site may be threatened in the future by the need to carry out coastal defence works to protect properties at the top of the cliffs.
2	Cliff-top buffer zone	Kimmeridge	Potential location for setback of agricultural land at top of cliffs thereby providing a buffer strip as cliff erodes back.
3	Threat of coastal defences in the future	Osmington Mills, near Weymouth	The geological interest of this site is potentially threatened in the future if coastal defences are installed to protect the adjacent properties and car park. Gabions have been placed at the site which failed after a few months.
4	Cliff-top buffer zone	Ringstead Bay, near Weymouth	Set-back of agricultural land on top of cliff to enhance cliff-top communities.
5	Removal of coastal defences	Ringstead Bay, near Weymouth	Potential to enhance the geological exposures by removal of existing coastal defences or by not replacing/repairing existing defences in the future.
6	Artificial reef	End of Preston Beach (Osmington)	Suggestion for installing an artificial reef to enhance the biological interest of the bay whilst protecting the beach from wave action. There is currently a shingle beach with wall behind it. However care should be taken that there is no loss to any important soft sediment biodiversity or obstruction to long shore drift.
7	Habitat management	Radipole Lake, Weymouth	Creation of additional reedbed habitat through raising water levels.
8	Removal of coastal structures	Portland Harbour Shore	The geological exposures of this site are being lost by historical reduction in erosion rates of Weymouth Harbour due to construction of breakwater. A number of redundant structures are also present on the shore which could also be removed.
9	Habitat management	Chesil Beach and Fleet	Potential to enhance habitats in the lagoon by improving water quality through change in agriculture practises to reduce run-off. Might also be the possibility to enhance cliff top communities through the set-back of agricultural land.
10	Removal of coastal structures	West Bexington, Dorset	Increase in shingle beach habitat and allow free functioning of coastal processes by removing car park which currently extends over the beach.
11	Habitat management	Burton Bradstock	Potential for enhancing undercliff habitat through grazing of National Trust land.

No.	Biodiversity opportunity	Location	Description of opportunity
12	Threat of coastal defences in the future	East Beach, West Bay	It is possible that coastal defence structures may be required in the future at East Beach, West Bay. This represents a potential threat to the geomorphology. Shingle is currently imported to the beach by the Environment Agency from Burton Bradstock.
13	Managed realignment	River Brit at West Bay	Possibility for managed realignment upstream of West Bay. Water levels are currently controlled by sluice gates at West Bay.
14	Cliff-top buffer zone	Charmouth	Potential location for setback of agricultural land at top of cliffs to provide a buffer strip as cliff erodes back. There is an ongoing problem in the area due to loss of the coastal footpath to coastal erosion.
15	Educational opportunities	East Cliff, Lyme Regis	Coastal protection works are currently proposed by West Dorset District Council. There may be the potential to incorporate environmental enhancements into these and may be educational opportunities as well.
16	Cliff-top buffer zone	Cox's Cliff, Branscombe, nr Sidmouth	Potential location for setback of agricultural land at top of cliffs cliffs to provide a buffer strip as cliff erodes back.
17	Marine protected area	Lyme Bay Reefs	There is the possibility of enhancing the Lyme Bay reefs through preventing physical damage from fishing activities, for example by the creation of marine protected areas.
18	Managed realignment	River Axe at Seaton	Possibility of managed realignment scheme on lower part of Axe (little detail known of potential scheme).
19	Removal of coastal defences	Seaton Hole	Loss of geological exposure due to coastal defence structures. Landfalls have taken place at Seaton Hole.
20	Habitat management	Axmouth and Lyme Regis undercliffs	Enhancement of undercliff habitat by changing agricultural practices.
21	Threat of coastal defences in the future	Pennington Point, Sidmouth	A coastal defence scheme has been proposed in this location which would obscure important geological exposures. The scheme is currently on hold but represents a potential threat to geological interests at the site.
22	Managed realignment	River Otter, Budleigh Salterton	Possibility of managed realignment on lower reaches of the River Otter on the west bank upstream of Budleigh Salterton.
23	Managed realignment	Bowling Green Marsh on the River Clyst, near Topsham	Managed realignment opportunity.
24	Managed realignment	Fishers Mill bridge - upstream to Clyst St Mary and beyond, River Clyst.	Potential for managed realignment through removal of the weir at Topsham bridge/Fishers Mill. Complex meanders - could adopt a staged approached to work upstream, reinstating individual meanders to demonstrate success.

No.	Biodiversity opportunity	Location	Description of opportunity
25	Managed realignment	Exminster Marshes, Exe Estuary	Possibility of conversion of grazing marsh (100+ ha) to saltmarsh. It was saltmarsh in the past which was reclaimed during construction of the canal. Over the long term there might be the possibility to convert some of this back to saltmarsh.
26	Managed realignment	Turf locks to Powderham Church, Exe Estuary	Potential for realignment of the sea wall or, alternatively, regulated tidal exchange.
27	Habitat management	River Kenn, Exe Estuary	Restoration of floodplain.
28	Habitat management	Cockwood Marsh, Exe Estuary	Restoration of the floodplain at Cockwood Marsh, inland of the railway. There is currently a navigable opening under the railway.
29	Managed realignment	Dawlish Warren	The spit at Dawlish Warren is essentially an ephemeral feature which wants to move inland up the estuary. There could be the option of (a) managed realignment of the northern half or (b) change management across the rest of the area up to the gabions.
30	Managed realignment	River Teign	Opportunities exist at various fields on the north bank which are adjacent to the railway line. Some of these are defended and some are not whilst some have sluices (all in a very mixed state of repair). Small saline lagoons could be enhanced on south side.
31	Cliff-top buffer zone	Stoke Fleming to Berry Head and Torquay to Teignmouth	Possibility of restoration of coastal grassland by set back of agricultural land from the cliff edge. The area also includes the Man Sands managed retreat (near Dartmouth).
32	Managed realignment	Broadsands, Torbay	In 1960's there was a *Phragmites* reedbed which is now a car park that floods with a remnant section of reedbed. Freshwater enters through limestone . There may be an opportunity to remove the 2nd car park and allow it to flood and remove the sea wall.
33	Managed realignment	Sharpham Marshes to Totnes, River Dart	Opportunities for creation of marsh generally limited as the estuary is steep sided. However, there are dilapidated sea defences which have breached in places and likely to proceed as wall erodes. These areas could be opened up to breach.
34	Removal of coastal defences	Start Bay (Slapton Ley, Hallsands and Beesands)	Opportunity exists at Hallsands and Beesands for saline lagoon and/or, if the seawall is removed at Beesands, vegetated shingle. If existing rock defences are not maintained, areas behind Hallsands could become more brackish.
35	Cliff-top buffer zone	Start Point to Wembury, South Devon	Restoration of maritime grassland by set-back of agricultural land to allow cliff communities to migrate landward. There are areas of eroding cliffs within this stretch and large areas of slippage.

No.	Biodiversity opportunity	Location	Description of opportunity
36	Habitat management	West Charlton Marsh, Salcombe	Currently grazing marsh (3ha) which could be enhanced through water level management. Other areas around Frogmore creek (which are currently grazed) could be converted to grazing marsh; some are defended, others are not, eg Harwell Farm.
37	Managed realignment	Thurlestone Bay	At present this is a freshwater site approximately 20 ha in size separated from the sea by a shingle barrier. A car park and road are present on the barrier which are partially defended by timber piles. There might be the potential to create reed bed.
38	Habitat management	Amyer Cove, South Devon	At Amyer Cove there is potential for grazing marsh and letting the areas behind become brackish through impeded drainage.
39		Sand dunes at Bantham	At Bantham, natural processes are creating dunes at present - this should not be inhibited.
40	Managed realignment	River Avon (Aveton Gifford and South Edford House Marshes)	Possibility for removal of existing defence and/or retreat the line. Possibility of managed retreat at South Edford marshes.
41	Managed realignment	Great Orcheton Marshes, River Erme.	Small scale opportunity (2ha) to replace grazing marsh habitat on the east bank of the River Erme. Only minor sea/flood defences exist and some of these could be allowed to degrade.
42	Habitat management	Wembury Mill Meadows, Yealm estuary	Potential for creation of freshwater grazing marsh.
43	Managed realignment	Crabtree, near Marsh Mills on the River Plym	There is the possibility of managed realignment at this site where the flood banks, which currently protect a local nature reserve are falling into disrepair.
44	Habitat management	Millbrook, nr Plymouth	Possibility of enhancing existing lagoonal habitat. At present the lagoon is freshwater and it is occasionally flushed with seawater to control midges. There might be the possibility to create it as a more natural saline lagoon or mudflats.
45	Managed realignment	Tamar	Various opportunities exist on the Tamar. Tamar management is concentrating on re-establishment and maintenance at the estuary in its current state without losing more areas to agriculture (ie reclamation is on-going).
46	Managed realignment	South Hooe Farm, Tamar.	Managed realignment - quite a big site (around 18 ha).
47	Managed realignment	Cotehele to Chapel Farm (15 ha), River Tamar	Managed realignment. This is a site which the National Trust are in the process of progressing.
48	Habitat management	Looe Bay	Enhancement of eelgrass beds by reducing impact of anchoring. This could be achieved through installing visitor moorings.
49	Managed realignment	Madderly Moor, Lostwithiel	Possibility of managed retreat on the east bank of the River Fowey downstream of Lostwithiel.
50	Cliff-top buffer zone	Gribbin Head	Restoration of cliff-top habitat.

No.	Biodiversity opportunity	Location	Description of opportunity
51	Restoration of sand dunes	Par Sands, nr St Austell	Possibility for increasing area of dune on landward edge.
52	Habitat management	Carlyon Bay, nr St Austell	A residential development is proposed to be constructed at Carlyon Bay, for which planning consent already exists. There maybe opportunities for environmental enhancement associated with the proposed development through the enhancement of maritime cliff.
53	Restoration of sand dunes	Pentewan Beach	Possibility for increasing dune habitat on landward edge through relocation of caravan park.
54	Managed realignment	Caerhays	A freshwater lake currently exists at Caerhays which is separated from the sea by a sandy beach barrier with a road on it. In the long-term there might be the opportunity for creating saline lagoon if the beach breaches.
55	Removal of coastal defences	Pendower Beach, Roseland Peninsular	The cliffs at Pendower Beach are defended at present to protect the road and several properties including a hotel. It was suggested that in the long term the policy should be to do nothing, ie do not repair/replace existing defences to allow natural processes.
56	Various	Fal Estuary	Various possibilities exist on the Fal. A study is currently being carried out on behalf of Cornwall County Council, as part of the Cycleau project to identify opportunities for habitat creation.
57	Managed realignment	Swanpool, nr Falmouth	At Swanpool a saline lagoon is present which is separated from the sea by a road under which a culvert runs. The lagoon currently floods around 7-8 times a year. In the long-term the lagoon is likely to become more saline due to sea level rise.
58	Habitat management	Maenporth, nr Falmouth	At Maenporth there is a lake which was historically freshwater separated from the sea by a road with a tidal flap valve. In recent years the flap valve has failed and the lake has now become saline and intertidal with large areas of mudflat.
59	Habitat management	Porthallow to Lowland Point, nr St Keverne	This area has been subject to extensive quarrying and there is the possibility of restoration of coastal habitats.
60	Removal of coastal structures	Kennack Sands, near Cadgwith	Possibility of increase in dune habitat through removal of world war two defences. These defences comprise a vertical concrete wall which separate the beach and dunes. Removal of the dunes would give the possibility of creating a more natural beach/dune transition.
61	Removal of coastal structures	Poldhu Cove nr Mullion	Possibility of creating transitional coastal habitat through moving car park landward.
62	Managed realignment	Loe Pool nr Helston	Loe Bar is at risk of breaching at some point in the future and therefore this area is likely to be subject to natural change. There is the possibility of creation of marine habitat at the loss of vegetated shingle and freshwater interests.

No.	Biodiversity opportunity	Location	Description of opportunity
63	Removal of coastal structures	Porthleven	Coastal defences are currently obscuring important geological exposures of the Porthleven Cliffs East SSSI. There might be the possibility in the long term of increasing the geological exposures of SSSI by not replacing or maintaining the existing defences.
64	Restoration of sand dunes	Praa sands	Possibility for enhancement of sand dune habitat.
65	Habitat management	Mounts Bay, Penzance	Restoration and/or creation of coastal habitat between Penzance and Marazion. There might be the possibility of enhancing the value of the habitats which lies between the beach and the road.
66	Cliff-top buffer zone	Mousehole to Land's End	Potential for set-back of agricultural land on top of cliff to enhance cliff-top communities.
67	Restoration of sand dunes	Hayle to Mexico Towans	Possibilities exist for increasing and/or improving dunes adjacent to estuary mouth (between Hayle and Mexico Towans) by removal of chalets and car park. There may also be the possibility of habitat enhancement within Lelant saltings.
68	Managed realignment	Mouth of Red River, nr Gwithian	Possibilities exist for managed realignment on the banks of the Red River, which is currently embanked.
69	Restoration of sand dunes	Perran Beach and Penhale Sand, Perranporth	Possibility for creation and/or improvement of sand dune habitat by removal of caravan park and golf course on landward edge of sand dunes.
70	Managed realignment	River Gannel, Newquay	There is the possibility of removing an area of infilling to re-create upper saltmarsh.
71	Artificial surfing reef	Newquay artificial reef project	A proposal has been put forward to construct an artificial surfing reef at Newquay.
72	Restoration of sand dunes	Fistral Beach	There is the possibility of restoration of small areas of dune habitats.
73	Various	Mawgan Porth valley (between coast and St Mawgan)	Enhancement of coastal habitats/dunes and coastal and floodplain grazing marsh within the valley.
74	Restoration of sand dunes	Harlyn Bay	Creation of dune/ coastal habitat through removal or management of car park.
75	Various	Camel Estuary	A number of possibilities for BAP gain exist within the estuary, including managed realignment.
76	Various	Bude	Restoration of cliff top habitats by management of recreational pressure. Possible dune re-creation. Possibly removal of Bude weir to create intertidal habitat.
77	Cliff-top buffer zone	Porlock Bay to Foreland Point, Woody Bay and Westward Ho! To Hartland Point	Within these stretches of coast, natural processes should be maintained to maintain the geological exposures. In much of this stretch there is also the requirement for a buffer zone to be created along the top of the cliffs to allow management of coastal habitats.

No.	Biodiversity opportunity	Location	Description of opportunity
78	Managed realignment and habitat management	Northam Burrows, nr Bideford	Long term opportunity to allow the site to become mobile again. Could either allow breach of flood defences or put defences back. Natural processes should be allowed to continue and increased water levels should be created (scrapes and wetland area).
79	Managed realignment	Barnstaple to Yelland (Home Farm Marsh)	A possible site for managed realignment through the breach of defences to create 80 - 100 ha. Existing areas of marsh are under threat from sea level rise, therefore, there is the need to increase the resource now.
80	Managed realignment	Taw-Torridge Estuary	Significant opportunities for managed realignment exist throughout the estuary to allow the environment to accommodate rising sea levels. North Devon Coast and Countryside Service have identified as a short-medium term option Horsey Island (tidal flooding).
81	Various	Braunton Burrows and Braunton Marsh	North Devon Coast and Countryside Service have identified a number of opportunities in this area. At South Burrow Farm, they would like to reduce water loss from the dune system into the marsh by improving the sluice on the boundary drain.
82	Marine protected area	North Devon Voluntary Marine Conservation Area, from Coombe Martin to Croyde.	Potential to extend the VMCA east to Foreland Point (into the National Park).
83	Cliff-top buffer zone	Baggy Point, Croyde	Set-back of agricultural land from cliff-edge to improve maritime cliff-top communities. Improve management of habitats on land not owned by the National Trust.
84	Habitat management	Woolacombe to Mortehoe	Better management of the catchments that feed the beaches with freshwater.
85	Threat of loss in the future	Ilfracombe to Morte Point	Small bays at risk of loss due to sea level rise which will lose intertidal.
86	Various	Porlock Bay	The shingle ridge, which was a natural defence, breached in 1997. Since then creeks and saltmarsh have developed at the expense of the freshwater marsh. Options exist to develop the site further to include improved agricultural land.
87	Habitat management	Minehead	Possibility of enhancing the *Sabellaria* reefs along the Minehead frontage. This is heavily managed for flood defence reasons. There is a need to understand the existing resource, in the context of the southwest.

Table 2.2 List of habitats that could be enhanced through the enhancement opportunities. NB: Some opportunities have the potential to enhance more than one habitat

Habitat that could be enhanced	Approximate number of opportunities
Saltmarsh	22
Sand dunes	17
Grazing marsh	16
Reedbeds	14
Mudflat	13
Vegetated cliffs and grassland	12
Saline lagoons	11
Geological interest	8
Subtidal habitats	3
Shingle	2
Eelgrass	1
Sabellaria	1

The opportunities identified comprised a number of different types. These have been grouped into eight different broad categories which are listed in Table 2.3. The most frequent opportunity that was identified was managed realignment. 29 different sites were identified where it was thought this might be possible. The other two most frequent type of opportunities were improved habitat management and creation of a buffer strip at the top of cliffs.

Table 2.3 Different types of habitat enhancement opportunities identified during the workshops

Type of habitat enhancement opportunity	Approximate number of opportunities
Managed realignment	29
Improved habitat management such as through water level management or control of grazing	21
Set back of agricultural land by creation of agricultural buffer zone at top of cliffs	11
Restoration of sand dunes by removal of infrastructure on dunes	10
Removal of redundant coastal defences and similar structures	7
Threat of coastal defences in the future	5
Creation of artificial reef	2
Marine protected area	2

For each of the opportunities identified the constraints at each site were discussed. Common constraints appear to be the presence of infrastructure such as roads and properties which would be threatened by the loss of coastal defence structures. The loss of agricultural land is also a constraint, as is the loss of freshwater habitats.

3. Conclusions and recommendations

3.1 Summary of findings

Over 85 possible locations for environmental enhancements were identified during the workshops. These generally took one of five forms, which are discussed below.

3.1.1 Set-back of agricultural land

In many locations, such as between Land's End and Mousehole, it was identified that farming is taking place very close to the cliff edge. In these locations there is the potential to enhance the cliff-top habitat by creating a buffer strip, whereby agriculture is set-back from the edge of the cliff. This allows the development of a more natural maritime grassland or heathland community. It also means that the adjacent vegetated cliff community is likely to be more natural than otherwise. This management method is already undertaken on much of the National Trust land. In order to achieve this on other sites, close liaison is needed with the landowners and farmers. The major constraint to doing this is lack of co-operation from the farmers due to the loss of agricultural land that this causes. However, it may be possible to progress these schemes through an agri-environment scheme such as the forthcoming Environmental Stewardship scheme.

3.1.2 Removal of redundant coastal defences

In some locations, such as Kennack Sands in Cornwall, it was identified that there are coastal defences present which are redundant. These could potentially be removed to allow natural processes to resume. In some locations such as Ringstead Bay in Dorset, this would increase the level of geological exposure. In many locations, coastal defences exist but in the long-term may not be sustainable. It was suggested that some of these sites offer the opportunity in the long-term to not maintain or replace the defences when they reach the end of their life. It was recognised that the major constraint to this happening is the loss of infrastructure which the defences are currently defending. In some locations, it might be possible to relocate these assets, such as where caravan parks exist, but in other locations the loss of this asset might be considered unacceptable.

3.1.3 Restoration of sand dunes

Along the Cornish coast many important sand dune systems are present such as Penhale Sands near Newquay. In many of these locations, infrastructure such as golf courses, car parks and caravan sites are present on the landward edge of the dunes. In some locations these may be hindering the natural development of the dune systems and, therefore, there is the potential to enhance the dunes by removing such infrastructure. Around seven sites were identified where it was thought this approach would be desirable. However, a major constraint to this would be the loss of the commercial infrastructure and subsequent effects on the commercial operators.

3.1.4 Breach of shingle ridge

In several locations, such as the Fleet, shingle beaches are present behind which freshwater or saline lagoons are present. In some of these locations, roads are present along the shingle beach, such as at Slapton Ley. It was highlighted during the workshops that, in the long term,

the maintenance of these barrier beaches may be unsustainable and many of them are likely to breach. In many places this will cause the loss of freshwater interests which will be replaced by marine habitats. It was generally felt that natural processes should be allowed to continue in these places through no active, or limited, intervention. In some places this will cause the loss of features such as roads and, therefore, appropriate planning is required to enable local communities to adapt to these scenarios.

3.1.5 Managed realignment

A series of potential locations for managed realignment were identified during the workshops. These were mostly situated on the banks of estuaries and would involve breaching of flood banks. The main locations for these were on the banks of the Exe Estuary, the River Tamar, the River Camel and the Taw-Torridge Estuary. A number of these opportunities are already being progressed by the Environment Agency or local organisations such as North Devon Coast and Countryside Service. The main constraints on such schemes are the loss of freshwater interests or agricultural land behind the existing defences. However, a number of sites were identified which were considered feasible to take forward.

3.2 Recommendations

Within the opportunities that have been identified, there is a high degree of variability as to their potential feasibility. Some sites offer potentially "quick wins" with relatively few obstacles and comparatively little effort required to achieve them. The opportunities also vary significantly in the degree of environmental gain they offer. For example, some of the managed realignment sites could create at least 100 hectares of marine/estuarine habitat, whereas some offer the potential of creating only a few hectares.

The opportunities also vary in terms of the type of work that is required to achieve them. In terms of implementing the identified opportunities some could be achieved through the SMP process by changes in the shoreline management policy. However, for the majority of opportunities other action is required outside the SMP process. For example, this is the case with restoration of coastal maritime or heathland communities, which are more effectively achieved through liaison with the land owners or managers. At some sites a specific feasibility study is required whereas other opportunities are more appropriately addressed by carrying out surveys or discussions with landowners. It should be noted that many of the opportunities are already being looked into by a variety of organisations, such as the National Trust, the Environment Agency or local estuary forums. The Environment Agency in particular is developing a strategy for managed realignment, to which this project will contribute.

With so many records identified, it is unlikely that there are sufficient resources to take forward all of them at the same time. It is therefore recommended that some form of prioritisation exercise is carried out to identify the opportunities which are most feasible or desirable and on which effort should be focussed.

During the workshops, opportunities were highlighted which were considered to be priorities to take forward. This was because either they are readily achievable or they offer the potential for substantial habitat enhancement or creation. These were as follows:

- Managed realignment on the Exe Estuary, for example on the River Clyst upstream of Bridge Mill, which was identified as having very good potential for the creations of large areas of intertidal habitats.
- Managed realignment on the Tamar, such as South Hooe Farm;
- Restoration of coastal habitats which have been affected by quarrying along the coast at Porthallows;
- Removal of redundant World War Two defences at Kennack Sands.
- Restoration of dunes within St Ives Bay;
- Managed realignment at various locations on the River Camel; and,
- Managed realignment and habitat management at various locations on the Taw-Torridge estuary.

It is therefore recommended that action (eg in terms of more detailed feasibility studies) is focussed on the above in the first instance. In addition, the results of this project will be fed into the next generation of SMPs by English Nature in due course.

4. References

DEFRA. 2001. *Shoreline Management Plans. A guide for coastal defence authorities.* Report by Defra.

UK BIODIVERSITY GROUP. 1999. *Volume V - Maritime Species and habitats. Tranche 2 Action Plans.* Published by English Nature, Peterborough on behalf of the UK Biodiversity Group.

Appendix A. Attendees at the facilitated workshops on 8 and 9 November 2004

Name	Job title	Organisation
Aidan Winder	Coastal Officer	Devon County Council
Alison Cox	Ecologist	Exmoor National Park
Andrew Houghton	Flood Defence Engineer	Environment Agency
Andy George	Assistant Regional Engineer	Defra
Bill Lawrence	Principal Engineer	South Hams District Council
Chris Davis	Maritime Conservation Officer (Devon)	English Nature
Fiona Anderson	Project Officer	North Devon Coast and Countryside Service
Ian Hugo	Queens Harbour Master	Royal Navy
James Burke	Biodiversity Officer	Environment Agency
Jane Smith	Environment Officer	Fowey Harbour Commissioners
Janet Lister	Regional Nature Conservation Advisor	National Trust
Jess Thomasson	Biodiversity Officer	Environment Agency
Leigh Lock	Conservation Manager	RSPB
Lyn Jenkins	Principal Officer (Conservation)	Environment Agency
Maeve Nightingale	Coastal Officer	Tamar Estuaries Consultative Forum
Martin Clemo	Engineer	Restormel Borough Council
Mike Ingram	Area Warden	National Trust
Mike Williams	Technical Specialist (Devon)	Environment Agency
Nick Harrison	Assistant Regional Engineer	Defra
Nicola White	Environmental Scientist	Royal Haskoning
Nigel Hester	Countryside Manager	National Trust
Nigel Smallbones	Coastal Zone Manager	Torbay Coast and Countryside Trust
Peter Tinsley	Marine Conservation Officer	Dorset Wildlife Trust
Philippa Hoskin	Maritime Officer	Cornwall County Council
Rachel Waldock	Maritime Conservation Officer (Dorset)	English Nature
Richard Edmonds	Earth Science Manager	Dorset County Council
Richard Stanford	Lyme Bay Reefs Officer	Devon Wildlife Trust
Roger Covey	Maritime Officer (Cornwall)	English Nature (Cornwall)
Roger Goulding	Biodiversity Officer	Environment Agency
Sian John	Director of Business Group	Royal Haskoning
Sue Burton	Assistant Conservation Officer (Dorset)	English Nature
Tamsyn Butler	Coast and Countryside Officer	Caradon District Council

Appendix B. Details of biodiversity opportunities

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
1-1	1	Durlston Bay	South Dorset Coast	This site may be threatened in the future by the need to carry out coastal defence works to protect properties at the top of the cliffs	Geological interest	Presence of properties and road at top of cliff	Purbeck District Council	High Point Rendell, 2003.	-	Do Nothing	
1-12	2	Kimmeridge	South Dorset Coast	Potential location for setback of agricultural land at top of cliffs.	Vegetated cliffs and maritime grassland	Loss of agricultural land. Presence of Clavell Tower.	Encombe Estate, Dorset Wildlife Trust, MoD, Landmark Trust, Heritage coast service, SW coast path.	Archaeological studies.	-	Do Nothing	
1-3	3	Osmington Mills, near Weymouth	South Dorset Coast	The geological interest of this site is potentially threatened in the future if coastal defences are installed to protect the adjacent properties and car park. Gabions have been placed at the site which failed after a few months.	Geological interest and vegetated cliffs	Holiday park, car park and properties around Osmington Mills/car park, private ownership and road.	West Dorset District Council, Private land owners.	West Dorset District Council have undertaken a cost benefit study in the late 1990s.	-	Do nothing	Retreat
1-10	4	Ringstead Bay, near Weymouth	South Dorset Coast	Set-back of agricultural land on top of cliff to enhance cliff-top communities	Cliff-top vegetation	Loss of agricultural land	National Trust	None known	-	Hold	Do Nothing
1-2	5	Ringstead Bay, nr Weymouth	South Dorset Coast	Potential to enhance the geological exposures by removal of existing coastal defences or by not replacing/repairing existing defences in the future.	Geological interest (Ringstead Coral Bed)	Presence of caravan park which is currently protected by the defences. A number of holiday homes are also present.	National Trust, West Dorset District Council, Private landowners.	None known	-	Do nothing	Hold

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
1-4	6	End of Preston Beach (Osmington)	South Dorset Coast	Suggestion for installing an artificial reef to enhance the biological interest of the bay whilst protecting the beach from wave action. There is currently a shingle beach with wall behind it.	Subtidal habitats	None known	Environment Agency, Weymouth and Portland Borough Council.	Beach management plans have been produced by the Environment Agency as part of which environmental appraisals of the effects of beach management have taken place. Ecological surveys of Weymouth Bay and Harbour have taken place by Ken Collins of Southampton University.	-	Do nothing	
1-9	7	Radipole Lake, Weymouth	Lyme Bay	Creation of additional reedbed habitat through raising water levels	Reedbeds and associated freshwater habitats	Loss of agricultural land. Presence of road.	Weymouth and Portland Borough Council, RSPB.	None known	-		
1-7	8	Portland Harbour Shore	Lyme Bay	The geological exposures of this site are being lost by historical reduction in erosion rates of Weymouth Harbour due to construction of breakwater. A number of redundant structures are also present on the shore which could also be removed. In addition, the geological exposures of the cliffs are threatened by possible housing developments and associated coastal defences in the future.	Geological interest.	Presence of Portland Harbour breakwaters.	Private landowners, Defra, Portland Port, English Heritage, Crown Estate, Weymouth and Portland Borough Council.	Weymouth and Portland Borough Council are undertaking study of breakwater. A number of ecological surveys have been carried out in Weymouth Harbour.	-	Hold	Retreat

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
1-5	9	Chesil Beach and Fleet	Lyme Bay	Potential to enhance habitats in the lagoon by improving water quality through change agriculture practises to reduce run-off. Might also be the possibility to enhance cliff top communities through the set-back of agricultural land. Chesil Beach and the Fleet are also subject to long-term change.	Saline lagoons and vegetated cliffs	Loss of farm land. Caravan Park.	MoD, Ilchester estate, Crum estate, National Trust.	A number of studies are ongoing within the Fleet, such as monitoring carried out by the Environment Agency.	Recommendations for public education were made.	Do nothing	
1-6	10	West Bexington, Dorset	Lyme Bay	Increase in shingle beach habitat and allow free functioning of coastal processes by removing car park which currently extends over the beach.	Shingle beach. Allowing free functioning of coastal processes.	Presence of car park and café.	West Dorset District Council, private landowners.	None known	-	Do nothing	
1-15	11	Burton Bradstock	Lyme Bay	Potential for enhancing undercliff habitat through grazing of National Trust land.	Vegetated cliffs	Loss of agricultural land	National Trust	None known	-	Do nothing	
1-18	12	East Beach, West Bay	Lyme Bay	It is possible that coastal defence structures may be required in the future at East Beach, West Bay. This represents a potential threat to the geomorphology. Shingle is currently imported to the beach by the Environment Agency from Burton Bradstock.	Potential loss of geological exposures in future.	Presence of properties behind East Beach.	West Dorset District Council, Environment Agency.	West Bay Harbour Improvements and Coastal Protection Scheme is currently being constructed. An environmental impact assessment of this scheme was carried out on behalf of West Dorset District Council.	-	Hold the Line	Selectively Hold the Line
1-8	13	River Brit at West Bay	Lyme Bay	Possibility for managed realignment upstream of West Bay. Water levels are currently controlled by sluice gates at West Bay.	Reedbeds. Grazing Marsh. Intertidal habitat	Presence of sluice gates. Amenity use of site.	Environment Agency, West Dorset District Council, Private landowners.	River Brit water level management plan	-		

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
1-17	14	Charmouth	Lyme Bay	Potential location for setback of agricultural land at top of cliffs. There is an ongoing problem in the area due to loss of the coastal footpath.	Cliff-top habitats	Presence of golf course and loss of agricultural land.	Coast path action group, Private landowners, National Trust, Golf course.	Discussion with the landowners has taken place with regard to relocating the coastal footpath.	-	Selectively Hold the Line	
1-16	15	East Cliff, Lyme Regis	Lyme Bay	Coastal protection works are currently proposed by West Dorset District Council. There may be the potential to incorporate environmental enhancements into these and may be educational opportunities as well.	Soft cliff habitat	None known	West Dorset District Council	West Dorset District Council Lyme Regis Coastal Protection Strategy	-	Selectively Hold the Line	Hold the Line
1-13	16	Cox's Cliff, Branscombe, nr Sidmouth	Lyme Bay	Potential location for setback of agricultural land at top of cliffs.	Vegetated cliffs and maritime grassland	Presence of car park and caravan site at mouth of Branscombe valley. Loss of agricultural land.	National Trust, South West coast path.	National Trust have recently carried out a biological survey of this stretch of cliff	-	Do nothing	
1-19	17	Lyme Bay Reefs	Lyme Bay	There is the possibility of enhancing the Lyme Bay reefs through preventing physical damage from fishing activities, for example by the creation of marine protected areas.	Sublittoral rock	Fishing activity and issues associated with lack of ownership of the seabed resource.	Devon Wildlife Trust, fishing organisations.	Devon Wildlife Trust have been looking at the possibilities of enhancing the reef habitat through the Lyme Bay reefs project. They have already created several areas which are voluntarily closed to scallop dredging and they are in discussions with fishing organisations to have further areas closed.	Continuation of Devon Wildlife Trust work.	Various	
1-8	18	River Axe at Seaton	Lyme Bay	Possibility of managed realignment scheme on lower part of Axe (little detail known of potential scheme)	Intertidal mudflat and saltmarsh	Presence of road and loss of farmland. Much of the lower Axe is a county wildlife site.	East Devon District Council, Environment Agency.	None known	-		

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
1-10	19	Seaton Hole	Lyme Bay	Loss of geological exposure due to coastal defence structures. Landfalls have taken place at Seaton Hole.	Geological exposures	None known	East Devon District Council	None known	-	Selectively hold the line	
1-15	20	Axmouth and Lyme Regis undercliffs	Lyme Bay	Enhancement of undercliff habitat by changing agricultural practices.	Soft cliffs vegetation	None known	East Devon Heritage Coast Service, Dowlands Estate, Al Howson Estate.	None known	This could potentially be achieved through the countryside stewardship scheme	Do nothing	
1-11	21	Pennington Point, Sidmouth	Lyme Bay	A coastal defence scheme has been proposed in this location which would obscure important geological exposures. The scheme is currently on hold but represents a potential threat to geological interests at the site.	Geological interest	Properties are present at the top of the cliff	East Devon District Council	Posford Haskoning, 2002. Environmental Impact Assessment for proposed coastal defence scheme at Pennington Point, Sidmouth. Unpublished report for East Devon District Council.	-	Do Nothing	Hold the Line
1-9	22	River Otter, Budleigh Salterton	Lyme Bay	Possibility of managed realignment on lower reaches of the River Otter on the west bank upstream of Budleigh Salterton	Intertidal mudflats and saltmarsh	Loss of agricultural land	Devon Wildlife Trust, East Devon District Council.	Cycleau project is covering the River Otter.	-		

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
2-15, 2-39	23	Bowling Green Marsh on the River Clyst, near Topsham	Lyme Bay	Managed realignment	Intertidal, mudflat and saltmarsh	Loss of high tide roost (v. important) and freshwater interests. Managed as a nature reserve by RSPB. Some property on the point as well as a road.	RSPB, leased from Exeter City Council.	None known	RSPB could see the function of the site changing as the system changes. Linked to Goosemore (tidal exchange site). Bowling Green may be a medium term option once the defences at Goosemore are less sustainable. Need a longer term solution at Goosemore (beyond the medium term 10-25 yr solution).		
2-16, 2-38	24	Fishers Mill bridge - upstream to Clyst St Mary and beyond, River Clyst.	Lyme Bay	Potential for managed realignment through removal of the weir at Topsham bridge/Fishers Mill. Complex meanders - could adopt a staged approached to work upstream, reinstating individual meanders to demonstrate success as you move upstream (ie a pilot). Could also create a high tide roost for the Exe	Intertidal, brackish and freshwater habitat (potentially 100s of ha)	Some properties at risk - Fishers Mill and road on Topsham flats. Road	Some sympathetic landowners.	Lower Clyst Study (Environment Agency)	Highlighted as a good environmental enhancement opportunity.		

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
2-12, 2-37	25	Exminster Marshes, Exe Estuary	Lyme Bay	Possibility of conversion of grazing marsh (100+ ha) to saltmarsh. It was saltmarsh in the past which was reclaimed during construction of the canal. Over the long term there might be the possibility to convert some of this back to saltmarsh, possibly in stages.	Saltmarsh and freshwater habitat.	Loss of freshwater interests. Presence of freshwater canal. The construction of the canal allowed the reclamation of the marsh. Loss of flood storage. Rights of way and some properties including the pub.	Exe Estuary Management Partnership, Exeter City Council.	Environment Agency water level management plan	-		
2-17, 2-40	26	Turf locks to Powderham Church, Exe Estuary	Lyme Bay	Potential for realignment of the sea wall or, alternatively, regulated tidal exchange.	Intertidal mud and some marsh (approx. 20 ha)	Railway in hinterland would require reinstatement of the wall to protect railway.	Exe Estuary Management Partnership	Marcus Hodges Environment have looked at the grazing marsh. A cycletrack is currently proposed along the top of the seawall.	-		
2-14, 2-36	27	River Kenn, Exe Estuary	Lyme Bay	Restoration of floodplain	Grazing marsh	Presence of railway track	Powderham Estate, Railtrack, Exe Estuary Management Partnership.	None known	-		
2-13, 2-35	28	Cockwood Marsh, Exe Estuary	Lyme Bay	Restoration of the floodplain at Cockwood Marsh, inland of the railway. There is currently a navigable opening under the railway.	Reedbed / grazing marsh	Railway and road	Environment Agency, Exe Estuary Management Partnership.	None known	-		

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
2-41, 2-42	29	Dawlish Warren	Lyme Bay	The spit at Dawlish Warren is essentially an ephemeral feature which wants to move inland up the estuary. There could be the option of (a) managed realignment of the northern half or (b) change management across the rest of the area up to the gabions.	Sand dunes, saltmarsh	Designated as a National Nature Reserve and cSAC. Presence of railway. Less sediment now reaches the Warren due to adequate flood defence provision. Presence of designated non-intertidal features (petal wort). Coastal defence issues at Exmouth.	Teignbridge District Council	Processes are well understood. The spit receives less sediment now than in the past, but the long-term scenario is unpredictable. Detailed study of management options being carried out by English Nature and Environment Agency.	English Nature with the Environment Agency and Teignbridge District Council are planning to undertake a study into what the changes would be if flood defences were removed, what the viable management options are and also to agree emergency measures.	Selectively Hold the Line	
2-1	30	River Teign	Lyme Bay	Opportunities exist at various fields on the north bank which are adjacent to the railway line. Some of these are defended and some are not whilst some have sluices (all in a very mixed state of repair). Small saline lagoons could be enhanced on south side. Some larger opportunities may also exist, for example, upstream of the bridge at Hackney marshes and the racecourse.	Saltmarsh. Saline lagoon. Reedbeds (at the western end of the estuary)	Landowners. Railway line. There might also be potential opportunities in the long-term at the racecourse which is not sustainable over a 50 year timeframe.	Private landowners, Teign Estuary Partnership, Teignbridge District Council.	Estuary officer (Graeme Smith) has been looking at the lagoons this summer.	A plan for the sites would allow a more cohesive approach to be adopted		

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
2-3, 2-22, 2-19	31	Stoke Fleming to Berry Head and Torquay to Teignmouth	Lyme Bay	Possibility of restoration of coastal grassland by set back of agricultural land from the cliff edge. The area also includes the Man Sands managed retreat (near Dartmouth). This site is protected by a shingle bar but is vulnerable to breach and therefore is likely to become more brackish. It is likely to breach of its own accord (10 ha), but natural processes should be allowed to resume.	Restoration of coastal grassland. Potential for grazing marsh and reedbeds if Man Sands breaches.	Loss of agricultural land	National Trust, Torbay Council, Teignbridge District Council and private landowners	None known	-	Selectively Hold the Line	Do Nothing
2-2, 2-20	32	Broadsands, Torbay	Lyme Bay	In 1960's there was a Phragmites reedbed which is now a car park that floods with a remnant section of reedbed. Freshwater enters through limestone . There may be an opportunity to remove the 2nd car park and allow it to flood and remove the sea wall (which defends the reclamation). The first car park could be extended to accommodate the parking use of the 2nd car park.	Reeds.	Presence of beach huts on the sea defence and car park.	Farm/Café, Torbay Council.	Torbay Coast and Countryside Trust has produced a draft management plan (although this does not mention the removal of the car park)	-	Selectively Hold the Line	

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
2-21	33	Sharpham Marshes to Totnes, River Dart	Lyme Bay	Opportunities for creation of marsh generally limited as the estuary is steep sided. However, there are dilapidated sea defences which have breached in places and likely to proceed as wall erodes. These areas could be opened up to breach to accelerate the flooding frequency.	Reedbed and saltmarsh.	None known	Dart Estuary Environmental Management	The Dart is subject of the Cycleau project (see www.cycleau.com for further details).	-		
2-4, 2-23	34	Start Bay (Slapton Ley, Hallsands and Beesands)	Lyme Bay	Opportunity exists at Hallsands and Beesands for saline lagoon and/or, if the seawall is removed at Beesands, vegetated shingle. If existing rock defences are not maintained, areas behind Hallsands could become more brackish. The various freshwater interests could be threatened (if the shingle breaches) but, if the shingle rolls back and does not breach, the freshwater could be maintained.	Saline lagoon. Vegetated shingle.	Presence of road and designations at Slapton. Loss of freshwater habitats. Presence of seawall at Beesands, (although this is not sustainable).	Numerous organisations are involved such as the Whitney Trust, South Hams District Council and Environment Agency.	Scott Wilson are looking at how Slapton will change naturally and management options on behalf of South Hams District Council. This will advise the SMP on threats and opportunities. Phase one report due in November 2004.	-	Selectively hold the line	
2-25	35	Start Point to Wembury, South Devon	Start Point to Land's End	Restoration of maritime grassland by set-back of agricultural land to allow cliff communities to migrate landward. There are areas of eroding cliffs within this stretch and large areas of slippage.	Coastal grassland (unimproved and maritime)	Coastal path. Loss of agricultural land	National Trust	None known	-	No Nothing	Selectively Hold the Line

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
2-5, 2-24	36	West Charlton Marsh, Salcombe	Start Point to Land's End	Currently grazing marsh (3ha) which could be enhanced through water level management. Other areas around Frogmore creek (which are currently grazed) could be converted to grazing marsh; some are defended, others are not, eg Harwell Farm.	Grazing marsh and improved grazing marsh	Water quality problems - nearby sewage treatment works.	Private landowners	None known	-		
2-6, 2-26	37	Thurlestone Bay	Start Point to Land's End	At present this is a freshwater site approximately 20 ha in size separated from the sea by a shingle barrier. A car park and road are present on the barrier which are partially defended by timber piles. There might be the potential to create reed bed and grazing marsh but a range of options are available such as breaching the existing sea wall (which are timber piles) to move the site inland.	Reedbed and grazing marsh	Loss of car park and potential threat to road and hotel.	Leased by Devon Birdwatching and Preservation Society from landowners, National Trust.	None known	-	Selectively Hold the Line	
2-27	38	Amyer Cove, South Devon	Start Point to Land's End	At Amyer Cove there is potential for grazing marsh and letting the areas behind become brackish through impeded drainage.	Brackish habitat and grazing marsh upstream	Coastal footpath	National Trust	None known	-		
2-7	39	Sand dunes at Bantham	Start Point to Land's End	At Bantham, natural processes are creating dunes at present - this should not be inhibited.	Sand dunes	Coastal footpath crosses the beach.	National Trust	None known	Possible opportunity here for a transition to more mature habitats. This needs some consideration of options for longer term management	Selectively Hold the Line	

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
2-8	40	River Avon (Aveton Gifford and South Edford House Marshes)	Start Point to Land's End	Possibility for removal of existing defence and/or retreat the line. Possibility of managed retreat at South Edford marshes.	Saltmarsh	Road - significant arterial route. Significant property interests.	None known	None known	-		
2-9	41	Great Orcheton Marshes, River Erme.	Start Point to Land's End	Small scale opportunity (2ha) to replace grazing marsh habitat on the east bank of the River Erme. Only minor sea/flood defences exist and some of these could be allowed to degrade.	Reedbeds or saltmarsh	Grazing marsh is SSSI (but not SAC/SPA) therefore favourable condition could be maintained (subject to natural changes). No properties at risk.	None known	None known	-		
2-30	42	Wembury Mill Meadows, Yealm estuary	Start Point to Land's End	Potential for creation of freshwater grazing marsh.	Freshwater grazing marsh	None known	National Trust	None known	-		
3-1	43	Crabtree, near Marsh Mills on the River Plym	Start Point to Land's End	There is the possibility of managed realignment at this site where the flood banks, which currently protect a local nature reserve are falling into disrepair.	Upper saltmarsh might be created.	This is currently a nature reserve of Plymouth City Council. Managed realignment would entail loss of terrestrial and freshwater interests. The railway line runs along the landward edge of the site.	Plymouth City Council, Railtrack, Port of Plymouth Marine Liaison Authority (PPMLA).	None known	It was suggested that there might be the possibility of using grant money to create a local nature reserve elsewhere to replace the terrestrial habitats that might be lost.		

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3-2	44	Millbrook, nr Plymouth	Start Point to Land's End	Possibility of enhancing existing lagoonal habitat. At present the lagoon is freshwater and it is occasionally flushed with seawater to control midges. There might be the possibility to create it as a more natural saline lagoon or alternatively to create mudflats by removing structures to make it intertidal. There might also be the potential to increase the recreational use of the area.	Saline lagoon or mudflat.	The lagoon is currently flushed for the control of midges. Flood risk of adjacent properties.	Environment Agency, Town Council, Caradon District Council, Cornwall County Council.	Site was included in the saline lagoon survey (English Nature, 1996).	It was suggested that the proposals could be taken forward by incorporating them into the parish plan. It was noted that the creation of a saline lagoon likely to be more feasible than creation of mudflats.		
2-11	45	Tamar	Start Point to Land's End	Various opportunities exist on the Tamar. Tamar management is concentrating on re-establishment and maintenance at the estuary in its current state without losing more areas to agriculture (ie reclamation is on-going). (See separate records for South Hooe Farm and Cotehele)	Saltmarsh, reedbeds and grazing marsh.	Few opportunities exist because the estuary is steep sided.	Tamar Estuaries Consultative Forum	Institute of Grassland and Environmental Research (IGER) report modelled potential for transitional habitats and habitat creation in the Tamar - available in draft. As part of RAFT, the Defence Estates have looked at all options for managed realignment on the Tamar. A study has also been commissioned into the potential effects of maintenance dredging on the Tamar. This has indicated 1-2cm/year of saltmarsh loss over 50 years. In addition, a site below the Tamar Dam on the River Tavy is also an option considered by the Defence Estates.		Selectively Hold the Line	

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2-32, 3	46	South Hooe Farm, Tamar.	Start Point to Land's End	Managed realignment - quite a big site (around 18 ha)	Saltmarsh, reedbeds, mudflats	Possible loss of grazing marsh, agricultural land use. Navigation on the Tamar.	Private landowner (would not cooperate with RAFT proposal), QHM, MoD, parish council	Looked at as part of the compensation for the RAFT proposal. Defence estate looked at all potential managed retreat sites in the Tamar estuary.	Geomorphological study, hydrographic etc.		
2-33	47	Cotehele to Chapel Farm (15 ha), River Tamar	Start Point to Land's End	Managed realignment. This is a site which the National Trust are in the process of progressing.	Reedbed	Concerns about navigation	National Trust	IGER study on Tamar Estuary have identified a number of potential managed realignment. Lots of studies carried out by National Trust	-		
3-4	48	Looe Bay	Start Point to Land's End	Enhancement of eelgrass beds by reducing impact of anchoring. This could be achieved through installing visitor moorings.	Eelgrass	Use of bay for anchoring.	Looe Harbour Commissioners	Feasibility study has been done. A regeneration and harbour defence strategy is being carried out for Looe.	-	Hold the line	Do nothing
3-5	49	Madderly Moor, Lostwithiel	Start Point to Land's End	Possibility of managed retreat on the east bank of the River Fowey downstream of Lostwithiel.	Creation of intertidal mudflat and saltmarsh	Loss of agricultural land and possibly grazing marsh. Possible effects on navigation on river.	Mr Collins (landowner), Fowey Harbour Commissioners, Lostwithiel Town Council and Town Forum.	The town council are considering creating this as a local nature reserve. West Country Rivers Trust have produced a report.	-		
3-6	50	Gribbin Head	Start Point to Land's End	Restoration of cliff-top habitat.	Coastal grassland	Lack of control over agricultural practices.	National Trust, Cornwall County Council, Restormel Borough Council.	None known	-	Do nothing	

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3-7	51	Par Sands, nr St Austell	Start Point to Land's End	Possibility for increasing area of dune on landward edge	Sand dunes	Presence of development on the landward edge.	Cornwall County Council, Restormel Borough Council, Environment Agency, Imerys	Cornwall County Council have produced a beach dune management study. Also possibly to be included with DEFRA funded Dune & Beach Management Study (subject to approval) LNR Management Plan	Dune accretion occurring	Do nothing	
3-8	52	Carlyon Bay, nr St Austell	Start Point to Land's End	A residential development is proposed to be constructed at Carlyon Bay, for which planning consent already exists. There maybe opportunities for environmental enhancement associated with the proposed development through the enhancement of maritime cliff vegetation on a portion of the site that will not be developed.	Maritime cliff vegetation	Development pressure on the site. Presence of Japanese knotweed.	Ampersand Ltd, Carlyon Bay Watch, Cornwall Wildlife Trust.	HR Wallingford have undertaken modelling of the coastal processes and flooding issues. An Environmental Impact Assessment of the proposed sea defence works is taking place.	This should be taken forward by discussions with the developer	Do Nothing	
3-9	53	Pentewan Beach	Start Point to Land's End	Possibility for increasing dune habitat on landward edge through relocation of caravan park.	Sand dunes	Presence of Caravan Park	Pentewan Sands - Tremayne Will Trust, Environment Agency, Restormel Borough Council.	None known	It was noted that this a good potential site. Flood storage areas are present.	Do Nothing	

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3-10	54	Caerhays	Start Point to Land's End	A freshwater lake currently exists at Caerhays which is separated from the sea by a sandy beach barrier with a road on it. In the long-term there might be the opportunity for creating saline lagoon if the beach breaches. However, there is likely to be some resistance due to the presence of the road and because the lake is an ornamental feature. Caerhays is on EH's Schedule of Historic Parks And Gardens and alteration to what is an historic landscape feature would be resisted	Saline lagoons	Presence of road. Change in appearance of lake from freshwater to saline with associated loss of freshwater ornamental plants. Likely to be subject to resistance from landowner.	Caerhays Estate, CCC (highways).	Saline lagoon study for English Nature (Downie, 1996)	-		
3-11	55	Pendower Beach, Roseland Peninsular	Start Point to Land's End	The cliffs at Pendower Beach are defended at present to protect the road and several properties including a hotel. It was suggested that in the long term the policy should be to do nothing, ie do not repair/replace existing defences to allow natural processes to take place.	Vegetated cliff and shore dock	Presence of road (a no-through road), coastal path and properties on top of cliff.	National Trust, Private landowners.	None known	-		

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3-12	56	Fal Estuary	Start Point to Land's End	Various possibilities exist on the Fal. A study is currently being carried out on behalf of Cornwall County Council, as part of the Cycleau project to identify opportunities for habitat creation. It is suggested that the results of this study are used to inform the second generation of SMPs.	Various	Various	Various	An audit of possibilities of habitat creation is being carried out on behalf of Cornwall County Council as part of the Cycleau project. This is looking at opportunities for habitat creation and restoration for intertidal, subtidal and terrestrial environments.	-		
3-13	57	Swanpool, nr Falmouth	Start Point to Land's End	At Swanpool a saline lagoon is present which is separated from the sea by a road under which a culvert runs. The lagoon currently floods around 7-8 times a year. In the long-term the lagoon is likely to become more saline due to sea level rise.	Saline lagoon	Presence of road	Not known	None known	-		
3-13	58	Maenporth, nr Falmouth	Start Point to Land's End	At Maenporth there is a lake which was historically freshwater separated from the sea by a road with a tidal flap valve. In recent years the flap valve has failed and the lake has now become saline and intertidal with large areas of mudflat. In the long-term there might the opportunity here to restore mudflat and saltmarsh, alternatively to create saline lagoon.	Mudflat and saltmarsh or saline lagoon.	Presence of road	Private landowners	None known	-		

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3-14	59	Porthallow to Lowland Point, nr St Keverne	Start Point to Land's End	This area has been subject to extensive quarrying and there is the possibility of restoration of coastal habitats.	Maritime cliff and slope and some grazing marsh.	Current quarrying activity and presence of infrastructure	Quarry owners, National Trust, RIGS.	None known	Historic and current quarrying need to be considered in assessing feasibility of proposal.		
3-15	60	Kennack Sands, near Cadgwith	Start Point to Land's End	Possibility of increase in dune habitat through removal of world war two defences. These defences comprise a vertical concrete wall which separate the beach and dunes. Removal of the dunes would give the possibility of creating a more natural beach/dune transition.	Sand dunes	Site is of historic/archaeological interest.	English Nature currently lease site, Lord Falmouth.	Defences have already been removed on some of the adjacent stretches of beach.	This site was highlighted as one which would be relatively easy to progress.		
3-16	61	Poldhu Cove nr Mullion	Start Point to Land's End	Possibility of creating transitional coastal habitat through moving car park landward.	Dune to reeds transition	Presence of car park and road	National Trust	None known	-		
3-17	62	Loe Pool nr Helston	Start Point to Land's End	Loe Bar is at risk of breaching at some point in the future and therefore this area is likely to be subject to natural change. There is the possibility of creation of marine habitat at the loss vegetated shingle and freshwater interests.	Marine habitats, eg saline lagoon	Loss of vegetated shingle and freshwater interests. Flood defence issues at Helston.	National Trust, Environment Agency.	National Trust have commissioned a geomorphological assessment of bar.	-	Do Nothing	

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
3-18	63	Porthleven	Start Point to Land's End	Coastal defences are currently obscuring important geological exposures of the Porthleven Cliffs East SSSI. There might be the possibility in the long term of increasing the geological exposures of SSSI by not replacing or maintaining the existing defences. The most recent defences were put in place 7-8 years ago.	Geological exposures in long term	Presence of properties	Kerrier District Council.	Studies were probably carried out when the existing defences were installed (7-8 years ago)	-	Do Nothing	
3-19	64	Praa sands	Start Point to Land's End	Possibility for enhancement of sand dune habitat	Sand dunes	None known	Cornwall County Council, Kerrier District Council.	This site is currently being looked at by Cornwall County Council as part of a beach dune management strategy. An application for flood defences has been submitted.	-	Do Nothing	
3-20	65	Mounts Bay, Penzance	Start Point to Land's End	Restoration and/or creation of coastal habitat between Penzance and Marazion. There might be the possibility of enhancing the value of the habitats which lies between the beach and the road.	Fixed dunes etc. Sandy grassland.	Opportunities restricted landward by road and railway sidings.	St Albans Estate, Penwith District Council., RSPB, Cornwall County Council, Railtrack.	Site is being examined as part of Cornwall County Council's study.	Maybe more opportunities around redundant railway sidings.		
3-21	66	Mousehole to Land's End	Land's End to Minehead	Potential for set-back of agricultural land on top of cliff to enhance cliff-top communities.	Vegetated cliffs, maritime heaths and grassland.	Loss of agricultural land	National Trust and privaet landowners	None known	-	Various	

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3-22	67	Hayle to Mexico Towans	Land's End to Minehead	Possibilities exist for increasing and/or improving dunes adjacent to estuary mouth (between Hayle and Mexico Towans) by removal of chalets and car park. There may also be the possibility of habitat enhancement within Lelant saltings.	Sand dunes and coastal scrub habitats. Mudflats (within Lelant salting)	Presence of chalets and other infrastructure. Development pressure within Hayle harbour. Contamination issues.	Cornwall County Council, Hayle Harbour Advisory Committee, Environment Agency	Cornwall County Council have purchased a disused sand quarry, which is a 60 ha site at the mouth of the Red River. This will provide BAP gains.	Proposed redevelopment of harbour might provide opportunity for incorporation of biodiversity opportunities.	Do Nothing	Hold the Line
3-24	68	Mouth of Red River, nr Gwithian	Land's End to Minehead	Possibilities exist for managed realignment on the banks of the Red River, which is currently embanked	Saltmarsh and mudflat	Potential loss of grazing marsh and agricultural land. Presence of infrastructure.	Kerrier District Council, Cornwall County Council.	The Red River is being looked at as part of the Cycleau project which is aiming to carry out a number of studies and habitat improvements. See http://www.cycleau.com/index.asp?id=1001099 for further information.	Long term studies needed of evolution of Red River looking at sediment processes.		
3-26	69	Perran Beach and Penhale Sand, Perranporth	Land's End to Minehead	Possibility for creation and/or improvement of sand dune habitat by removal of caravan park and golf course on landward edge of sand dunes.	Sand dunes	Presence of holiday park, golf course and car-parks.	Cornwall County Council	Cornwall County Council have already carried out some sand dune creation.	-		
3-27	70	River Gannel, Newquay	Land's End to Minehead	There is the possibility of removing an area of infilling to re-create upper saltmarsh.	Upper saltmarsh	Cost of doing works	Environment Agency, Duchy, Cornwall County Council Restormel Borough Council National Trust	Environment Agency restoration project needs Cornwall County Council back up.	Gannel Estuary is possible subject of future Management Plan led by Restormel Borough Council.		

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3-28	71	Newquay artificial reef project	Land's End to Minehead	A proposal has been put forward to construct an artificial surfing reef at Newquay.	Limited potential for BAP gain but might provide the opportunity for research.	Funding of scheme	Newquay Artificial Reef Company, Restormel Bourough Council	A feasibility study has been carried out on behalf of the Newquay Artificial Reef Company which concluded that a reef could be feasible at Tolcarne Beach within Newquay Bay.	Contact for further information is Anthony Weight of Cornwall County Council	Do Nothing	
3-29	72	Fistral Beach	Land's End to Minehead	There is the possibility of restoration of small areas of dune habitats	Sand dune and vegetated cliff	Presence of golf course, major development and car park on beach.	Restormel Borough Council, Brittanic Industries	None known	-	Do Nothing	
3-30	73	Mawgan Porth valley (between coast and St Mawgan)	Land's End to Minehead	Enhancement of coastal habitats/dunes and coastal and floodplain grazing marsh within the valley.	Coastal grazing marsh potential. Sand dune management improvements and possible increase in sand dune area.	Presence of caravan park, road, car park and low-lying properties.	EMMA- local pressure group, Restormel Borough Council, Environment Agency	Possible Restormel Borough Council, Cornwall County Council and Environment Agency Flood Defence work in the past.	Sand Dune management, coastal and flood plain grazing marsh improvements.		
3-32	74	Harlyn Bay	Land's End to Minehead	Creation of dune/ coastal habitat through removal or management of car park	Sand dune	Presence of car park	Private landowners	None known	-	Do Nothing	Hold the Line
3-33	75	Camel Estuary	Land's End to Minehead	A number of possibilities for BAP gain exist within the estuary. At Polzeath there is the potential for sand dune restoration by removing car park and buildings. At Rock there is the potential for removal of rock armour. Four realignment potentials in the Camel: Dinham, Amble Trevanson, Sladesbridge.	Sand dunes, mudflats and saltmarsh, coastal and flood plain grazing marsh.	Presence of car park at Polzeath. Possible loss of grazing marsh.	Environment Agency	Environment Agency have carried out a number of studies within the estuary. A geomorphology audit of the Camel Estuary has recently been carried out Posford Haskoning on behalf of the Environment Agency.	Good possibilities for managed realignment exist within the estuary. Good restoration of enclosed habitats also possible.		

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
3-34	76	Bude	Land's End to Minehead	Restoration of cliff top habitats by management of recreational pressure. Possible dune re-creation. Possibly removal of Bude weir to create intertidal habitat.	Cliff top habitats, sand dunes and intertidal habitat.	Presence of infrastructure	North Cornwall District Council	Environment Agency looking at feasibility of removing weir.	There has been a loss of *Sabellaria* reefs. Noone knows why at the moment. No studies have been carried out.	Hold the Line	Do Nothing
4-9,4-23	77	Porlock Bay to Foreland Point, Woody Bay and Westward Ho! To Hartland Point	Land's End to Minehead	Within these stretches of coast, natural processes should be maintained to maintain the geological exposures. In much of this stretch there is also the requirement for a buffer zone to be created along the top of the cliffs to allow management of coastal heathlands. There were losses into the 1980's but now there is improvement.	Improved coastal heathlands. More options could exist with a coordinated strategy.	More options could exist with a coordinated strategy.	National Trust, Exmoor National Park and Lynton Town Council.	None known	Surveys to define the resource would be advantageous.	Various	

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4-7	78	Northam Burrows, nr Bideford	Land's End to Minehead	Long term opportunity to allow the site to become mobile again. Could either allow breach of flood defences or put defences back. Natural processes should be allowed to continue and increased water levels should be created (scrapes and wetland area). Enhance the Skern which used to be a marshland area.	Mobile dune habitats, grazing marsh (if it was wetter) and saltmarsh.	Presence of landfill site behind the shingle ridge, the options for which include removal or protection (is it defendable given sea level rise?). This would require rethinking the groyne/gabion system to the south-west which effects sediment supply. Ancient grazing common rights and high grazing levels. Golf course. No policy drivers to help process to go forward.	Torridge District Council. Devon County Council.	Some short term proposals already exist in this area - North Devon Coast and Countryside Service has proposed removal of the wall on the burrows side near Appledore Bridge Goosey Pool feasibility study was carried out but has now been excluded as an option by North Devon Coast and Countryside Service.	Needs an investigation into coastal sediment exchange (from the south).	Hold	Do Nothing
4-8	79	Barnstaple to Yelland (Home Farm Marsh)	Land's End to Minehead	A possible site for managed realignment through the breach of defences to create 80 - 100 ha. Existing areas of marsh are under threat from sea level rise, therefore, there is the need to increase the resource now. The Environment Agency have indicated that they are happy to let defences go.	Intertidal mudflat, saltmarsh and grazing meadows.	Disused railway line to the south (now cycle path) could be armoured to provide a new defence. Lack of co-operation from landowners.	Gya Trust, Environment Agency, Private landowners, North Devon Coast and Countryside Service.	North Devon Coast and Countryside Service are looking into this proposal.	Need studies into the dynamics of the estuary to look at where retreat would be feasible or where it may take sediment out of the system.		

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4-2, 4-12	80	Taw-Torridge Estuary	Land's End to Minehead	Significant opportunities for managed realignment exist throughout the estuary to allow the environment to accommodate rising sea levels. North Devon Coast and Countryside Service have identified as a short-medium term option Horsey Island (tidal flooding to restore Horsey Pool). Opportunities for managed realignment have also been identified at Tawstock (at the upper limits of the Taw), Home Farm Marsh near Fremington. A number of other sites have also been identified by North Devon Coast and Countryside Service for improvement habitat management such as at Chivenor (action plan for wetland), Sherpa Marsh (enhance site for booming bitterns), Raleigh (management of grazing regime), Sticklepath and Taw Meadow (installation of tidal control structures), Westleigh Pill, Knapp House Holiday Camp and mouth of the River Yeo. [See separate entry for Home Farm Marsh]	There is the possibility to create mudflat and saltmarsh through management retreat. Also enhancement of reedbed and wetland habitats through improved management. Some scope for creation of lagoons.	Gradients and space exist for a good coastal transition. At Horsey, the inner bank is not strong enough to become a second defence. Proposal would affect agricultural land, but, significant opportunity exists for quick gains - because the constraints are not significant. Near to urban environment. The Environment Agency have indicated that they would be happy to remove a number of the defences around agricultural land. At some sites, opportunities are constrained by lack of will from landowners.	North Devon Coast and Countryside Service, English Nature, Environment Agency, Private landowners.	North Devon Coast and Countryside Service have existing project which is currently trying to progress many of these environmental enhancements.	-		

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
4-1, 4-13, 4-18	81	Braunton Burrows and Braunton Marsh	Land's End to Minehead	North Devon Coast and Countryside Service have identified a number of opportunities in this area. At South Burrow Farm, they would like to reduce water loss from the dune system into the marsh by improving the sluice on the boundary drain.	Enhance dune resource. Saline lagoons. Improved marsh behind the dunes by raising water levels.	Lack of will from the landowner. NNR status has been removed. Requires a significant change in land management; needs better management of grazing. Access route constraints. Freshwater marsh. MoD interest. Archaeological interest - best arable strip system in the UK.	North Devon Coast and Countryside Service, Christie Estates, Environment Agency, Internal Drainage Board.	North Devon Coast and Countryside Service have identified existing opportunities for improvement. Coastal study - Barnstaple and Bideford Bay. English Nature management plans for National Nature Reserve. Braunton tidal defence scheme.	Water Level Management Plan also proposed - but internal drainage board is difficult. At the mouth of the estuary - application to extract gravel (reactivating an old licence - Crow Point extraction)	Do Nothing	
4-11	82	North Devon Voluntary Marine Conservation Area, from Coombe Martin to Croyde.	Land's End to Minehead	Potential to extend the VMCA east to Foreland Point (into the National Park)	Increase educational opportunities	Need to sell and monitor the socio-economic benefits of a no-take policy (eg Lundy).	Devon Wildlife Trust	North Devon Coast and Countryside Service has undertaken extensive work. Chris Davis is heading up a 'Finding Sanctuary Project' for marine areas (ie no-take zones for the south-west peninsula) although no sites have been identified yet	-	Various	
4-4	83	Baggy Point, Croyde	Land's End to Minehead	Set-back of agricultural land from cliff-edge to improve maritime cliff-top communities. Improve management of habitats on land not owned by the National Trust.	Heathland enhancement	Positive management restricted to the strip from the cliff edge to the road. Existing agricultural landowners.	National Trust, Christie Estates.	None known	-	Do Nothing	

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4-4, 4-20	84	Woolacombe to Mortehoe	Land's End to Minehead	Better management of the catchments that feed the beaches with freshwater.	Saline habitats upstream	Existing catchment land management and the ability for this to change.	North Devon District Council, Environment Agency, North Devon Coast and Countryside Service, Tourist Associations.	None known	-	Observe and Monitor	
4-10	85	Ilfracombe to Morte Point	Land's End to Minehead	Small bays at risk of loss due to sea level rise which will lose intertidal	None possible, ie no room to retreat when sea level rises. However, the sites should not be defended.	Sea level rise. Potential pressure from Ilfracombe business to maintain the small bays. No biodiversity benefit to defend.	Not known	None known	-	Do Nothing	Hold
4-5	86	Porlock Bay	Land's End to Minehead	The shingle ridge, which was a natural defence, breached in 1997. Since then creeks and saltmarsh have developed at the expense of the freshwater marsh. Options exist to develop the site further to include improved agricultural land, in order to provide a useful margin for wading birds.	Opportunities to manage the farmland behind for farmland birds - overwintering stubbles / arable margins, eg areas for nesting lapwing. Less intensive use for the wader resource.	Local pressure for restoration of the ridge. Important archaeology now being exposed.	Private landowners. National Trust, who resisted shingle recycling. Porlock Manor Estate. The Trust recently entered into a management agreement (Countryside Stewardship) with the landowner.	See National Park information - numerous studies and John Pethick study.	Defences should not be reinstated.	Retreat	Hold

Data-sheet number(s)	Number	Location	Natural Area	Description of opportunity	BAP gains	Constraints and opportunities	Site stakeholders	Existing studies	Recommendations and additional notes	Current SMP policy (1)	Current SMP policy (2)
4-6, 4-25	87	Minehead	Land's End to Minehead	Possibility of enhancing the *Sabellaria* reefs along the Minehead frontage. This is heavily managed for flood defence reasons. There is a need to understand the existing resource, in the context of the southwest.	*Sabellaria* reefs	Wider threats from the Severn Estuary. No development pressure. Well used coastal path / North Hill and climbing. Flood defences - seawall and beach replenishment	Exmoor National Park, National Trust, Environment Agency.	Some work on coastal habitat. Good information on the National Park. Minehead scheme information.	With respect to the *Sabellaria*, need survey to define the resource. With respect to the defences, the issue is how you manage the defences to help maintain environmental value and serve the flood defence requirements.	Hold	

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Front cover photographs:
Top left: Using a home-made moth trap.
Peter Wakely/English Nature 17,396
Middle left: Co_2 experiment at Roudsea Wood and Mosses NNR, Lancashire.
Peter Wakely/English Nature 21,792
Bottom left: Radio tracking a hare on Pawlett Hams, Somerset.
Paul Glendell/English Nature 23,020
Main: Identifying moths caught in a moth trap at Ham Wall NNR, Somerset.
Paul Glendell/English Nature 24,888