

# Cardigan Bay Special Area of Conservation (SAC)

## Management Scheme



2008

# Cardigan Bay Special Area of Conservation (SAC) Management Scheme



@ Steve Delmonte

This document has been produced jointly by:  
Ceredigion County Council, the Countryside Council for Wales, Environment Agency Wales, North Western and North Wales Sea Fisheries Committee, Pembrokeshire Coast National Park Authority, Pembrokeshire County Council, South Wales Sea Fisheries Committee and Dŵr Cymru Welsh Water, with support from the EC LIFE-Nature Programme.



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## How to use this document

The original Management Scheme was written implicitly to address the conservation needs of the bottlenose dolphin. As outlined within the Introduction, three additional species and three habitats were added as features of the site in 2001. As a result the Management Scheme has been reviewed and now accounts for all features of the site.

This document follows a logical and open approach to assessing and describing the Cardigan Bay SAC's management requirements. The approach taken is sequential, largely along the lines of; audit; plan; and review. The content and purpose of each section is given below:

**Section 1.** An introduction to the background and legal framework of the Special Area of Conservation (SAC). It aims to provide the reader with a basic understanding of the purpose and underlying management principles of an SAC.

**Section 2.** A summary description of the Cardigan Bay SAC. The summary addresses the environmental conditions and the features of the site and makes reference to further information resources. Its aim is to put the site into context.

**Section 3.** The conservation objective for the site. An explanation is given of how the objective is defined and how it will be monitored. Aims to provide an understanding of the site's main objective and its development.

**Section 4.** The procedures for assessing different types of activities are outlined and the impacts of natural processes and human activities upon the features of the site are assessed. The current and potential effects on the features of the site are considered alongside existing management and socio-economic requirements to determine the need, or otherwise, to modify existing management or introduce something new. The reader is then referred to Section 6 for specific action related to the management of each activity. The section aims to provide a logical and transparent explanation for the development of the site management.

**Section 5.** Site management will require regular review as circumstances in Cardigan Bay change over time. This section explains the mechanism and timetable for such a review process.

**Section 6.** Management actions related to all factors listed in **Section 4**. The body responsible for the action and a timescale are provided. This section aims to provide a handy summary of how potential or current threats to the site's features will be addressed and who will be responsible for implementing the listed actions.

**Appendices.** Appendices containing additional information, which may be of use as a reference when consulting the Management Scheme.

# 1 INTRODUCTION

## 1.1 Background

This Management Scheme Document has been developed to fulfil the requirements of the UK Habitats Regulations<sup>1</sup> for the Cardigan Bay SAC, and thereby contribute to meeting the UK's obligations under the European Union's Habitat's Directive<sup>2</sup>. The Document sets the framework within which activities within the Cardigan Bay SAC and/or adjacent to the SAC with the potential of threatening the conservation status of the features of the SAC will be managed in ways compatible with the achievement of the nature conservation interest. Whilst in the first instance this Scheme has been prepared for the relevant statutory organisations responsible for implementing the Scheme, everyone with an interest in the site has been encouraged to contribute to the Scheme's development, and the Scheme's success is dependent on all users of the area playing their part in its management.

The aim of the Habitats Directive is the maintenance or restoration of habitats and species of European importance to a Favourable Conservation Status<sup>3</sup> (FCS). Conservation measures must be established within SACs, which correspond to the ecological requirements of the habitats and species for which the sites were designated. Appropriate steps must then be taken to avoid disturbance to species and the deterioration of habitats for which the sites have been designated.

In 1996 the southern portion of the Bay was put forward as a SAC due to the significant presence of bottlenose dolphins in the area. It was for this species that the Relevant Authorities<sup>4</sup> (RA), in partnership with local interest groups, developed and are now implementing the Cardigan Bay SAC Management Scheme which was formally adopted in 2001.

However, as detailed in **Section 1.5**, in response to the European Commission's request to the UK Government to make improvements to the list of candidate SAC sites submitted, the Countryside Council for Wales was required to add three additional species and three new habitats as features of the SAC. These are:

- Habitat features: Reefs, Sandbanks which are slightly submerged by seawater at all times and Sea Caves.
- Species features: Atlantic Grey Seals, River Lamprey and Sea Lamprey

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<sup>1</sup> The Conservation (Natural Habitats, &c.) Regulations, Statutory Instrument No. 2716. SI 1994/2716, HMSO, London. [http://www.legislation.hmsso.gov.uk/si/si1994/ukSI\\_19942716\\_en\\_1.htm](http://www.legislation.hmsso.gov.uk/si/si1994/ukSI_19942716_en_1.htm) and amendments 2007

[http://www.opsi.gov.uk/legislation/scotland/ssi2007/draft/sdsi\\_9780110776118\\_en.pdf](http://www.opsi.gov.uk/legislation/scotland/ssi2007/draft/sdsi_9780110776118_en.pdf)

<sup>2</sup> Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna. (OJ No L 206, 22.7.92)

[http://ec.europa.eu/environment/nature/nature\\_conservation/eu\\_nature\\_legislation/habitats\\_directive/index\\_en.htm](http://ec.europa.eu/environment/nature/nature_conservation/eu_nature_legislation/habitats_directive/index_en.htm)

<sup>3</sup> Favourable conservation status, for both habitats and species, is defined in Article 1(e) of the Habitats Directive. For species, the definition is as follows:

"The conservation status will be taken as favourable when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is it likely to be reduced for the foreseeable future
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis"

<sup>4</sup> Defined in Regulation 5 of the Habitats Regulations

The addition of these new features to the site required a detailed review of the management of activities that may impact upon the conservation status of each of the site's features to ensure the obligations under the Habitats Directive are achieved. Current management of these factors has been examined and, where it was felt appropriate, each Relevant Authority (RA) has proposed new or altered management actions to address perceived or potential impacts on the features.

## **1.2 SAC vision and Management Scheme aim**

Standing on the cliff top the site extends as far as the eye can see. It looks a uniform grey-blue colour at first glance but this hides a wealth of marine life beneath the waves. Cardigan Bay is a very important site for marine species and habitats that includes bottlenose dolphin, grey seal and lamprey species and reef, sandbank and cave habitats of European importance.

Look closely at its shores or dive under the waves and you will be aware of the wide range of animals and plants that thrive there. Close to shore there are rich reefs of honeycomb worms and rock pools full of red algae and colourful fish, and extending below the surface forests of kelp providing cover for many more species such as the colourful cuckoo wrasse and blue-rayed limpet. There is a changing or dynamic pattern of distribution of marine habitats and species that demonstrates that ecological structure is being maintained.

The sight of bottlenose dolphins leaping out of the water must be one of the most spectacular encounters with marine wildlife. Over 200 bottlenose dolphins use the Bay and interact with animals further a field. They are found spread throughout the Bay but are to be regularly seen concentrated nearer to shore, feeding around headlands and in the mouths of estuaries and nursing their young in the shallow sheltered waters.

The vision for the Cardigan Bay Special Area of Conservation is one of a quality marine environment, where the habitats and species of the site are in a condition as good as or better than when the site was selected, and where sustainable use of the marine environment within the Special Area of Conservation is an important and integral part of local socio-economics for future generations.

The consequent aim of the management scheme, agreed by the Relevant Authorities (RAs) is:

*"To secure and maintain the favourable conservation status of the Cardigan Bay Special Area of Conservation by ensuring that human activities co-exist in harmony with the habitats and species of the site."*

This means, for example, that the size and range of the populations of dolphins and seals are not restricted or threatened, directly or indirectly, by any human activity in the Bay and beyond, but that human activities co-exist in harmony with the habitats and species found there.

The Management Scheme is intended to be a dynamic plan evolving as circumstances change to address activities taking place within and adjacent to the site. It will be regularly reviewed and modified to take into account new information, changing issues and legal obligations so as to aid decisions associated with the site's management (see **Section 5.1** and **6.24**). The Marine Bill for example, and any legislation arising from it, may well have wide implications for the future of marine nature conservation. Through the action plan it is hoped that new management measures will constantly address activities with the potential to damage the site so as to secure its long-term sustainability and allow the Cardigan Bay SAC to be enjoyed and used as a resource for future generations to come.

### 1.3 Key principles for production of the Management Scheme

To help ensure that the Cardigan Bay SAC Relevant Authorities (RAs) (see Section 1.7.1) are working toward the same goals, the following eight key principles were agreed. These principles are fundamental to and underlie the Management Scheme.

**Principle 1 – Favourable conservation status**

*All management actions should contribute towards achieving and maintaining favourable conservation status for the SAC features.*

**Principle 2 – Sustainability**

*The Management Scheme will strive to ensure that activities are undertaken in sustainable ways that ensure social and economic objectives are integrated with the conservation objectives for the site.*

**Principle 3 – Precautionary Principle**

*All potential sources of risk to the SAC features will be examined. Where there is risk, lack of full scientific certainty will not be used as a reason for postponing identification and introduction of management measures that are likely to be cost effective in preventing damage.*

**Principle 4 – Assessment of Management Requirements**

*Identification of management requirements will be based on a full inventory of the necessary management action to secure and maintain favourable conservation status.*

**Principle 5 – Formulating Management Actions**

*Management actions will:*

- i) integrate with and, where necessary, build upon existing plans and initiatives without duplication;*
- ii) wherever possible, be specific, measurable, achievable, realistic and have a timescale;*
- iii) be based upon best available scientific advice, and where such advice is insufficient, be considered in light of the precautionary principle;*
- iv) utilise additional regulation (e.g. new byelaws) where it is the only effective solution.*

**Principle 6 – Partnership Approach**

*Maintain the involvement of, and partnership approach, with all interest groups.*

**Principle 7 – Education/awareness**

*Raise awareness of the importance of Cardigan Bay's marine environment and the consequences of living nearby and/or using the marine SAC.*

**Principle 8 – Monitoring and Review**

*Regularly monitor and review the effectiveness of the scheme.*

### 1.4 Legislative background

#### 1.4.1. Habitats Directive

The Habitats Directive was adopted by the European Community in 1992 as a major contribution to the Biodiversity Convention signed at the Rio Earth Summit<sup>5</sup>. Its main aim is to highlight the need to maintain biodiversity throughout all Member States. To make this enormous task more manageable, it focuses on rare or threatened habitats and species, which are listed as Annexes within the Directive.

The main mechanism used to protect the habitats and species listed in the Habitats Directive is the selection and subsequent designation of Special Areas of Conservation (SACs). Article 6(2) of the Directive requires member states to:

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<sup>5</sup> 1992 International Convention on Biological Diversity <http://www.biodiv.org/convention>

*“take appropriate steps to avoid (in European sites) the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the sites have been designated, in so far as such disturbance could be significant in relation to the objectives of the Directive.”*

Another important feature of the Directive is that it mentions the need to take account of the economic, cultural, social and recreational needs of local people when managing the site. A majority of the sites already chosen have been subject to human use for hundreds or thousands of years and the implications of the Directive on those patterns of use have to be considered as part of the whole management process.

Special Areas of Conservation are initially selected by each member state on the basis of the habitats and species listed in Annexes I and II of the Habitats Directive. The habitats and species found on each site are referred to as the “interest features”. The best examples of these interest features for each country, once agreed locally and nationally through consultation, are then submitted to the EC for consideration. At this stage they are referred to as “candidate sites”. After adoption by the EC, these candidate sites must then be formally designated by their member states. Cardigan Bay SAC was formally designated on 13 December 2004.

#### **1.4.2 Habitats Regulations**

The Habitats Directive is given effect in Great Britain by legislation commonly referred to as the Habitats Regulations. These Regulations set out in detail the duties and powers of the organisations responsible for implementing the Directive. The key provisions in relation to marine SACs can be summarised as follows:

- i. all public and statutory bodies must have regard to the requirements of the Habitats Directive in exercising all their functions;
- ii. in relation to marine areas, all public and statutory bodies with functions relevant to marine conservation, must exercise them in accordance with the requirements of the Directive;
- iii. Relevant Authorities (RAs) may establish Management Schemes for marine SACs, under which they shall exercise their functions.
- iv. the nature conservation body (CCW in Wales) must advise the other Relevant Authorities (RAs) as to the conservation objectives for a site, and any operations which may cause deterioration or disturbance to the habitats or species for which a site is designated.

This reviewed Management Scheme arises from (iii) above. It has been prepared by the Relevant Authorities (RAs) for the site, in consultation with others. It describes how each Relevant Authority (RA) intends to comply with the requirements of the Habitats Directive in relation to the Cardigan Bay SAC. It is also intended to act as guidance to others as to the management requirements of the SAC.

#### **1.4.3 SACs and the Natura 2000 network**

Special Areas of Conservation designated under the Habitats Directive, and Special Protection Areas (SPAs) designated under the complementary Birds Directive<sup>6</sup> to protect wild birds, collectively form a network of protected sites across Europe called Natura 2000.

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<sup>6</sup> Council Directive 79/409/EEC on the Conservation of Wild Birds

SACs and SPAs cover both terrestrial and marine environments. Where they include the sea or the foreshore, they can also be referred to as “European Marine Sites”. There are over 60 SACs within the UK that are marine<sup>7</sup>. Sizes of sites vary, as do the number of habitats and species for which the sites have been chosen.

## 1.5 Site History

Cardigan Bay has been recognised for its marine wildlife for many years, with particular interest in the area’s bottlenose dolphins. Following submission of a large petition calling for greater protection of this species and other marine wildlife in 1991, Ceredigion County Council resolved to “endorse the conservation interests of the New Quay to Tresaith coastal zone as being worthy of special planning treatment”. This led to the designation of the Ceredigion Marine Heritage Coast, the first of its type in the UK.

The Cardigan Bay SAC site was proposed in 1995 due to its importance for bottlenose dolphins. In 1997 the site was submitted to the EC and so became known as a candidate site.

In 1999, the lists of candidate SACs from each European Union member state within the Atlantic biogeographical region, including the UK, were reviewed at meetings convened by the European Commission. Following this review, the UK along with a number of other member states was asked by the EC to submit further sites, and to identify additional features of interest on existing sites. The process (often referred to as the ‘moderation process’) of identifying the additional sites, and the additional habitats and species, started in November 1999 and was completed by the end of 2000. Moderation requirements specifically relevant to this site were to:

- modify the existing candidate SAC site to include additional habitats and species from Annex I and II of the Habitats Directive;
- change site boundaries to better encompass existing features or to accommodate new features.

This resulted in the following additions to the site:

- Species features: Atlantic Grey Seals, River Lamprey and Sea Lamprey;
- Habitat features: Reefs, sandbanks which are slightly submerged by seawater at all times, and submerged or partially submerged sea-caves.

The list of proposed sites in Wales was agreed following discussion between Countryside Council for Wales (CCW) specialists and colleagues in the conservation agencies in England, Scotland and Northern Ireland and the UK Joint Nature Conservation Committee (JNCC) to ensure consistency across the UK. Following this there were discussions with the National Assembly for Wales and UK government departments to help ensure that the proposed revisions to the UK site list met the requirements of the European Commission.

In 2003 amendments were made to the landward limit of the site to ensure that features occurring above the original mean high water boundary (sea caves and Atlantic grey seals) were accounted for. The change also ensured consistency with UK conservation designations, in particular Sites of Special Scientific Interest (SSSIs).

On the 7 December 2004, the European Commission formally adopted the UK list of Special Areas of Conservation. Carwyn Jones, the Environment Minister in the Welsh

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<sup>7</sup> In this case marine SAC is understood as a site that has at least one marine feature classified as being of interest at a national level (grade C in the European Commission DGXI 1995 classification system)

Assembly Government, then formally designated the 90 Welsh sites on this list as SACs on December 13th 2004.

The Cardigan Bay SAC was one of 12 marine sites in the UK which received funding through the EC Life project (<http://www.ukmarinesac.org.uk/project-background.htm>) and this resulted in the development of a Management Scheme which has been in place since 2001. The 2001 Management Scheme Document is now being replaced by the current document, which has been updated to take into account the 6 designated features added through the moderation process.

## 1.6 Management Framework

### 1.6.1 Relevant Authorities (RAs)

The UK Habitats Regulations make Relevant Authorities (RAs) (see **Box 1**) responsible for the conservation and management of the SAC. However, no single RA can have overall responsibility for the site, since none has all the necessary powers. The ultimate responsibility for ensuring compliance with the requirements of the Habitats Directive in Wales, both generally and in relation to the Cardigan Bay SAC, lies with the National Assembly for Wales (NAW) and the UK government.

#### **Box 1: Competent Authorities (CAs) and Relevant Authorities (RAs)**

The Habitats Regulations use the terms Relevant Authorities (RAs) and Competent Authorities (CAs) to describe statutory bodies to which the Regulations apply.

The term **Competent Authorities (CAs)** includes any statutory body or public office exercising legislative powers, whether on land or at sea.

**Relevant Authorities (RAs)** are those CAs which have powers or functions which have, or could have, an impact on the marine area within or adjacent to a European marine site.

Whereas all Relevant Authorities (RAs) are also CAs, not all CAs are Relevant Authorities. Regulation 5 lists those bodies that can be RAs.

Each Relevant Authority (RA) is individually responsible for meeting its duties under the Habitats Regulations. However by jointly preparing, implementing and reviewing this Management Scheme document, it is anticipated that the RAs will be able to more effectively achieve the aims of the Habitats Directive in relation to this site, than if they acted alone. To this end the RAs for the site have formed the Cardigan Bay SAC Relevant Authorities Group (RAG), a voluntary partnership. This Group has no additional powers but serves to ensure that all RAs contribute to develop and implement the Management Scheme. This joint approach also enables communication with local people and other interested parties about the plan as a whole.

Conserving the species and habitats of SACs forms only one of the many functions of each of the RAs, all of which exist primarily for other purposes and who act under other legislation. However, all of the RAs must of course comply with their obligations. All are committed to the conservation of the features of Cardigan Bay SAC and to the successful implementation of this Management Scheme Document.

There are nine Relevant Authorities (RAs)<sup>8</sup> for the Cardigan Bay SAC. These authorities are equal members of the Cardigan Bay SAC RAG and are as follows:

Ceredigion County Council (CCC)  
Countryside Council for Wales (CCW)  
Environment Agency Wales (EAW)  
Dŵr Cymru Welsh Water (DCWW)  
North West & North Wales Sea Fisheries Committee (NW&NWSFC)  
Pembrokeshire Coast National Park Authority (PCNPA)  
Pembrokeshire County Council (PCC)  
South Wales Sea Fisheries Committee (SWSFC)  
Trinity House Lighthouse Service (THLS)

### **1.6.2 Competent Authorities (CAs)**

All Competent Authorities (CAs) for the site (see **Box 1** for a definition) are invited to sit on the Liaison Forum (see below). They are kept up to date with the work of the Relevant Authorities Group (RAG) and involved in the development of the Management Scheme. Details on the roles and responsibilities of the Competent Authorities (CAs) can be found in **Appendix 3**.

### **1.6.3 SAC Liaison Group**

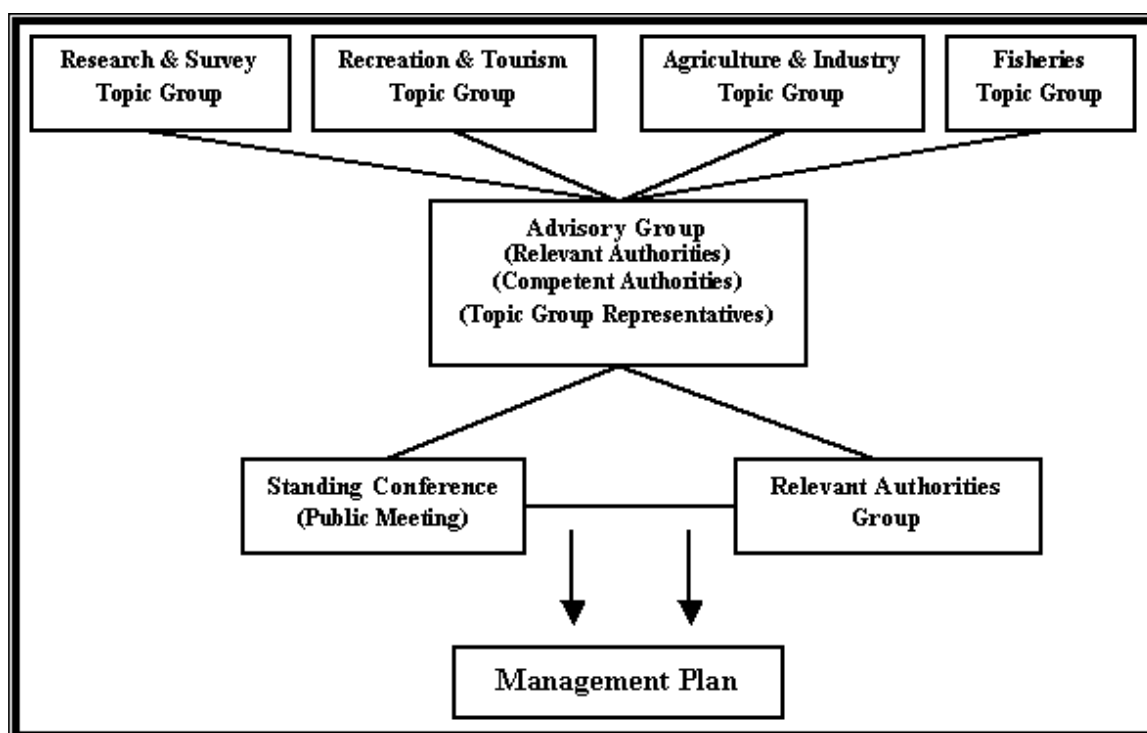
Although only Relevant and Competent Authorities (CAs) have statutory responsibilities, other interested parties are encouraged to participate in the management of the site.

As demonstrated by the petition for the Marine Heritage Coast, it was clear there is a great deal of public interest and support for conservation measures in the area. The Relevant Authorities (RAs) recognised the value of working in partnership with these interested parties and consulted with the local community as to how the views, suggestions and concerns of the variety of sectoral interest could be encompassed. As a result, a number of 'Topic Groups' were established in 1997. These groups and the mechanism by which they liaised with the Relevant Authority (RA) group are shown in **Figure 1**.

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<sup>8</sup> see **Appendix 3** for details on duties, powers and contact information of the Relevant Authorities.

**Figure 1. Liaison framework as established in 1997, showing topic groups of the Cardigan Bay SAC Liaison Group.**

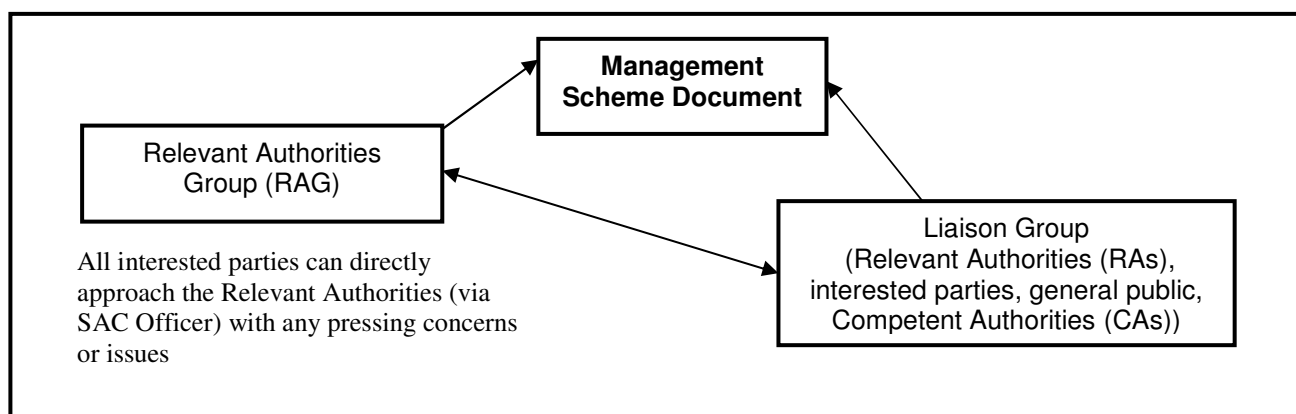


Each topic group contained a representative from a Relevant Authority (RA) to assist in the administration of the group, to clarify SAC requirements, and to provide up to date information and feedback from the Relevant Authorities Group (RAG). Representatives from each topic group met at intervals with the Relevant Authorities Group (RAG), some relevant authority 'members' and several Competent Authorities (CAs) in a forum called the advisory group. This was the main interface for the exchange of information between all interested parties.

Topic groups made a significant contribution to several areas of the original Management Scheme Document's development, including a review of current knowledge, development of the site's original conservation objective and input into the structure and content of the Management Scheme document from an early stage.

A review of the liaison framework took place in the summer of 2000, and this resulted in the formation of a new liaison structure so as to better represent the level and type of liaison interest now shown. This has resulted in the replacement of Topic Groups and the Advisory Group by a single 'Liaison Group (LG)'. Membership to this forum is open to anyone wishing to participate in the sites development and maintenance, and is advertised to the public prior to any meeting.

**Figure 2. Current Liaison framework**



The Liaison Group was asked to vote on the need to reconvene topic groups to consider associated management issues. Members rejected the need to reconvene the groups, and were happy that the necessary mechanisms were in place for their contributions to be heard.

In addition to the Liaison Group, opportunities for the public's input into the management process are initiated through the SAC 'roadshow' and other outreach events. Such events allow all stakeholders an opportunity to find out more about the SAC and how to contribute to its management. They are based in the community (run for example from the local community hall or at carnival events) where local users of the SAC and members of the public are encouraged to visit for information on the site, voice opinions, and conduct one-to-one discussions on issues of concern. These initiatives are especially useful for those who do not welcome formal meetings, and offer opportunities for working jointly on other initiatives (for example the development of the SAC Education and Interpretation Strategy<sup>9</sup>).

#### **1.6.4 SAC Officer**

The SAC Officer position was created in January 2003. The post is jointly funded by and works on behalf of the Relevant Authorities Group (RAG). Main duties and responsibilities of the post are shown in **Box 2**.

#### **Box 2: Main duties and responsibilities of the SAC Officer**

##### **Management Scheme**

- Co-ordinate and facilitate with Relevant Authorities (RAs) and all stakeholders, the continuing development and implementation of the Management Scheme for the Cardigan Bay SAC.
- Progress actions contained in the Management Scheme through:
  - Co-ordination and facilitation of actions arising from the Management Scheme which are the responsibility of several Relevant Authorities (RAs) and require liaison between them and other stakeholders.
  - Co-ordination and facilitation of actions arising from the Management Scheme which are not the direct responsibility of any one RA but require liaison between them and other interests.
  - Representation of individual Relevant Authorities (RAs), where appropriate and agreed to do so.

<sup>9</sup> Cardigan Bay SAC Education and Interpretation Strategy, 2004. See Section 4.2.1

**Administration & Liaison**

- Provide a secretariat for the Relevant Authorities Group (RAG) including the production of written communications and organisation of meetings.
- Maintenance of the project's joint budget and production of a financial statement to the Relevant Authorities (RAs) annually.
- Provide a point of contact between the Liaison Forum, Relevant Authorities (RAs), responsible managing organisations and other stakeholders, and organise and facilitate meetings as appropriate.
- Liaise with the Countryside Council for Wales (CCW) to ensure appropriate consultation on changes to Regulation 33 advice and to ensure changes are disseminated to interested parties.
- Deal with general enquiries from the public, local organisations and Relevant Authorities (RAs) and pass on to the correct Relevant Authorities (RAs) for action.
- Liaise with other marine SACs and marine protected sites in order to exchange relevant information and promote best practice.

**Reporting**

- To review annually the action plan with Relevant Authorities (RAs), Liaison Forum and others to take account of changing issues and management needs across the site as required by the UK Habitats Regulations. This will require considerable liaison between the parties involved and lead to the production of additional information to be contained in the Management Scheme. Production of an annual report to the members of the Relevant Authorities Group (RAG) and the Liaison Forum will be required. This will include information on:
  - Each RA's implementation of existing management measures to ensure compliance with the Habitats Regulations.
  - Progress made with the development of new management measures to address actions arising from the Management Scheme.
  - New issues developing across the site to be addressed in the forthcoming year.
  - Changes made to the Regulation 33 advice issued by the Countryside Council for Wales.
- To undertake a major review of the Management Scheme every 5 years.
- To ensure results of any relevant research within the site are disseminated as and when appropriate.

**Awareness raising**

- Preparation of awareness raising materials associated with the project including web site administration.
- Implementation of the Education and Interpretation Strategy.
- Raise awareness of the environmental importance of the Cardigan Bay SAC
- Raise awareness and engender support for the management objectives of the site
- Encourage a sustainable approach to the use of the site's environmental resources.

The long term role of the SAC Officer is considered by the Relevant Authorities Group (RAG) to be of critical importance to the successful ongoing implementation of the Management Scheme.

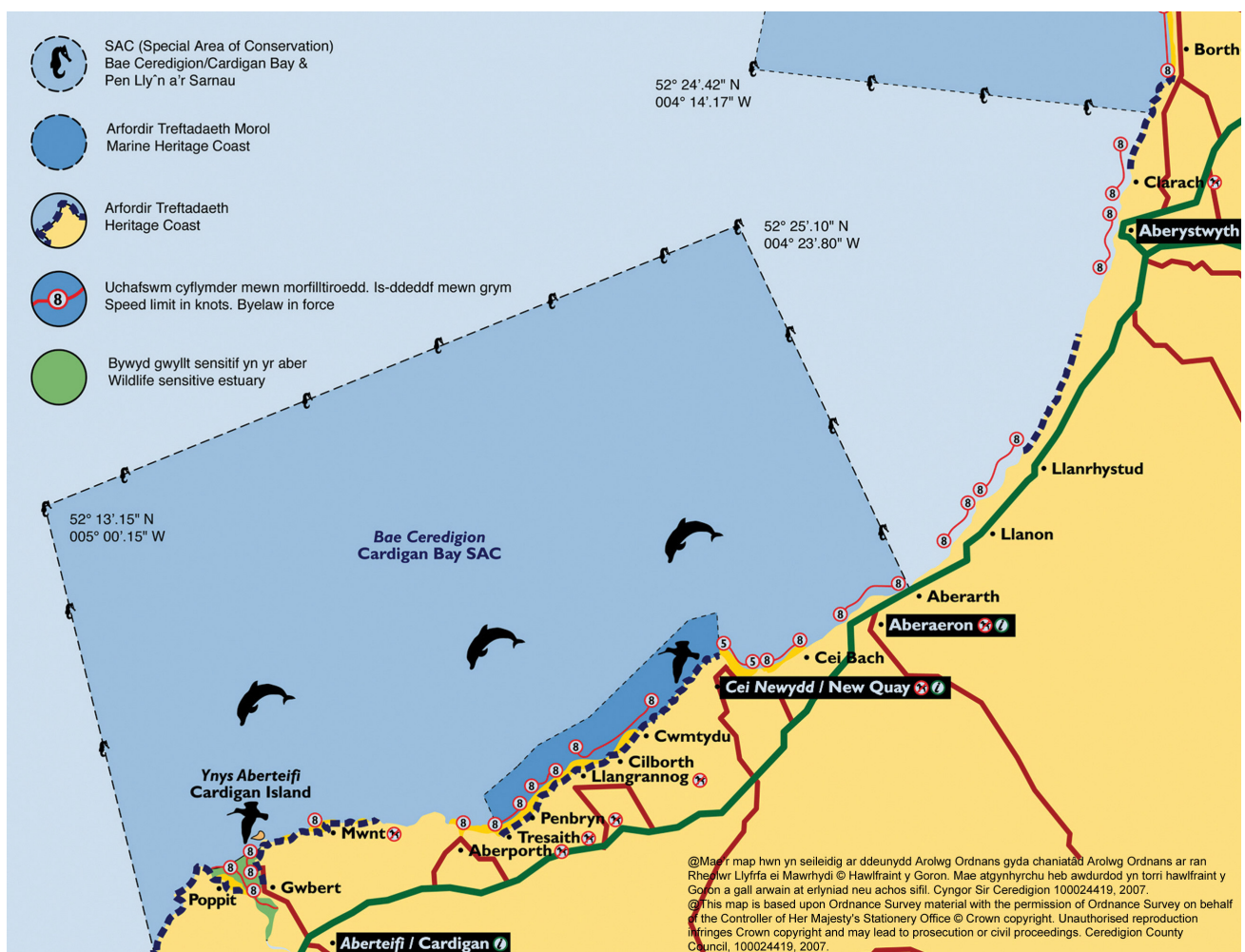
## 2 SITE DESCRIPTION AND FEATURES

### 2.1 Site Description

#### 2.1.1 Site Boundaries & maps

The Cardigan Bay SAC is sited within the southern part of Cardigan Bay. It extends from its northern boundary of Aberarth, Ceredigion to Ceibwr Bay, Pembrokeshire. The landward boundary runs along the coastline, and generally extends up the coastal slope to the coastal footpath or fence. The site extends approximately twelve miles offshore, see **Figure 3**.

**Figure 3** Cardigan Bay SAC boundaries



## Marine Communities

### Sublittoral

Broadscale maps (and descriptions) of Cardigan Bay's underwater marine communities are shown in the Marine Nature Conservation Review area summary<sup>10</sup> and Great Britain overview of benthic marine ecosystems<sup>11</sup>. Recent broad scale acoustic discrimination system surveys of Cardigan Bay have developed maps of the distribution of seabed communities. These are held on GIS. Two examples are given in **Figure 4 & 5** below.

### Intertidal

The entire Welsh coast has been surveyed and mapped by the Countryside Council for Wales Phase 1 Intertidal Survey. This includes the intertidal area adjacent to the SAC boundary. The survey has resulted in the production of marine biotope<sup>12</sup> maps of the intertidal. These are held on GIS.

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<sup>10</sup> Brazier, D.P., Holt, R.H.TF., Murray, E., & Nichols, D.M. 1999. Marine Nature Conservation Review Sector 10. Cardigan Bay and North Wales: area summaries. Peterborough, Joint Nature Conservation Committee. (Coasts and seas of the United Kingdom. MNCR series).

<sup>11</sup> Hiscock, K., ed. 1998. Marine Nature Conservation Review. Benthic marine ecosystems of Great Britain and the north-east Atlantic. Peterborough, Joint Nature Conservation Committee. (Coasts and seas of the United Kingdom. MNCR series).

<sup>12</sup> Biotope: The habitat (i.e. the environment's physical and chemical characteristics) together with its recurring associated community of species, operating together at a particular scale

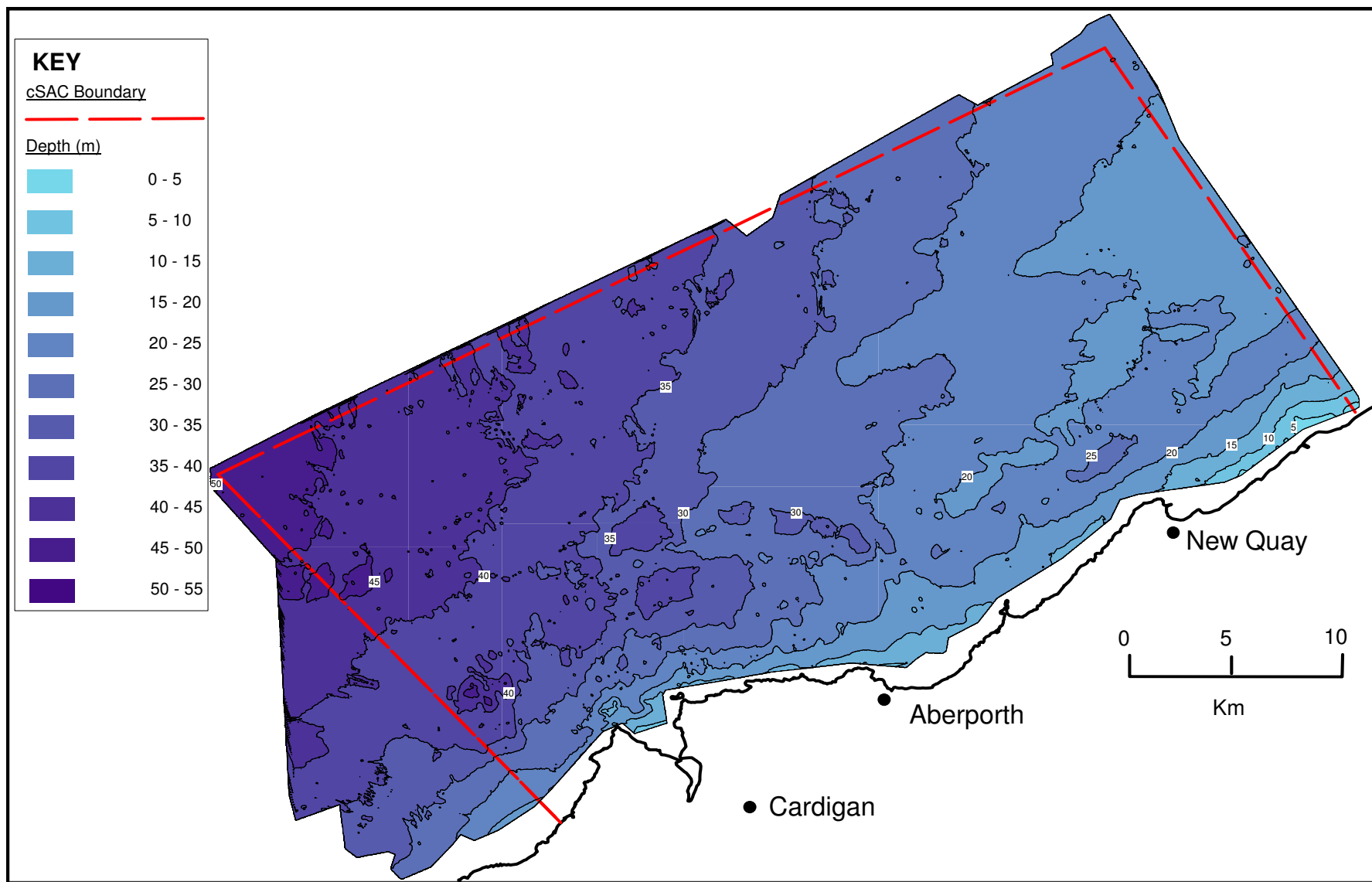


Figure 4. Indicative bathymetry of Cardigan Bay SAC, from recent acoustic surveys. ©CCW, M. Camplin

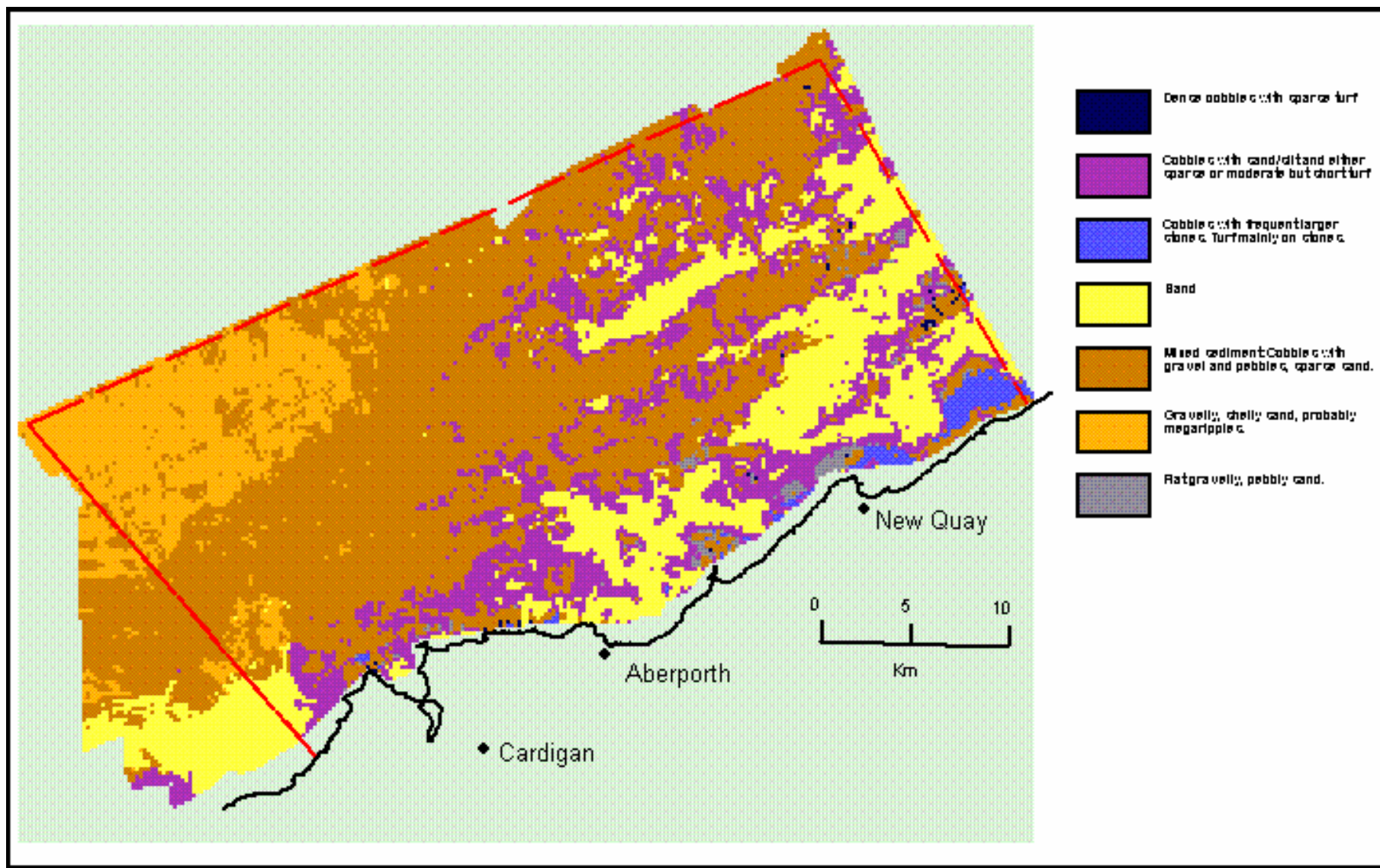


Figure 5. Indicative distribution of seabed substrates and community types within Cardigan Bay SAC. ©CCW, M. Camplin

## 2.1.2 Land and seabed ownership

As with most of British inshore waters, the sea bed within the Cardigan Bay SAC is owned by the Crown and is managed on their behalf by the Crown Estate Commissioners (CEC). Small parts of the site are leased by the CEC to third parties such as the local authorities (CCC, PCC, PCNPA). These areas are used, for example, for the placing of boat moorings, and specific conditions are applied to their use. For example, the foreshore (between Mean Low Water and Mean High Water) within the National Park is leased to PCNPA.

## 2.1.3 Environmental Information

### 2.1.3.1. Physical

This section provides a very brief summary of physical information for Cardigan Bay. A more comprehensive review of the environment of Cardigan Bay can be found in Nicholls et al (1992)<sup>13</sup>. The following sections draw largely from this report.

#### Climate

Cardigan Bay is just within the boreal biogeographic region<sup>14</sup> and has a temperate climate. Warmer Lusitanian waters extend north as far as the Celtic deep. The climate shows strong seasonality for several environmental parameters such as temperature, rainfall, water turbidity and wind strength.

#### Exposure

Cardigan Bay is one of the largest bays in the British Isles, measuring over 100km (60 miles) across its westernmost extent from the Llyn Peninsula to St. David's Head. The bay has a mainly open coastline, exposed to the prevailing south-westerly and westerly winds. South-westerly gales generally occur from October through to March. As the Irish Sea is relatively sheltered, the majority of waves reaching the Cardigan Bay coast are locally generated, of fairly short period and therefore steep. A substantial swell also develops during prolonged periods of high winds. During the winter months when gales are common, the wave height exceeds 1m for about half the time, compared to about a quarter of the time during the summer months. Depending on the wind direction, small embayments within the SAC may provide some shelter during stormy conditions in the areas of New Quay, Ynys Lochlyn, Aberporth, Mwnt and in the Teifi estuary.

#### Turbidity

Parts of the Irish Sea have a marked seasonal variation in turbidity and this is particularly true in Cardigan Bay. This is, in part, due to the shallow nature of the Bay, but largely due to the seasonality of wind strength and rainfall.

During the summer months, suspended sediments settle out in the relatively calm bay, reducing turbidity. During the winter when high winds increase bottom sediments are mixed throughout the water column and produce turbid surface waters. Turbidity of inshore waters is strongly affected by outflow from the rivers. Within the SAC, the turbidity round the Aeron, Ina, and Teifi rivers, as well as smaller outflows, increases markedly when the rivers are in spate. Sediments from the Gwaun and Nevern Rivers adjacent to the southern boundary of the site are also carried into the SAC by tidal currents, and together these

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<sup>13</sup> Nichols, C., Havard, M. and Warren, L.M. 1992. *An evaluation of the use and efficacy of statutory and non-statutory designations for the conservation of Cardigan Bay*. Report for The Countryside Council for Wales, University of Wales, Cardiff.

<sup>14</sup> The north east Atlantic can be divided into several distinct biogeographical areas. Boreal waters (cold temperate) extend down the Irish sea whilst Lusitanian waters (warm temperate) spread up the east Atlantic coast from the Mediterranean.

turbid waters often form darker coloured bands that spread out from the estuaries and follow the line of the coast.

### Temperature

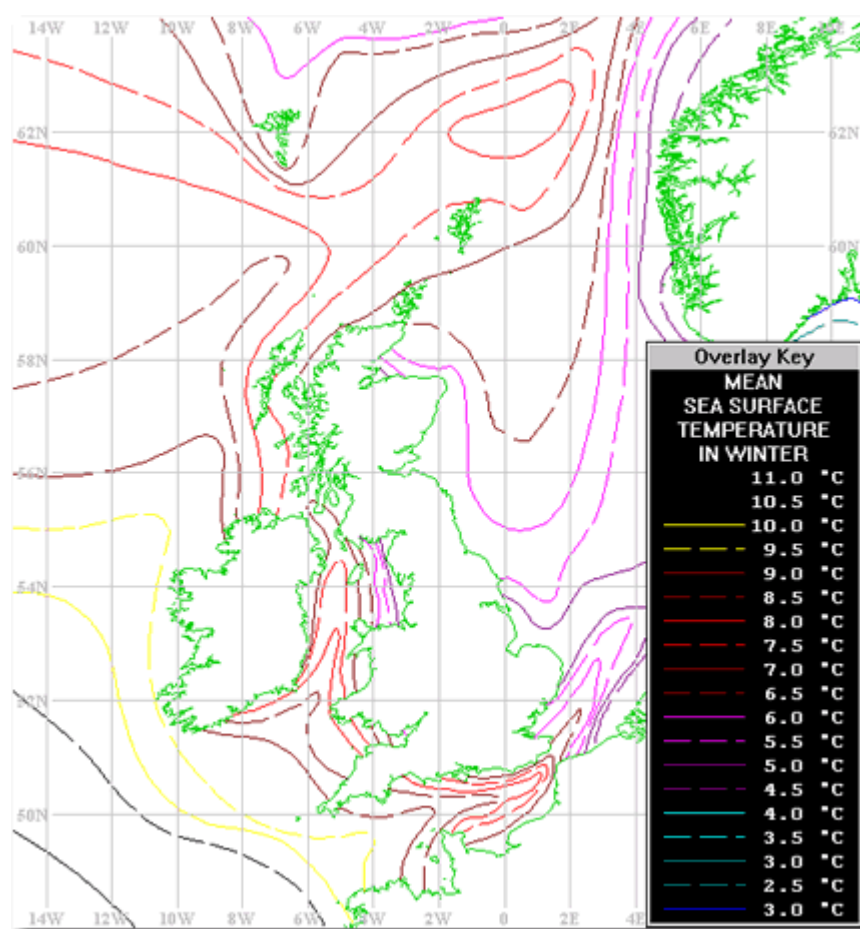
The mean annual sea temperature in St. George's Channel is just over 11°C with little variation<sup>15</sup>, although shallow coastal areas are subject to larger fluctuations. The mean surface temperature at the mouth of the Bay in August is 15°C. Within Cardigan Bay, there are fairly large fluctuations in water temperature, influenced by proximity to land, as well as in response to seasonal changes, and the shallowness of the bay itself.

Local water temperatures are affected by the substantial input of fresh water into Cardigan Bay, and this also affects the Bay's salinity and water quality, particularly locally. Seasonal stratification occurs in the shallower waters of Cardigan Bay, due to weak tidal currents, with warmer, fresher water lying above colder, more saline water. Surface temperatures of coastal waters are lowest in February (5°C in the inner part of Cardigan Bay to 7.5°C in the outer part), and warmest in July/August when they may reach 20°C inshore and about 14-16°C offshore<sup>16</sup>.

Average sea bed temperatures are only slightly lower than those of the surface waters in winter, but the difference in summer is greater with temperatures up to 2°C lower at depth<sup>17</sup>.

**Figure 6. Mean surface sea temperature in winter.**

*©Reproduced from the UK digital marine atlas courtesy of CEFAS*



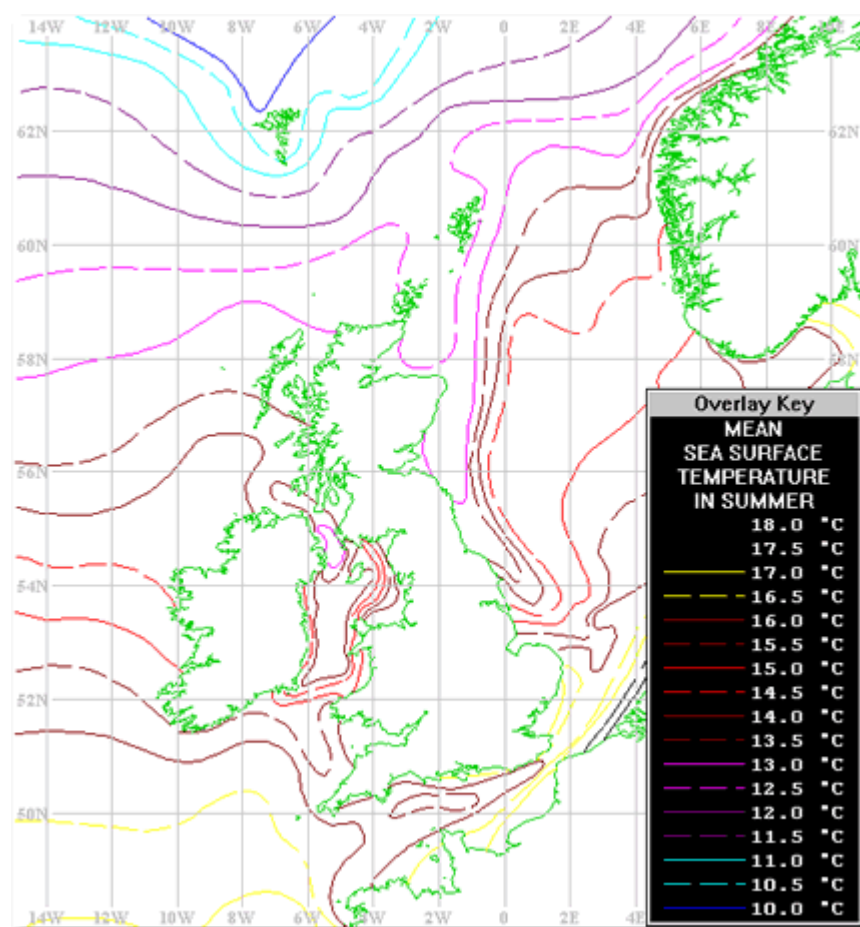
<sup>15</sup> Smith, J., Yonow, N. and Elliott, R. 1995. The coast of Dyfed and South Glamorgan: an Environmental Appraisal. Field Studies Council, Shrewsbury. ISBN 1 851532 994

<sup>16</sup> Nichols et al (1992).

<sup>17</sup> Smith et al (1995)

**Figure 7 . Mean surface sea temperature in summer.**

©Reproduced from the UK digital marine atlas courtesy of CEFAS



### Salinity

Within the Irish Sea the annual mean salinity is characterised by a decrease from south to north and from the centre of the channel to the sides. Salinity within Cardigan Bay is influenced not only by incoming Atlantic water, but also by freshwater input from rainfall, run-off from rivers and estuaries within the bay as well as the Severn, and the effects of evaporation, currents and mixing. Surface salinities within the Bay in summer are generally less than 34 parts per thousand, decreasing towards the shore. Mean salinity in the outer parts of the Bay ranges from <34.5ppt in August to <34.6ppt in February, while in the inner waters, average salinity ranges from <34.2ppt in August dropping to about <33.3 in February<sup>18</sup>. During the summer months when the inshore waters of Cardigan Bay are stratified, salinity also varies with depth with fresher water overlying more saline water, particularly near the mouths of rivers and estuaries.

Rainfall into the Irish Sea contributes a volume of water equal to about one third of the riverine input. Cardigan Bay receives an average freshwater flow from rivers of  $113\text{m}^3\text{s}^{-1}$ . Of this, the Teifi contributes  $31\text{m}^3\text{s}^{-1}$ , the Dyfi  $39\text{m}^3\text{s}^{-1}$  and others a total of  $43\text{m}^3\text{s}^{-1}$ <sup>19</sup>. The Teifi has a comparatively small estuary with a proportionally greater outflow of freshwater than larger estuaries in the Bay<sup>20</sup>. Rivers adjacent to the SAC include the Aeron, Ina and

<sup>18</sup> Nichols et al (1992)

<sup>19</sup> Field Studies Research Council. 1992. Environmental Assessment St.George's Channel Blocks. A report to Marathon Oil UK Ltd. Field Studies Council Research Centre, Pembroke.

<sup>20</sup> Jones, R. 1992. The estuaries of Cardigan Bay. In: Gritten, R. (Ed.) Proceedings of Cardigan Bay in Crisis? Conference. Plas Tan-y-Bwlch, Maentwrog. 27 February – 2 March, 1991. Snowdonia National Park Authority. pp. 19-21.

Teifi, which contributes the greatest input of freshwater into this area. Smaller streams also flow into the SAC, and freshwater from the rivers Nevern at Newport and the Gwaun at Fishguard also affect salinity, particularly in the southern inshore waters of the SAC. River discharges are highly variable; the peak flow of a major river in flood can be up to 400 times the flow during a drought. The largest inputs to Cardigan Bay occur during the months December to February and the smallest in July<sup>21</sup>.

#### Stratification & Fronts

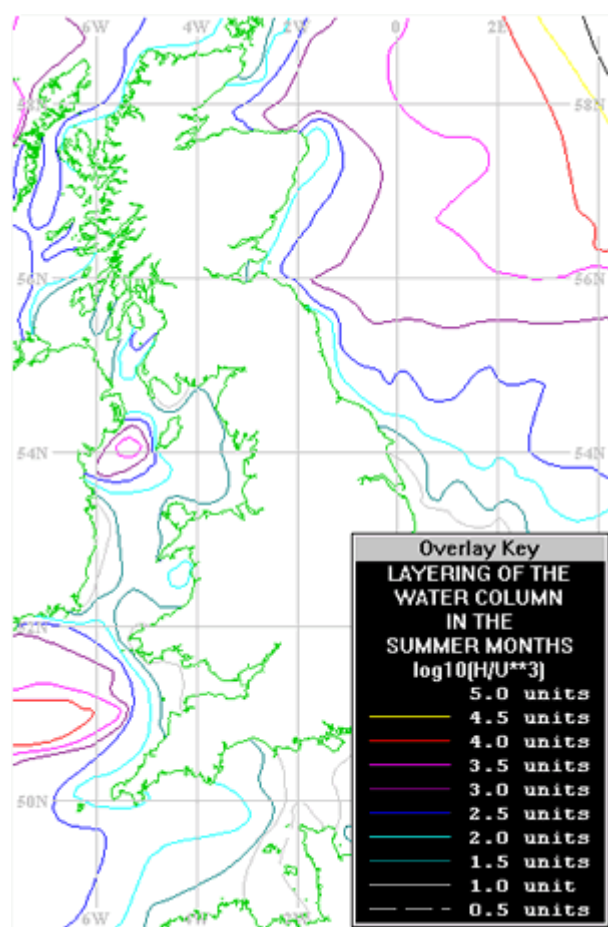
Satellite infra red images show the surface waters of Cardigan Bay to be warmer than the water outside the bay in St. George's Channel.

Studies have shown that for at least part of the summer months stratification of the water occurs within the bay with warm freshwater overlying denser, cooler and more saline, waters. It is thought that the weak currents within the Bay, particularly the northern corner, contribute to this.

The stratification breaks down along a line running south of Trwyn Cilan and along this 'front' there are strong horizontal gradients of surface temperature, salinity, density and turbidity<sup>22</sup>. Figure 11 shows stratification of the water column in summer. Conditions for frontal formation are most likely to occur along the  $\log_{10}(H/U^{**3}) = 2.0$  units contour.

**Figure 8. layering of the water column in the summer months**

*©Reproduced from the UK digital marine atlas courtesy of CEFAS*



<sup>21</sup> Field Studies Research Council (1992)

<sup>22</sup> Bowers, D.G. 1992. The physical oceanography of Cardigan Bay. In: Gritten, R. (Ed.) Proceedings of Cardigan Bay in Crisis? Conference, Plas Tan-y-Bwlch, Maentwrog 27 February – 2 March, 1991. Snowdonia National Park Authority. pp. 15-18.

## Tides

The Irish Sea is a relatively enclosed body of water with moderate tidal ranges. For southern Cardigan Bay, mean spring tidal ranges are approximately 4-5m. Tides in this area are predominantly semi-diurnal, with a period of 12h 25min between two successive high or low waters. High or low water times are progressively later as one goes north along the Cardigan Bay coast. The tide enters the Bay from St. George's Channel with a weak average flow northwards of both surface and bottom currents, running north during flood tides and south during the ebb<sup>23</sup>.

Tidal current strength is generally low within the bay (max 1.8 knots) and little is known about water transport patterns. The weakest tidal currents are within Tremadoc Bay, increasing to the south and west. Currents are slightly stronger near headlands and estuaries; the strongest currents along the SAC coast run between Cardigan Island and the mainland.

## Sediment transport

There is limited knowledge on the sediment movement within and into Cardigan Bay. Estimations of coastal sediment transport regimes are being made as part of the Ceredigion Shoreline Management Plan.

## Geology and geomorphology

The geology of the sea bed influences the type and abundance of marine life that lives there. The type of rock, its hardness, solubility, inclination and orientation are all important to some degree.

The geology of Cardigan Bay has been recorded by Dobson and Whittington<sup>24</sup> as consisting of an almost complete arc of Pre-Cambrian and Lower Palaeozoic rocks (the basement rocks) cradling a post-Palaeozoic sedimentary basin (with Mesozoic and Cainozoic sediments). It shows a south-west to north-east trend characteristic of the Irish Sea as a whole, extending from St. George's Channel to the coastline of Tremadoc Bay, where the Mesozoic to Tertiary basin is strongly faulted against the basement. These features are shown on the British Geological Survey Solid Geology sheet for the area which specifically excludes the Quaternary sediments that completely cover Cardigan Bay except for small areas of exposed basement rocks.

During the middle to late Pleistocene, the area was subject to periods of intense erosion during glaciations, and sequences of glacial and glacio-marine sediments were deposited in the area, particularly in the Celtic Trough. Quaternary deposits are shown on the BGS Quaternary Geology sheet for the area. These are widespread, and the only exceptions are limited to areas of rock which outcrop close inshore off Bardsey and the north Pembrokeshire coast.

The distribution of seabed sediments is largely dependent on tidal current speed; gravels occur where the currents are strongest and mud where water energy is lowest. The coastal areas of Cardigan Bay are generally dominated by sands, with narrow intrusions of gravel around the Sarnau, and in the 'gutter' areas adjacent to New Quay. Gravelly sediments and areas of exposed boulders and bedrock mainly occur in regions dominated by strong tidal currents or wave action, such as headlands<sup>25</sup>. A map of sediment distribution in Cardigan Bay is given in **Figure 5 (Section 2.1.1)**.

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<sup>23</sup> Field Studies Research Council (1992)

<sup>24</sup> Dobson M., R. and Whittington R., J. 1987. The geology of Cardigan Bay. Proc. Geol. Ass. 98 (4) pp331-353.

<sup>25</sup> Field Studies Research Council (1992)

### Topography

Cardigan Bay is a relatively shallow and gently sloping embayment of the Irish Sea, reaching 50m generally in the outer parts of the bay towards St. George's Channel. Most of the SAC is less than 30m deep, with deeper areas of 30-40m depth off Aberporth and in the south western corner of the site. Because of the general shallowness of the bay, wind and wave action dominate the physical dispersion processes.

Detailed information on the bathymetry within Cardigan Bay is quite poor. A general indication can be gleaned from the Admiralty charts for the area or, far better, from recent acoustic surveys (**Figure 4, Section 2.1.1**)

### 2.1.3.2. Chemical & Biological

Chemicals may enter the SAC by various routes and the potential impacts of these are influenced by the physical features of Cardigan Bay, migration by tidal movements and through sediment transport. The ingress of river water from the adjacent land and direct discharges of effluents may also influence the water quality of Cardigan Bay.

The limited marine monitoring undertaken in Cardigan Bay has found the water quality to be good but sediment monitoring has found a single highly contaminated sample (PCBs) in Aberystwyth harbour which is thought to originate from a local source. Further, a contaminated quarry near Cardiff (Brofiscin quarry) has been found to be leaking PCBs into the ground water.

The riverine inputs are influenced by land use, and the subsequent run off and discharge of effluents has the potential to enable chemicals to pass down the rivers and into the SAC.

The majority of the discharges to the SAC, consented by EAW, are of domestic sewage effluent with a few being from an industrial source. However, diffuse run off and effluent from agricultural land and the continuing impact from historic mining activity provide the major inputs in this part of Cardigan Bay. The consented discharges, and also the major rivers at their freshwater limit e.g. Teifi, are routinely monitored by EAW to, in part, provide some information on loadings of chemicals entering the Bay.

Some limited microbial monitoring is also undertaken by EAW over the summer months each year, to assess the quality of bathing waters at those beaches identified in accordance with the EC Bathing Waters Directive. Ceredigion County Council also undertakes similar monitoring at a number of other non-identified beaches in their county.

## 2.2 Site Features

### 2.2.1 Reasons for recommendation of the site

As explained in **Section 1.5**, the Cardigan Bay SAC is now selected for three habitat types (from the Habitats Directive Annex I) and four species (from Annex II). The site is considered to be one of the best areas in the UK for:

Bottlenose dolphins – *Tursiops truncatus*

and to support a significant presence of:

Reefs

Sandbanks which are slightly covered by seawater all the time

Submerged or partially submerged sea caves

River lamprey - *Lampetra fluviatilis*

Sea lamprey - *Petromyzon marinus*

Atlantic Grey seal - *Halichoerus grypus*

The features are distributed throughout the site; no one feature occupies the whole site and several habitat features overlap.

## 2.2.2 Introduction and SAC evaluation of the features

### 2.2.2.1 Bottlenose dolphins



**Bottlenose dolphins (*Tursiops truncatus*) mother and calf (© Mick Baines)**

Worldwide bottlenose dolphins are a cosmopolitan species, widely distributed in a range of mainly near-shore coastal habitats and absent only from polar waters<sup>26</sup>. In Britain, bottlenose dolphins have been recorded most frequently in coastal waters, predominantly in two areas: Cardigan Bay and the Moray Firth. In addition, small groups have been recorded regularly elsewhere in UK waters, including along the Cornish, Devon and Dorset coasts, in the waters around the Hebrides, off the Irish coast particularly in the Shannon Estuary, and occasionally in offshore waters of the North-east Atlantic, Irish Sea and St. George's Channel<sup>27</sup>. The status of bottlenose dolphins in British and Irish waters is unknown; worldwide, the species is threatened in some areas by fisheries and net by-catch as well as habitat degradation and other anthropogenic influences.

A number of areas have been identified to be important to bottlenose dolphins in West Wales. Within Cardigan Bay they are most commonly seen within 10 miles of the coast and most concentrate within two miles, e.g. at New Quay, Aberporth, Mwnt, Camaes Head and around the Teifi estuary, from April to October. A second area, in Tremadog Bay, where animals are recorded less frequently, occurs from Barmouth out to Sarn Badrig northward to the western end of the Lleyn Peninsula around Bardsey Island. They are also seen in north Wales and around Pembrokeshire. Bottlenose dolphins are seen year-round in Cardigan Bay. The number of individuals

<sup>26</sup> Klinowska, M. 1991. Dolphins, Porpoises and Whales of the World. The IUCN Red Data Book, IUCN, Gland and Cambridge

<sup>27</sup> Evans, P.G.H. 1992. Status review of cetaceans in British and Irish waters. Unpublished report to the Department of the Environment, UK Mammal Society Cetacean Group Report/Sea Watch Foundation, Oxford.

increases during the summer months and into autumn, reaching a peak in late September and October<sup>28</sup>. The size of groups also tends to increase throughout the summer, and in late September and October quite large aggregations of more than 60 individuals may be seen<sup>29</sup>.

The overall population size using Cardigan Bay was estimated at 213 animals (Evans *et al*, 2002), while the abundance in the Cardigan Bay SAC was estimated at 138 animals (Ugarte and Evans, 2006). Although the full range covered by the Cardigan Bay dolphins is not known, minimum inshore ranges of identified dolphins vary from about 160km<sup>2</sup> (62mi<sup>2</sup>) to at least 774km<sup>2</sup> (300mi<sup>2</sup>). Individuals recorded regularly along the southern coast of the Bay have also been seen both north and south of the SAC<sup>30</sup>. Information to date suggests that Cardigan Bay dolphins represent a mobile and wide-ranging population of variable individual residence. Food resources appear to be a primary factor in determining movements and site fidelity in bottlenose dolphins. Several authors have noted that bottlenose dolphins make regular use of specific habitats within Cardigan Bay. Areas of strong tidal currents near headlands and estuaries are particularly favoured habitats and behaviour interpreted as feeding is most frequently observed here. Prey are concentrated in these areas and the features may also play a role in helping capture of fish.

In cold British and Irish waters, bottlenose dolphins are amongst the largest examples of this species in the world, reaching lengths of 3-4.1m. A long-lived species, these animals may survive in the wild for 40-50 years or more<sup>31</sup>. However, males commonly have a shorter lifespan of 25-35 years, while females are known to have lived over 50 years<sup>32</sup>. Despite their long lifespan, the reproductive rate of bottlenose dolphins is low. Females produce a single calf every 2-6 years, following a gestation period of about one year, and the pregnancy rate does not appear to decrease with age<sup>33</sup>. Bottlenose dolphin social structure varies from population to population, but in general their associations are relatively fluid and they live in 'fission-fusion' societies rather than family groups. The strongest social bonds are between mothers and young calves during the suckling and weaning periods. Calves are weaned after about 18 months, but continue to associate closely with the mother for 3 to 6 years until they leave to join mixed groups of other juveniles. Sub-adults remain in these bachelor groups until they reach sexual maturity which, in the wild, ranges from 7-12 years of age for females and 10-13 years old for males<sup>34</sup>. Sexually mature males tend to move about individually or in small groups, in some areas forming long-term partnerships or alliances of 2-3 males that travel from one band to another searching for receptive females<sup>35</sup>. Males commonly have only brief associations with females for mating and do not play a part in rearing the young calves. Bottlenose dolphins are generalist and opportunistic feeders, and both

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<sup>28</sup> Evans (1992), Grellier *et al* (1995)

<sup>29</sup> Grellier *et al* (1995)

<sup>30</sup> Grellier *et al* (1995)

<sup>31</sup> Hohn, A.A. 1990. Reading between the lines: analysis of age estimation in dolphins. (in Leatherwood, S. & Reeves, R. R. (eds) *The bottlenose dolphin*. Academic press. London. pp575-585).

<sup>32</sup> Thompson, P. and Wilson, B. 1994. *Bottlenose Dolphins*. WorldLife Library Series, Colin Baxter Photography Ltd. , Grantown-on Spey, Scotland.

<sup>33</sup> Kasuya, T., Izumisawa, Y., Komyo, Y., Ishino, Y. and Maejima, Y. 1997. Life history parameters of bottlenose dolphins off Japan. *IBI Reports* 7:71-107.

<sup>34</sup> Smolker, R.A., Richards, A.F., Connor, R.C. & Pepper, J.W. (1992). Sex differences in patterns of association among Indian Ocean bottlenose dolphins. *Behaviour*, 123(1-2), 38-69. Grellier *et al* (1995).

Connor, R.C., Richards, A.F., Smolker, R.A., Mann, J. (1996). Patterns of female attractiveness in Indian Ocean bottlenose dolphins. *Behaviour* 133, 37-69.

Felix, F. 1997. Organization and social structure of the coastal bottlenose dolphin *Tursiops truncatus* in the Gulf de Guayaquil, Ecuador. *Aquatic Mammals* 23(1): 1-16.

Kasuya *et al* (1997)

<sup>35</sup> Connor, R.C., Smolker, R.A. & Richards, A.F. 1992. Two levels of alliance formation among male bottlenose dolphins (*Tursiops* sp.) *Proceedings of the National Academy of Sciences, U.S.A.*, 89. 987-990.

observations and strandings records indicate they eat a wide range of fish, crustaceans and molluscs. It is understood that bottlenose dolphin diet is varied and includes commercially exploited species<sup>36</sup>.

Cardigan Bay dolphins appear to use the area for all essential activities including feeding, socialising and nurture of young. Newborn and very young calves have been reported in the Bay from April into September, suggesting a seasonal pattern to calving<sup>37</sup>. Understanding of the behaviour of Cardigan Bay dolphins is still in its infancy, but we now know that, like the dolphins in the Moray Firth in Scotland, bottlenose dolphins in Cardigan Bay occasionally injure and kill harbour porpoises<sup>38</sup>. So far, this unexplained behaviour has not been recorded in other communities of this species outside the UK. However, bottlenose dolphin infanticide, which may be related, has been recorded in the Moray Firth<sup>39</sup>.

A summary of potential threats to the bottlenose dolphin population is given by Grellier (1995). For CCW's advice on which activities and operations may affect bottlenose dolphins in Cardigan Bay one should refer to the Cardigan Bay Regulation 33 document. Areas of concern include waterborne disturbance, collision, pollution from artificial or toxic materials, prey depletion, bycatch and noise pollution. Assessment of individual activities, current management and necessary actions are described in **Section 4 and 6** of the current document.

Bottlenose dolphins are vulnerable not only to short term impacts but also to long term cumulative, chronic impacts. As both the dolphins and their prey can be highly mobile, there will be a wide spatial spread of the dolphins' ecological unit (i.e. the spread of the marine food web and environmental processes on which the bottlenose dolphins depends). This means that impacts some distance outside the Cardigan Bay SAC may still affect the bottlenose dolphins. It will be important for management decisions to consider potential indirect impacts to the bottlenose dolphins even when the issue at hand may appear unrelated. The relatively small numbers of bottlenose dolphins in Cardigan Bay makes them fragile to small losses in numbers.

Reference to literature on bottlenose dolphins can be found in **Appendix 4**.

Further information on bottlenose dolphins can be found in report a report titled "A review of information relevant to bottlenose dolphins in Cardigan Bay candidate Special Area of Conservation "<sup>40</sup> as well as at the following links:

<http://www.jncc.gov.uk/ProtectedSites/SACselection/species.asp?FeatureIntCode=S1349>

<http://www.marlin.ac.uk/species/Tursiops truncatus.htm>

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<sup>36</sup> Evans *et al.*, (2000).

<sup>37</sup> Grellier *et al* (1995)

<sup>38</sup> Ross, H.M. & Wilson, B. (1996). Violent interactions between bottlenose dolphins and harbour porpoises. *Proceedings of the Royal Society London, B* vol 263 pp283-286

Jepson P. D. & Baker J. R. (1998). Bottlenose dolphins (*Tursiops truncatus*) as a possible cause of acute traumatic injuries in Porpoises (*Phocoena phocoena*). *Veterinary Record* 143 pp614-615.

<sup>39</sup> Patterson, I.A.P., Reid, R.J., Wilson, B., Grellier, K., Ross, H.M., Thompson, P.M. (1998). Evidence for infanticide in bottlenose dolphins; an explanation for violent interactions with harbour porpoises? *Proc. Royal Society, B.*, 265: 1167-1170.

<sup>40</sup> Arnolds, H. 2000. A review of information relevant to bottlenose dolphins in Cardigan Bay candidate Special Area of Conservation, West Wales, LIFE TASK 4.7 Report to CCW No. 73-02-199

## 2.2.2.2 Atlantic grey seals



**Atlantic grey seal (*Halichoerus grypus*) mother and pup** (©Janet Baxter)

The grey seal is found across the North Atlantic and in the Baltic Sea. The UK is one of the main centres of population, holding about 39% of the world population, with the other being Nova Scotia and the Gulf of St Lawrence in Canada. By far the greater proportion of UK grey seals, over 90%, are found in Scotland with the remainder found on the east coast of England and in the southwest. The majority of the grey seals of southwest Britain breed on the coasts of southwest Wales, a three year census in the mid-1990s estimated the population at 5,000 with an annual pup production of about 1,500 in 1995. Southwest Wales supports internationally important numbers of the grey seal (*Halichoerus grypus*). Whilst grey seals are known to range throughout the SAC, most of the important pupping beaches occur in Pembrokeshire. There are however a significant number in south-western Ceredigion. . A survey by Baines *et al.* (1995) recorded that the average number of pups born within the Cardigan Bay SAC was 66 pups per year representing approx. 1.7% of the total recorded pups born within West Wales between the years 1992-1994. From the Teifi Estuary area pupping numbers diminish rapidly northwards up the coast, with Cemaes being of greatest importance. Seals, like dolphins are highly mobile, and whilst pupping sites have a strong south western distribution adult seals are commonly seen in the sea or hauled out along Wales' west coast.

Grey seals often haul-out on land, especially on outlying islands and remote coastlines exposed to the open sea. Individual seals based at a haul-out have been tracked and found to travel hundreds of miles on repeated foraging trips to the same region offshore, to return to the same haul-out, or occasionally move to a new haul-out and begin foraging in a different area.

We are beginning to gain an understanding about the number of seals in Wales and whether they are a discrete colony or part of the larger assemblage of seals found in the Irish Sea. There is evidence that grey seals in Wales, Devon, Cornwall and the Isles of Scilly are genetically distinct from those in Scotland and the North Sea (SMRU). A recent study by the Sea Mammal Research Unit (SMRU) for the DTI

SEA6 (Hammond *et al.*, 2005) used satellite tags to track seal movements and diving behaviour. Information so far has shown that each seal follows its own pattern of resting ashore, some showing an international and national interchange between haul-out sites, mostly contained within the Irish Sea, interspersed with going off to feed at sea from three to five days at a time.

A study of the diet of grey seals in west Wales found mostly whiting and flatfish accounting for about 70% of their diet, with herring and, surprisingly, dragonet making up most of the rest (Strong, 1996). The recent tagging study by the SMRU included modelling at-sea usage of the Irish Sea for grey seals. Several areas of high usage that can be assumed as foraging areas were clear including an area in the southern part of Cardigan Bay exceeding 40-50 km offshore.

Seals can remove fish from, or damage them in, nets and cause damage to fishing gear although the introduction of stronger nets has reduced this problem. Apart from damage to fish in nets, which can be a local problem, whether seals compete directly for fish stocks that otherwise would be caught by fishers is more difficult to assess. The sea is a complex ecosystem consisting of other predators including larger fish, seabirds, cetaceans and humans. Research has shown that of all these groups, seals consume the least fish, and although much of it is of commercial importance their diet is very mixed. In undisturbed systems seals feed on a variety of fish and have evolved a complex web of feeding relationships with their prey, switching between species if they become scarce, and allowing recovery of depleted species.

The conservation status of the grey seals of Cardigan Bay SAC is thought to be favourable. The main concern for the grey seals is the disturbance of breeding and haul-out sites by human activity, for example by pleasure crafts, walkers and canoeists approaching pupping sites to observe the seals. Research has shown that with very few exceptions seals within Cardigan Bay SAC choose to haul-out on rocky shores or in sea caves remote from access by humans<sup>41</sup>. As such an increase in pleasure boat 'seal-sighting' trips would be of concern in. As a top predator the grey seal is very dependent upon the health of lower trophic levels and being wide ranging will be affected indirectly by impacts outside the SAC.

Reference to additional literature on Atlantic grey seals can be found in **Appendix 4** and further information can be viewed at the following links:

<http://www.jncc.gov.uk/ProtectedSites/SACSelection/species.asp?FeatureIntCode=S1364>

<http://www.marlin.ac.uk/species/Halichoerusgrypus.htm> .

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<sup>41</sup> Baines *et al.* 1995

### 2.2.2.3 River and Sea Lampreys



**Sea lamprey** - (© drawing by Tom M<sup>c</sup>Owatt – CCC)

Information about the abundance and distribution of lampreys within the SAC is very limited. However, fishermen using the Teifi and Aeron rivers report that lamprey have been caught for generations and recent records show the occurrence of both species in the Teifi. They are therefore likely to occur within the site. The lampreys (family *Petromyzonidae*, meaning “stone suckers”) belong to a small but important group known as Agnatha – literally, jawless – the most primitive of all living vertebrates. They are not true fish, though it is normally convenient to refer to them as such. Lampreys have no lower jaws and a round, sucker-like disc within which, in the adults, are strong, horny, rasping teeth, surrounds the mouth. Teeth vary in shape, size, position and number among the species, and are an important aid to identification.<sup>42</sup>

In 2003 CCW commissioned a report reviewing what is known about food, habitat and water quality requirements for lampreys and their associated prey/host species. The report highlighted the limited information available on distribution and feeding during the marine part of the life cycle and made recommendations for further research. Recommendations included genetic comparisons from locations around Britain and Europe and measures of accumulated compounds in fatty tissue such as tributyltin and PCBs.

#### 2.2.2.3.1 River lamprey



**River lamprey – *Lampetra fluviatilis***

Confined to Western Europe, the river lamprey is widespread in the UK. The UK populations are considered important for the conservation of the species at an EC level.

The average adult length is around 30 cm with a corresponding weight of about 60g, but specimens over 40 cm can be found. They are easily distinguished from the sea lamprey on the basis of size and colouration, and the patterning of the teeth is also quite different. However, the general body shape of the two species is similar. Thus the river lamprey has a long, streamlined, eel-like body with two dorsal fins that are separate from each other until near spawning time; the second is continuous with the tail fin. There are no paired fins. Lampreys have seven gill openings on each side of the head.

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<sup>42</sup> Maitland, P.S. 2003. Ecology of the River, Brook and Sea Lamprey. Conserving Natura 200 Rivers Ecology Series No. 5. English Nature, Peterborough.

River lamprey are a migratory species. The larvae spend several years in freshwater silt beds before metamorphosing and migrating downstream to estuaries where they mature. While within estuaries they are known to feed on a variety of estuarine fish, particularly herring (*Clupea harengus*), sprat (*Sprattus sprattus*) and flounder (*Platichthys flesus*.). When mature they then move back into fresh water to spawn in clean rivers and streams, before they die.

River lampreys feed in estuaries and inshore waters during much of their adult life and spawn and spend the juvenile part of their life cycle in rivers. They require good clean gravel for spawning and marginal silt or sand for burrowing juvenile ammocoetes. The Afon Teifi SAC is considered to be one of the best rivers in the UK for this species. The general low level of anthropogenic activity in Cardigan Bay and Afon Teifi would indicate a population of river lamprey likely to be quite natural. However, without information on presence or absence of compounds such as tributyltin and PCBs in fatty tissue, it is not easy to establish the naturalness of the population.

River lampreys are vulnerable to habitat modifications, particularly barriers to migration such as weirs and dams. During the larval stage, river lampreys are sensitive to water quality and may be absent from some rivers because of pollution. Accessibility to clean rivers such as the Afon Teifi to spawn is likely to be a key factor for this species.

Additional information on river lampreys can be viewed at the following link:

<http://www.jncc.gov.uk/protectedsites/sacselection/species.asp?FeatureIntCode=S1099>

### 2.2.2.3.2 Sea lamprey



**Sea lamprey (*Petromyzon marinus*) photographed in Aberaeron harbour (©A. Bianchessi – CCC)**

The anadromous sea lamprey occurs over much of the Atlantic coastal area of western and northern Europe, from northern Norway to the western Mediterranean, and eastern North America. It is also found in estuaries and easily accessible rivers in these regions. In the British Isles it is absent from many northern rivers, and has become extinct in a number of southern ones due to pollution and engineering barriers (Maitland 1980). Nevertheless sea lampreys are still widespread in the UK and populations are considered important for the conservation of the species at an EC level.

Sea lampreys feed in the coastal waters of Cardigan Bay during the non-breeding stages of their life cycle. They spawn and spend the juvenile part of their life cycle in rivers. They require good clean gravel for spawning and marginal silt or sand for burrowing juvenile ammocoetes. The Afon Teifi SAC is considered to be one of the best rivers in the UK for this species.

The sea lamprey (*Petromyzon marinus*) is by far the largest of the British lampreys and may reach a length of 100 cm and a weight of 2.5 kg. The normal adult length is around 50 cm. There are no angling records for the species. The sea lamprey usually spawns in late May or June in British rivers, when the water temperature reaches at least 15°C. After hatching, larvae leave the nest and drift downstream, distributing themselves among suitable silt beds. The duration of larval life varies, but averages about five years. Metamorphosis to the adult form takes place between July and September and the process usually takes a few weeks (Potter 1980). The time of the main migration downstream seems to vary from river to river (Applegate & Brynildson 1952) and relatively little is known about them after they reach the sea, where they

have been found in both shallow coastal and deep offshore waters. They seem to feed on a wide variety of marine and anadromous fishes, including sturgeon (*Acipenser sturio*), herring (*Clupea harengus*), salmon (*Salmo salar*), cod (*Gadus morhua*) and haddock (*Melanogrammus aeglefinus*). Salmon and sea trout (*Salmo trutta*) entering rivers often bear fresh scars attributable to attacks by this species.

The general low level of anthropogenic activity in Cardigan Bay and Afon Teifi would indicate a population of sea lamprey likely to be quite natural. However, without information on presence or absence of compounds such as tributyltin and PCBs in fatty tissue, it is not easy to establish the naturalness of the population.

Additional information on sea lamprey, impacts, threats and their exploitation can be found at the following link:

<http://www.jncc.gov.uk/protectedsites/sacselection/species.asp?FeatureIntCode=S1095>

## 2.2.2.4 Reefs



**Hummocks of honeycomb worm (*Sabellaria alveolata*) reef (© JNCC)**

Reefs are rocky marine habitats or biological concretions that rise from the seabed. They are very variable, both in form, and in the communities that they support and are widespread in northern and southern Europe, occurring widely around the UK coast.

Two main types of reef can be recognised: 'rocky reefs', those where animal and plant communities develop on rock or stable boulders and cobbles, and 'biogenic reefs', those where the reef structure is created by the animals themselves. Cardigan Bay SAC supports both rocky and biogenic reef types. Its rocky reefs are widespread and in the subtidal form a mosaic with areas of sand and gravel. Reefs in the Bay consist largely of boulder, cobble and pebble, but along the beaches and just offshore there are occasional areas of bedrock.

The majority of reef within Cardigan Bay SAC is moderately exposed, tide and/or sand swept mixed sediment. A large section of reef extends north and northeast from Cemaes Head and Cardigan Island. Another reef section extends out from Ynys-Lochtyn running virtually unbroken to the edge of the SAC (to Aberarth). A total of 48 reef biotopes have been recorded (intertidal and subtidal) within Cardigan Bay SAC. A large amount of the subtidal reef feature within Cardigan Bay SAC is of mixed sediment with shells and stones on the surface enabling epifaunal communities to develop and stabilise the sediment surface<sup>43</sup>. This combination of epifaunal and infauna can lead to species rich communities. In some areas dense brittlestar beds, with *Ophiothrix fragilis* and *Ophiocomina nigra* dominate these mixed sediments. These brittle star beds tend to be species-poor with coralline crusts, tubeworms and

<sup>43</sup> Brazier, D.P., Holt, R.H.F., Murray, E. and Nichols, D.M. 1999. *Marine Nature Conservation Review Sector 10. Cardigan Bay and north Wales: area summaries*. JNCC, Peterborough. (Coasts and Seas of the United Kingdom. MNCR series)

some hydroids present (biotope MCR.Bri. Oph). Within the Teifi estuary there are two main outcrops of bedrock. In the lower reaches of the Teifi estuary, north of Pen yr Eryd, an area of cobbles, pebbles and gravel is sheltered by Poppit Sands. To the north and north east of Cemaes Head (and in other areas such as to the west of New Quay Bay) the tubeworm *Sabellaria spinulosa* can be found as a crust in association with dense ascidians, bryozoans and hydroids (MCR.MolPol.Sab).

From New Quay to Aberarth the majority of the shore consists of boulder and cobble fields with raised beaches of boulder clay backing the shores (which can be clearly seen at Ina Point). The mobile and friable nature of the rock in the supralittoral and littoral fringe throughout the area results in few examples of lichen community in these biological subzones. A small area of steeper coastline at Gilfach-yr-Halen is the only site between New Quay and Aberarth at which a supralittoral lichen zone (LR.YG) can be seen. The honeycomb reef worm *Sabellaria alveolata* forms biogenic reefs on the lower shore throughout most of this stretch of coast and accounts for some of the best examples of the littoral *Sabellaria* reefs in Wales. The high level of suspended sand in the near shore waters provides suitable conditions for this species. The reefs stabilise the boulders and cobbles and usually permit a degree of *Fucus serratus* cover with small holes around the cobbles and boulders providing habitats for crustaceans, molluscs and species of red, green and brown algae, increasing the interest on the site.

Close inshore between Ina Point and Aberarth the photic zone is shallow with few algae and small boulders and cobbles embedded in muddy sand and gravel providing a hard substratum predominantly animal dominated (with the hydroids *Sertularia argentea* and *Hydrallmania falcata* and bryozoans *Flustra foliacea* and *Alcyonidium diaphanum*).

Of further importance are the rock pools and overhangs that increase the diversity of habitats and species on the rocky shores and the presence of the nationally scarce crustacean *Pectenogammarus planicrurus*.

The extent, distribution and condition of this feature is largely dictated by natural environmental factors, in particular exposure to wind, waves and sand scouring. Biogenic reefs such as *S. alveolata* are dependent on natural process such as sediment transport to ensure a supply of tube forming material. Coastal engineering works and coastal development could be detrimental to some reef communities, if they lead to significant alteration of these key -controlling factors. Reef communities are vulnerable to pollution either from accidental releases such as oil spills or from regular discharges, for example those which cause nutrient enrichment in sensitive areas.

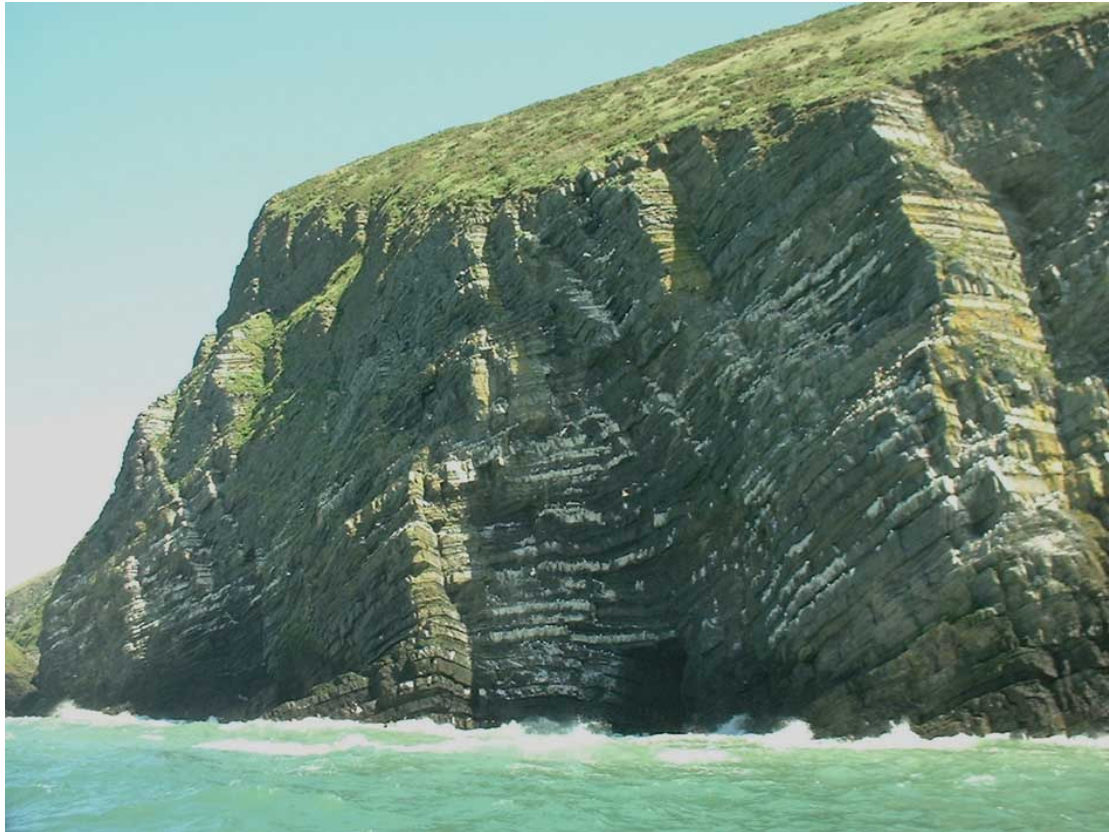
Little is known about the seabed flora and fauna of Cardigan Bay SAC. Survey work has been carried out by the School of Ocean Sciences and CCW, which measured the extent of important reef features in Wales, including Cardigan Bay SAC. There are currently a wide range of subtidal seabed mapping projects in progress although these tend to concentrate on collation of existing data rather than new surveys. Acoustic seabed mapping techniques such as multibeam can provide important information on sediment type and biological community composition of an area. Research is ongoing to improve the biological information used to determine whether changes in sub-tidal marine communities around Wales are due to natural perturbations or anthropogenic impacts.

Additional information can be viewed at the following links:

<http://www.jncc.gov.uk/protectedsites/sacselection/habitat.asp?FeatureIntCode=H1170>

<http://www.marin.ac.uk/species/Sabellariaalveolata.htm>

## 2.2.2.5 Sea Caves



**Sea cave by Bird's Rock, New Quay (© L. Allan – CCC)**

In the context of the Habitats Directive sea caves are defined as:

“Caves situated under the sea or opened to it, at least at high tide, including partially submerged sea caves. Their bottom and sides harbour communities or marine invertebrates and algae”. The UK has the most varied and extensive sea caves on the Atlantic coast of Europe. Caves within marine SACs in the UK have been selected to encompass the range of structural and ecological variation and cover their geographic range throughout the country.

Cardigan Bay SAC is considered to support a significant presence of sea caves. These are tunnels or caverns on the shore or below the sea surface in which vertical or overhanging rock surfaces form the main habitat. They are typically colonised by encrusting animal species. The total number of sea caves within the SAC is unknown. However, as the SACs cliffs are primarily composed of uplifted Ordovician slates, shales, sandstone and mudstones that tend to have softer strata layers of sediment sandwiched between harder ones, the formation of sea caves is common. Sea caves are therefore numerous within the site.

Four sea caves at the southern end of the SAC have been surveyed<sup>44</sup>. They varied in length between 100m and 53m. Zonation within the caves ranged from supralittoral to sublittoral habitats, supporting between 4 and 8 biotopes. Each of them was found to be moderately exposed to wave action, with mobile pebbles, cobbles and boulders making up the cave floors. Levels of scour, especially at the mouth of the caves, are therefore quite high. However, extensive areas of colonisation were found in more sheltered sections of the caves.

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<sup>44</sup> Bunker, F.StP.D. and Holt, R.H.F. 2003. Survey of Sea Caves in Welsh Special Area of Conservation 2000-2002. A report to the Countryside Council for Wales by MarineSeen, Pembrokeshire. CCW Monitoring Report No: 6

Three of the caves were found to support species of potential conservation interest. The presence of the algae *Naccaria wiggii*, and snail *Otina ovata* as well as the possible occurrence of the cave spider *Meta menardi* were identified as being of importance. In addition, while all four of the caves surveyed were found to be typical of this area, they were identified as important due to their size and therefore ability to support large expanses of biotope.

Stable boulders and bedrock on the lower shore portions of the cave floors in the Cardigan area are colonised by *Sabellaria alveolata* MLR.Salv. Although not found in the large hummocks of honeycomb-like tubes found on the open coast in this area, the fresh growth of tubes in several of the caves reflect the turbid and sand-scoured conditions not found in caves in the other SACs in Wales.

Above low water mark deep inside the caves the walls support little other than biotic films grazed by small molluscs such as small *Patella vulgaris*. This apparently barren zone of bedrock continues along the walls out towards the entrance of the caves just above the mobile boulder floor. Higher in the roofs of the caves, if out of reach from main surge spiders *Meta monardi* are found with thin crusts of blue-green algae, green algae, red velvety patches of *Audouinella* sp. and lichens where small amounts of light reach the rocky surfaces. Spirorbid worms and barnacles *Verruca stroemia* and *Semibalanus crenatus* with patchy thin crusts of sponge including *Halichondria panicea*, *Myxilla incrustans* and other yellow encrusting sponge species and sparse anemones *Actinia equina* cover the less scoured intertidal parts of the cave walls towards the backs of the caves. Barnacles, anemones and limpets are more common towards the cave entrance eventually merging with BPat.Sem biotopes normally encountered on open wave-exposed rock all along this stretch of coast.

Where cave walls have a lower shore and shallow subtidal section, for example in caves on the south-west side of Cardigan Island and the east side of Cemaes Head, the seasquirt *Dendrodoa grossularia* is occasionally found at high densities, mixed with smaller patches of the white lace sponge *Clathrina coriacea* – both highly characteristic of wave-surge conditions. The most species-rich sections of the cave on the SW side of Cardigan Island occur just below chart datum between 10 and 30m into caves. Patches of bright yellow sponge *Aplysilla sulfurea* and red *A. rosea* and *Ophlitaspongia seriata* are found on the walls, interspersed with colonial ascidians *Botrylloides leachii* and encrusting bryozoans such as *Flustrellidra hispida*. Towards the entrance of the cave, these short faunal turfs become more species-rich with other hydroids, ascidians and bryozoans.

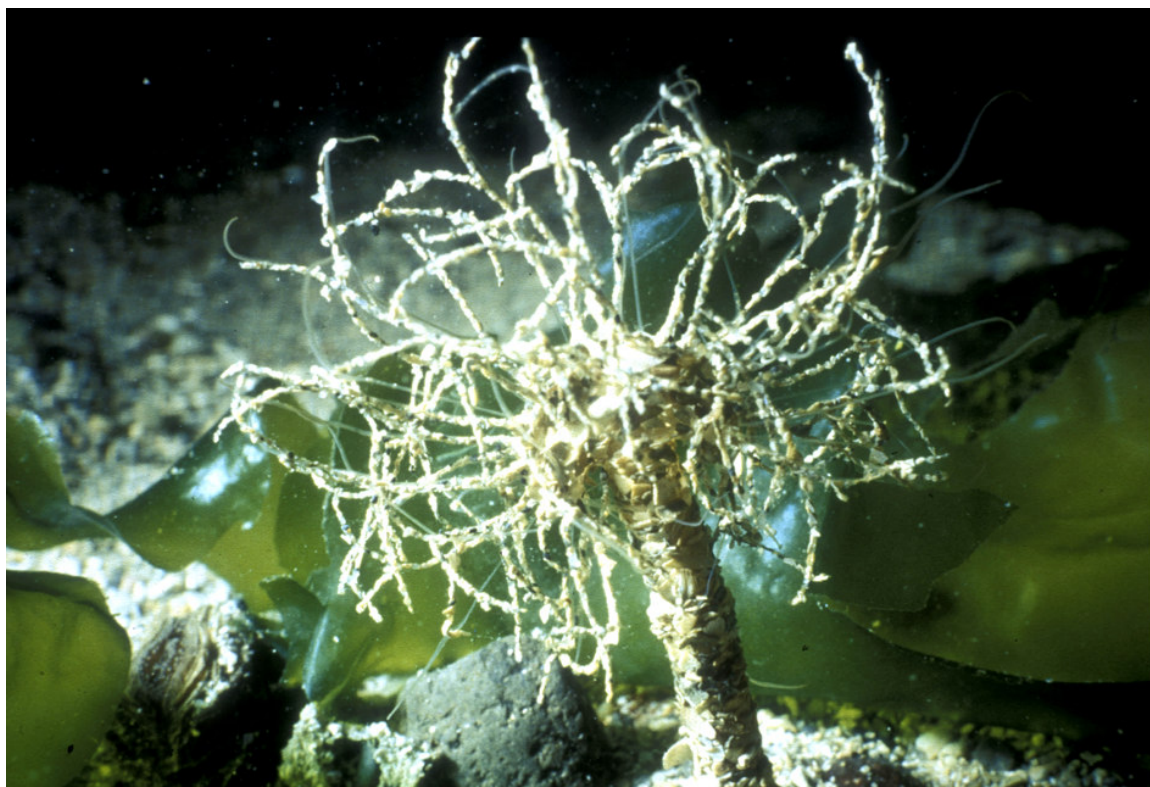
The extent, distribution and condition of this feature is largely dictated by natural environmental factors, in particular exposure to wind, waves, sand scouring and climatic extremes. Coastal engineering works could be detrimental to some communities, if they lead to significant alteration of these key -controlling factors. Sea cave communities are vulnerable to pollution either from accidental releases such as oil spills or from regular discharges for example those which cause nutrient enrichment in sensitive areas.

A 2003 report to CCW by *MarineSeen* presented findings of a sea cave study of Welsh SACs, primarily aimed at informing future management and monitoring of those caves with rare species or particularly good examples of cave habitats and communities. The report made recommendations for further sea cave studies in order to gain a fuller understanding of the species of plants and animals that inhabit caves and further development into sea cave biotope classification both in a national and regional context.

Additional information can be viewed at the following link:

<http://www.jncc.gov.uk/protectedsites/sacselection/habitat.asp?FeatureIntCode=H8330>

### 2.2.2.6 Subtidal sandbanks covered by seawater at all times



**Sand mason worm on sandbank (© JNCC)**

Cardigan Bay supports a diverse variety of marine species and habitats, including features identified as being of high conservation interest in a UK and European context.

Sandbanks permanently covered by sea water to depths of up to 20 meters below low water can include muddy sands, clean sands, gravelly sands, eelgrass *Zostera marina* beds, and maerl beds (carpets of small, unattached, calcareous seaweed)

The sandbanks of Cardigan Bay SAC are largely low-lying and most abundant in the east of the site, to the north and west of New Quay. Our knowledge of the Cardigan Bay sandbanks is rather limited. There have been a few general studies in the Bay that have sampled the sand bank areas, but only one dedicated survey of sandbank habitat. Sediments sampled in detail include banks in the New Quay area. Sandbanks are important, not just for the range and variation of community types present, but for the important role that they play in the food web and in the wider structural integrity of the surrounding habitats<sup>45</sup>. The sandbanks sediments of the west New Quay bank range from coarser fine sand through to sandy gravel. However, the seaward side has a more mixed muddy sandy gravel substratum<sup>46</sup>. In

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<sup>45</sup> Mann, K.H. 1982. *Ecology of coastal waters, a systems approach*. Blackwell Scientific Publications. Kingsford, M., and Battershill, C. 1998. *Studying temperate marine environments, a handbook for ecologists*. Canterbury University Press, New Zealand.

<sup>46</sup> Darbyshire, T., Mackie, A.S.Y., May, S.J., and Rostron, D. 2002. *A macrofaunal survey of Welsh sandbanks*. A National Museum of Wales and CCW collaborative project. CCW Ref. FC 79-01-03.

broad terms the prevalent sandy community type along the Cardigan Bay coast is a 'shallow Venus community' or an 'offshore sand association'<sup>47</sup>.

Species diversity of sandbanks in the Cardigan Bay SAC, from faunal data gathered in the Welsh Sandbank Survey 2002, was found to be very high. The New Quay sites were included in a subgroup comprising the eight most species rich locations sampled in Wales. The subgroup supported just over 70% of the total 618 taxa recorded.

The west New Quay bank has a very rich and diverse range of taxa, mainly due to the mixed sediments at the seaward side of the bank. Several species of annelids not recorded in the BIOMOR 1 report (Mackie *et al.* 1995) have been recorded during the Welsh Sandbank Survey 2002. *Euzonus flabelligerus*, anopheliid, *Malacoceros tetracerus* and *Armandia polyophthalma* are three uncommon species recorded from the New Quay sandbanks. One species found off New Quay is notable due to its rarity in British waters. The stomatopod (mantis shrimp) *Rissoides desmaresti* is found in and around the west New Quay bank. The only other known record in Wales is also from Cardigan Bay<sup>48</sup> reporting on a small population in Tremadog Bay.

The extent and distribution of sandbanks is largely dictated by natural environmental factors, including wave and sediment movements. Offshore development such as oil & gas exploration, offshore wind farms and coastal development including coastal engineering works could be detrimental to some sandbank communities, if they lead to significant alteration of these key controlling factors.

Several benthic surveys have been carried out off the Welsh coast in recent years and during 2001 a macrofaunal survey of Welsh sandbanks was funded by the National Museum of Wales CCW and the School of Ocean sciences, Bangor.

Additional information can be viewed at the following link:

<http://www.jncc.gov.uk/protectedsites/sacselection/habitat.asp?FeatureIntCode=H1110>

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<sup>47</sup> Petersen, C.G.J. 1913. *Valuation of the sea II. The animal communities of the sea bottom and their importance for marine zoogeography*. Report of the Danish Biological Station 21: 1-44 & 1-67. Jones, N.S. 1950. *Marine bottom communities*. Biological Reviews 25: 283-313.

<sup>48</sup> Ramsay, K. and Holt, R.H.F. 2001. *Mantis Shrimp Rissoides desmaresti in Tremadog Bay, North Wales*. J.mar.boil.Ass U.K. 81(4):695-696.

### **2.2.3 Current condition of interest features**

The assessment of current condition has been based upon existing knowledge of the site. Due to the huge costs associated with marine surveys, particularly subtidal work, there are gaps in current information on particular habitats and species. Where records exist, these may require updating; a considerable proportion of information is, and will always be, non-recent and therefore may no longer be correct. As further survey work is undertaken, these gaps will be filled and older work updated, with priority wherever feasible given to the most sensitive or threatened habitats. A summary of the current condition of features will be provided by the Countryside Council for Wales (CCW) in their Regulation 33 Advice for the site (see **Section 3 & 4**).

### 3 CONSERVATION OBJECTIVES, ADVICE ON POTENTIALLY DAMAGING OPERATIONS AND MONITORING

#### 3.1 Legal background

The conservation objectives for a European marine site are intended to represent the aims of the Habitats and Birds Directives in relation to that site. The Habitats Directive requires that measures taken under it, including the designation and management of SACs, be designed to maintain or restore habitats and species of European Community importance at “Favourable Conservation Status” (FCS), as defined in the Directive.

According to the Habitats Directive, a habitat is at FCS when its range and area are stable or increasing, the specific structure and functions necessary for its long term maintenance exist and are likely to continue to exist, and the conservation status of its typical species is favourable. A population of a species will be at FCS when it is being maintained on a long term basis, its natural range is not being and is not likely to be reduced, and there is sufficient habitat to support it in the long term. **Box 3** contains the full definition of FCS.

#### **Box 3: Favourable conservation status as defined in Article 1 of the Habitats Directive**

**Conservation status of a natural habitat** means the sum of the influences acting on a natural habitat and its typical species that may affect its long term natural distribution, structure and functions as well as the long term survival of its typical species within the territory referred to in Article 2.

The conservative [sic] status of a natural habitat will be taken as ‘favourable’ when:

- its natural range and the areas it covers within that range are stable or increasing, and
- the specific structure and functions which are necessary for its long term maintenance exist and are likely to continue to exist for the foreseeable future, and
- conservation status of typical species is favourable as defined in [Article]

1(i).

**Conservation status of a species** means the sum of the influences acting on the species concerned that may affect the long-term natural distribution and abundance of its populations within the territory referred to in Article 2;

The conservation status will be taken as ‘favourable’ when:

- population dynamics data on the species concerned indicate that it is maintaining itself on a long term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long term basis

Guidance from the European Commission<sup>49</sup> indicates that the Directive intends FCS to be applied at the level of an individual site, as well as to habitats and species across their European range. Therefore, in order to properly express the aims of the Habitats Directive for an individual site, the conservation objectives for a site are essentially to maintain (or restore) the habitats and species of the site at (or to) FCS.

### 3.2 Practical requirements

In practical terms, the conservation objectives for a site set the standards that must be met if the habitats and species (collectively referred to as “features”) are to be at FCS. There are four elements to this:

- (i) The conservation objectives must form the basis for proactive determination of the management needs of the site, in other words for identifying what actions, if any, need to be taken by those bodies responsible for the management of operations in and around the site, in order to conserve the features.
- (ii) They must inform the consideration of proposed developments, or “plans or projects”<sup>50</sup>, which are likely to significantly affect the features of the site. The statutory test for determining whether a Plan or Project (PP) can be allowed to proceed is whether it will adversely affect the “integrity of the site”<sup>51</sup>. In order for a Plan or Project (PP) to proceed, it must be ascertained that it will not adversely affect the integrity of a site. This question depends on whether or not the Plan or Project (PP) will adversely affect the conservation status of one or more of the features. Hence answering it requires direct reference to the conservation objectives.
- (iii) They must set the standard against which CCW reports to government on the conservation status of the features on the site, in other words whether they are considered to be in favourable or unfavourable conservation status. Government in turn will use this information, together with that from other SACs and on the status of habitats and species outside designated sites, to report to the EC on the implementation and effectiveness of the Habitats Directive.
- (iv) They must set the standard against which the appropriateness of management can be judged, in retrospect. If the conservation objectives are not being met it may be due to inappropriate management of the site, or to factors originating outside the site or outside the control of those responsible for management, or a combination.

Functions (i) and (ii) can only be served by a statement which is reasonably comprehensive, addressing all aspects of conservation status (see **Box 3**). Functions (iii) and (iv) require a standard whose achievement or otherwise can be monitored cost effectively. To fulfil these three functions adequately,

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<sup>49</sup> European Commission (2000). Managing Natura 2000 sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC. DGXI, Brussels, p.18.

([http://ec.europa.eu/environment/nature/nature\\_conservation/eu\\_nature\\_legislation/specific\\_articles/art6/index\\_en.htm](http://ec.europa.eu/environment/nature/nature_conservation/eu_nature_legislation/specific_articles/art6/index_en.htm))

<sup>50</sup> Plans or Projects (PP) are certain types of operation that the Habitats Directive and Regulations require be subject to specific procedures. PP considered likely to have a significant effect on a European (marine) site must be subject to appropriate assessment of their implications for the site in view of the site’s conservation objectives. The carrying out of an appropriate assessment must include consultation with CCW, and such consultation is a separate process to the advice in this document. However, the information in this document is intended to assist in the identification of PP which are likely to require appropriate assessments, and will form the basis for advice given by CCW in relation to individual plans and projects.

<sup>51</sup> “Integrity of the site” is not defined in the legislation, but has been defined by the UK government as “the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified [i.e. designated]”. This definition is similar in intent to FCS.

and to reflect the statutory context outlined above, the conservation objective for each feature consists of two parts:

- (a) An overall objective to maintain the feature at or, where appropriate, restore it to a site-specific expression of FCS, suitable for guiding the preparation of management plans and testing the acceptability or otherwise of the effects of plans and projects. **Box 4** indicates the various aspects of conservation status that the conservation objectives cover.
- (b) A related set of “performance indicators” which support monitoring<sup>52</sup> and allows judgements to be made about conservation status for purposes such as reporting and review of management. **Box 5** explains the structure of performance indicators.

The results of the monitoring of attributes and factors, combined with information on security and suitability of management, and the results of surveillance (see below) support the making of judgements about whether or not the conservation objectives are being met, that is whether or not the feature can be judged to be at FCS.

**Box 6** shows the elements that have been considered in assessing the FCS of a species (i.e. bottlenose dolphin) and a habitat (reef) features.

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<sup>52</sup> Monitoring is defined as “Surveillance undertaken to ensure that formulated standards are being maintained. The term is also applied to compliance monitoring against accepted standards to ensure that agreed or required measures are being followed.” (A statement on Common Standards Monitoring, 1998, Joint Nature Conservation Committee, Peterborough. <http://www.jncc.gov.uk/page-2198> )

**Box 4. Elements of Favourable Conservation Status (FCS) included in the conservation objectives.**

- (I) For each habitat feature
- Natural range and area it covers within that range: stable or increasing
    - total extent of the feature
    - distribution of the feature within the site
  - Specific structure and functions necessary for long term maintenance: exist and are likely to continue to exist for the foreseeable future
    - physical structure of the habitat
    - fundamental physiochemical processes
    - biotic assemblages
    - overall ecological integrity
    - management to be of an appropriate type, and secure in the long term
  - Conservation status of typical species: favourable as defined for species features below
    - species which typify (characterise) the habitat, either generally (ie. form part of its definition), or specifically on this site (ie. those that contribute to local distinctiveness of the habitat)
- (II) For each species feature
- Population: maintaining itself on a long term basis as a viable component of its natural habitat
    - population size
    - population structure (eg. age structure where relevant)
    - population to be self-maintaining in the long term, including where vulnerable to factors outside the site
    - management to be of an appropriate type, and secure in the long term
  - Natural range: not being reduced nor likely to be reduced for the foreseeable future
    - all areas of the site which the population uses
    - if restricted distribution is undermining long term maintenance of the population, range may need to be increased
    - management must be of the appropriate type and secure in the long term
  - Supporting habitat: large enough to maintain populations on a long term basis
    - extent of habitat of the appropriate quality
    - structure and functions (as for habitat features above)
- >NB The examples given here (but not the main bullets) would be adapted to suit each site.<*

Knowledge of the dynamics of many marine species and communities and their sensitivity is limited. Accordingly, for many attributes, factors and operations, it is not yet possible to identify values above or below which conservation status would be considered unfavourable. Therefore, surveillance<sup>53</sup> of such attributes and factors is necessary to:

- gain a greater understanding of feature and factor variability, in order to determine appropriate upper and lower limits which can in due course be included as performance indicators;

<sup>53</sup> Surveillance is defined as “a continued programme of surveys systematically undertaken to provide a series of observations in time” (A statement on Common Standards Monitoring, 1998, Joint Nature Conservation Committee, Peterborough. <http://www.jncc.gov.uk/page-2198> )

- provide information which can assist in the interpretation of the results of monitoring of the performance indicators. In particular, monitoring is designed only to indicate whether an attribute or factor has met its target or lies within or outside its limits. Information on trends in other attributes and factors can assist the identification of the causes of changes observed in the performance indicators;
- improve the overall level of understanding of the site, its features and the factors affecting them.

## **Box 5: Performance indicators and monitoring**

The conservation status of a feature encompasses its inherent condition (eg. its extent and quality), the factors affecting it, and its future prospects. Therefore in order to be able to judge the conservation status of a feature, it is necessary to have performance indicators covering each of these three elements. However, it is not generally possible to have performance indicators to cover all aspects of conservation status. This is because conservation status relates to a feature in its entirety and it is not possible to monitor all elements of a feature's conservation status, particularly in the marine environment, owing to practical and financial constraints. Therefore the performance indicators provide, as the term suggests, an indication of, or evidence for, conservation status, rather than a comprehensive definition of it.

### **Indicators of feature condition**

Each feature is represented by a series of 'attributes', which are measurable indicators of the condition of the feature on the site. Attributes may indicate the condition of entire features, or for large, complex features they may relate to particular components of the feature. For each attribute, a range of acceptable values bounded by upper and lower limits can be identified, which equates to the favourable condition of the feature. Note that for some attributes, the acceptable range is all values above (or below) a single limit value. Each attribute can fluctuate within this range of values without giving cause for concern. Monitoring is carried out to determine whether actual attribute values lie within or outside the limits.

### **Indicators for factors**

Factors are any external influences on the condition of a feature, including environmental processes, and the effects of human activities. Each factor that is an influence on feature condition ideally has a set of upper and lower limits which if breached are likely to lead to deterioration in condition. Monitoring of factors is carried out to determine where their value lies in relation to these limits. As with feature attributes above, the acceptable range of values for some factors may be all values above (or below) a single limit value.

### **Indicators of a feature's future prospects**

A set of judgements needs to be made about whether the management of the site is of an appropriate type to maintain or restore the condition of a feature to favourable in the foreseeable future, and if it is, that such management is secure. Performance indicators may therefore include upper (and occasionally lower) limits applied to particular activities considered critical to the condition of a feature, and "compliance monitoring" of the activity against those limits.

**Box 6: Example of the elements which have to be considered when assessing the FCS for a species (i.e. dolphin) and habitat (i.e. reef).**

<b>Species - bottlenose dolphin</b>	<b>Habitat - reef</b>
<b>Population Dynamics</b> <ul style="list-style-type: none"> <li>• Population size</li> <li>• Reproductive success</li> <li>• Population structure</li> <li>• Physiological health</li> </ul> <b>Range</b> <b>Habitat</b> <ul style="list-style-type: none"> <li>• Distribution and extent</li> <li>• Structure, function and quality</li> </ul> <b>Management of activities and operations</b>	<b>Distribution and extent</b> <b>Structure and function</b> <ul style="list-style-type: none"> <li>• Structure (Geology, Sedimentology, Geomorphology &amp; Topography, Habitat structure quality)</li> <li>• Function (Hydrography, hydrodynamics &amp; meteorology, Water &amp; sediment chemistry, Sediment processes, Biological interactions)</li> </ul> <b>Conservation status of typical species</b> <ul style="list-style-type: none"> <li>• Species richness</li> <li>• Population dynamics</li> <li>• Range</li> </ul> <b>Management of activities and operations</b>

The performance indicators and surveillance requirements for the features of the Cardigan Bay SAC are not included in this document. Information about these will be made available by CCW in due course and will be added to the current section (**Section 3**) of this Management Scheme.

**The conservation objectives for the features of the Cardigan Bay SAC as well as the advice as to the operations that may cause deterioration or disturbance to the features are contained in the “Regulation 33 Advice” document which can be downloaded from the Cardigan Bay SAC website at the following url:**

[http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice\\_draft\\_June05.pdf](http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice_draft_June05.pdf)

## 4 ASSESSMENT OF ACTIVITIES AND THEIR MANAGEMENT

The following part is divided into three sections.

**Section 4.1** describes the management planning process; the process by which management actions have been drawn up. This process has been guided by information supplied by the Relevant Authorities (RAs), SAC Liaison Group and other interests, and the Countryside Council for Wales' advice.

**Section 4.2** provides a description and assessment of all current activities within the SAC or possible future activities with a potential of affecting the SAC features. For each activity this section therefore provides: a brief description of the activity, a description of the current management of the activity, an assessment of the impact this activity may have on SAC features and impact mechanisms (issue rationale), the type of response needed (categorisation is explained in **section 4.1.6**) and reference to actions needed (which are summarised in the action plan in **section 6**). Additional sources of information can be found, under relevant section headings, in **Appendix 4**.

**Section 4.3** addresses the issue of funding and locating resources to be able to implement the current Management Scheme.

### 4.1 Assessing certain types of operation

#### 4.1.1 Plans and projects

The Habitats Directive and Regulations distinguish between 'activities', and developments which require some sort of specific statutory consent, authorisation, licence or permission from a competent authority (who might also be a relevant authority to the site) before they are allowed to proceed. Such developments are known as **Plans or Projects (PP)**.

Whilst this scheme is mainly concerned with management of ongoing current and likely future activity taking place within or adjacent to the SAC, and although the mechanisms for authorisation of PP differ, the management of authorisation of PP is nevertheless important and relevant to securing the SAC features at Favourable Conservation Status (see **Section 3**). This section is intended to serve as:

- an acknowledgement by and a reminder for Relevant (RA) and Competent Authorities (CAs) of the assessment requirements for Plans or Projects (PP) prior to authorisation,
- a brief explanation for users of the site and for the general public of the distinction of PP from activity management, and the requirement for their assessment.

Guidance on the process required prior to authorisation of a Plan or Project (PP) is given in The Conservation (Natural Habitats, &c.) Regulations, Statutory Instrument No. 2716. SI 1994/2716, HMSO, London available at

[http://www.legislation.hmsso.gov.uk/si/si1994/uksi\\_19942716\\_en\\_1.htm](http://www.legislation.hmsso.gov.uk/si/si1994/uksi_19942716_en_1.htm)

and amendments 2007 available at

[http://www.opsi.gov.uk/legislation/scotland/ssi2007/draft/sdsi\\_9780110776118\\_en.pdf](http://www.opsi.gov.uk/legislation/scotland/ssi2007/draft/sdsi_9780110776118_en.pdf)

as well as in CCW's **Reg 33 Advice** document available at the following link:

[http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice\\_draft\\_June05.pdf](http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice_draft_June05.pdf).

#### 4.1.2 Appropriate assessment of Plans and Projects

Any Plan or Project (PP) judged likely to have a significant effect upon the conservation features of the site, either individually or in combination with other plans or projects, is subject to an **Appropriate Assessment** of its implications for the conservation features of the site (see **Box 7**), in addition to any other Environmental Impact Assessment (See **Appendix 9**).

##### **Box 7: Article 6 (3) of the Habitats Directive**

*“Any Plan or Project (PP) not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to **Appropriate Assessment (AA)** of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the **Plan or Project (PP)** only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”*

New activities which require consent or permission from a competent authority before they can proceed or continue are dealt with under Regulations 3(3), 3(4) and 47 to 85 of the UK Habitats Regulations. The Regulations state that where these plans or projects have the potential to significantly affect the interest features of the site, full considerations must be given to the requirements of the Habitats Directive. European Union guidance<sup>54</sup> and UK government guidance<sup>55</sup> provide clear interpretation and direction of the requirements of Article 6(3). UK government commitment to these requirements was reconfirmed in April 2004 by the Secretary of State for Transport’s decision on development at Dibden Bay, Southampton<sup>56</sup>.

**The initial determination of the requirement for appropriate assessment of a Plan or Project (PP) is whether it can be clearly identified as *not* likely to have a significant adverse effect on the site. In the event that it *cannot* be clearly determined that it will *not* have such an effect, appropriate assessment is required. Manifestly, where it is unclear whether or not a plan or proposal will have significant effect, it *cannot* have been determined as having no likely significant effect and must therefore be subject to appropriate assessment.**

The meaning of "likely significant effect" in this context is any effect that may reasonably be predicted as a consequence of a Plan or Project (PP) that may affect the conservation objectives of the features for which the site was designated.

Appropriate assessment of a PP should encompass the PP in its entirety, alone and in combination with any other relevant plans and projects, and should include everything contained in their application(s) for consent, permission or other authorisation.

In addition to proposed plans or projects within the site, any PP adjacent to or near the site that may have an adverse effect within the site is subject to the same requirement for assessment prior to authorisation.

<sup>54</sup> European Commission (2000). Managing Natura 2000 sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC. DGXI, Brussels, p.18. ISBN 92-828-9048-1 ([http://ec.europa.eu/environment/nature/nature\\_conservation/eu\\_nature\\_legislation/specific\\_articles/art6/index\\_en.htm](http://ec.europa.eu/environment/nature/nature_conservation/eu_nature_legislation/specific_articles/art6/index_en.htm))

<sup>55</sup> DETR / Welsh Office, 1998. *op cit* (footnote 4)

<sup>56</sup> Secretary of State, Department for Transport decision and Inspector's Report refusing consent for the Port of Southampton (Dibden Terminal) Harbour Revision Order under the Harbours Act 1964 ([www.dft.gov.uk](http://www.dft.gov.uk))

The statutory test for determining whether a PP can be allowed to proceed is whether it will adversely affect the “integrity of the site”<sup>57</sup>. In order for PP to proceed, it must be ascertained that it will *not* adversely affect the integrity of a site. This planning process is outlined in **Figure 9** below. In determining adverse effect, short-term impacts must be considered in terms of the long-term integrity of the site, and proposed mitigation but not compensatory measures may be taken into account<sup>58</sup>.

The Habitats Directive makes provision, where an appropriate assessment has concluded adverse effect on the integrity of the site, for a PP to proceed under certain circumstances “for imperative reasons of overriding public interest”. Decisions on overriding public interest are the responsibility of the appropriate Secretary of State. Projects allowed to proceed on this basis are required to take all compensatory measures necessary to ensure the coherence of the *Natura 2000* network is maintained.

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<sup>57</sup> “Integrity of the site” is not defined in the legislation, but has been defined by the UK government as “the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified [i.e. designated]”. This definition is similar in intent to FCS.

<sup>58</sup> *Managing Natura 2000* draws a clear distinction between mitigation and compensation (para 5.4.1: mitigation aims to “minimise or even cancel the negative impacts on the site”).



#### 4.1.3 Advice on operations which may cause deterioration or disturbance

Advice on operations that are potentially damaging needs to be considered in the context of the Habitats Directive, which requires that for an SAC:

- the necessary conservation measures are established which correspond to the ecological requirements of the habitats and species on the site;
- appropriate steps are taken to avoid deterioration of habitats and significant disturbance of species;
- any Plan or Project (PP) which is likely to have a significant effect on a site is subject to an appropriate assessment in view of the site's conservation objectives.

The operations advice, in combination with the conservation objectives, is therefore intended to assist Relevant Authorities (RAs) and other decision-makers in complying with these provisions. The term "activities" is taken to cover all types of human activity, which manifest themselves directly or indirectly through one or more influences or processes.

The advice comprises a list of activities which CCW considers may cause deterioration or disturbance to the features of the site, with accompanying information on the factors through which the activity may affect the feature and which aspects of the feature may be affected. It makes an important contribution to the identification of:

- management measures necessary to secure features at FCS;
- PP that would be likely to have a significant effect and should be subject to appropriate assessment.

The advice is not a list of prohibited activities, or activities necessarily requiring consultation with CCW, or CCW's consent.

For current advice regarding the potential effects of an activity, relevant and Competent Authorities (CAs) are advised to contact the Countryside Council for Wales (see **Appendix 3**).

**The conservation objectives for the features of the Cardigan Bay SAC as well as the advice as to the operations that may cause deterioration or disturbance to the features are contained in the "Draft Regulation 33 Advice" document which can be downloaded from the Cardigan bay SAC website at the following url:**

**[http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice\\_draft\\_June05.pdf](http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice_draft_June05.pdf)**

#### 4.1.4 Environmental Impact Assessment

It is important not to confuse an "Appropriate Assessment (AA)" of a Plan or Project (PP) in an SAC with an "Environmental Impact Assessment" (EIA). Under EIA legislation, which is separate to the Habitats Directive, certain types of development (e.g. planning consents, highway construction, forestation) must undergo an assessment of their environmental effects. These requirements apply irrespective of whether there is an SAC involved, and would normally address a wider range of nature conservation and environmental aspects than the features of an SAC. Where an SAC is likely to be affected by a development requiring an EIA, it will be taken into account as part of the EIA. Data/information gathered for an EIA could be used to inform an Appropriate Assessment of a plan or project made under the Habitats Regulations 1994 (if the EIA has been scoped with this in mind), however an EIA would not itself be used to fulfil the requirements of the Habitats Regulations.

The EIA process is open to public scrutiny, and places certain obligations on developers to make public their proposals. The process places a formal obligation upon developers to consider the impacts that a proposal would have upon wildlife and the environment and where relevant, propose mitigation. The environmental statement also ensures that the consenting

authority has all the available environmental, social and economic information concerning a development at its disposal when it makes decisions about likely significant effects and also a decision regarding an AA.

It is not practical to identify in this Management Scheme the types of operation likely to affect the features of the site which would be subject to EIA. It is considered sufficient to identify which should be considered as Plans or Projects (PP) under the Habitats Directive and hence which may require an AA. In each case, the Competent Authority (CA) responsible for considering a proposed operation must ensure that it complies with both sets of requirements. Some types of operation will require an AA but not EIA, and vice versa.

#### **4.1.5 Assessing other activities**

The management actions necessary to secure the site's features at Favourable Conservation Status (FCS) have been identified following assessment of the directly or indirectly known effects of current, and likely imminent future activity on the site's features. Information availability - or unavailability - was a critical constraint on these assessments. In compiling this document and in determining management requirements, it was necessary to collate and synthesise a wide range of relevant information and to draw inferences from appropriate research findings to inform the process.

Activities occurring or likely to occur in the future, within the site were identified. Information on where the activities occurred and how they were currently managed was collected. Detailed activity information proved difficult to obtain. The variety of activities which take place within the SAC is wide, with many of these activities occurring largely 'out of sight'. Consequently, information on human activities within the site is hugely variable and much is not recorded or available in any formal manner. In most instances this information was incomplete and for many activities there was no information available at all. Ongoing activity information gathering remains an important part of the SAC management process (see **Section 5**).

The next step was to assess whether those activities had the potential to cause deterioration or significant disturbance to the SAC features. This information is included in formal Regulation 33 advice from the Countryside Council for Wales. The assessment of the potential of an activity to cause deterioration or significant disturbance to SAC features necessitates an understanding of the sensitivity and exposure of those features and sub-features to the different activities. Such information, again, is largely incomplete; information on causal relationships between human activity and wildlife, habitats and ecology is highly variable in detail and availability, and is mostly dispersed widely in the published scientific literature.

Where there is a lack of information about existing activities (i.e. there is insufficient information to determine whether or not they are adversely impacting the features of the site) then there should be some investigation (research) for possible impacts. In the absence of evidence one way or the other, it should not be assumed that the conservation of the site's features is compatible with current site use. However, the pattern of existing use has to be recognised. Therefore, the existing level of the activity should be maintained (as far as is possible) at current levels or less (i.e. not increased) until there is some conclusion as to what levels are acceptable.

An increase in intensity of a current activity, significant change in distribution of a current activity or the development of a new activity should be treated as or in a way analogous to that for a PP i.e. the increase or change should not be viewed as acceptable until it has been shown that it will not adversely affect site integrity.

Surveillance and / or monitoring of activities is required for activities that are known to adversely affect the features of the site or for which there is uncertainty but a mechanism for effect is known. This will allow some early warning of potential increases in activity and provide a

baseline of information if there is ever a need to investigate the cause of a loss of favourable condition.

It was appreciated that the degree to which each RA could conduct surveillance or monitoring would vary, being influenced by available resources and the scope of the activity. The degree to which existing statutory and institutional arrangements enabled activities to be “maintained at current levels” would also vary. This was particularly noted as being the case for fisheries and also various recreational activities not subject to formal management or regulation.

Where a management response requires some form of action this is given in **Section 4.2** after the issue rationale for each factor. A summary of all actions, comprising all of the actions generated in **section 4** is provided in **section 6**.

The marine environment is a complex one and modern survey and experimental techniques have only relatively recently begun to gradually provide the essential biological and ecological information on which to base informed management decisions. A considerable amount of information is available about the features, though it is spread amongst many documents which differ in style, detail, accessibility and age. Assessments were made based on best available knowledge only. It may be that in the light of further information, certain activities in certain locations may be assessed differently.

For most factors there is considerable uncertainty as to whether they are, or are not, having an effect on the features of the site. Showing irrefutably that an activity is adversely affecting the features is very difficult indeed; the low level of knowledge, scientific capabilities and available resources all conspire to hinder this. Even where there is some information - for example through examination of the few bottlenose dolphin strandings suitable for autopsy - it is very difficult to determine the factors contributing to a dolphin's death. A high parasite burden may, for example be a result of natural causes, anthropogenic causes such as pollution induced immuno-suppression, or a combination of both.

It is essential that the ‘precautionary principle’<sup>59</sup> is followed to take actions early enough to minimise potentially serious or irreversible effects. Management decisions will need to take into account reasonable predictions of likely affects of human activities on the features, despite a paucity of supporting scientific evidence.

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<sup>59</sup> Precautionary Principle: “Even if it has not been demonstrated, but an activity is considered ‘likely’ to have a significant impact on the feature, appropriate actions should be taken to manage that activity to prevent the impact”. (This is just one of many differing definitions of the ‘Precautionary Principle’. Whilst most of the site’s Relevant Authorities (RAs) sign up to this definition it should not be taken that all relevant and Competent Authorities (CAs) relevant to Cardigan Bay SAC site management would also).

#### 4.1.6 Categorising management

To assist in determining what type of actions need to be taken in managing activities which may affect the features of the site, a series of broad management responses have been drawn up and agreed by the sites Relevant Authorities (RAs). These are shown in **Table 1** below.

**Table 1. Categorization of management response within this Management Scheme**

<b>Code</b>	<b>Judgement</b>	<b>Management Response</b>
<b>F1</b>	The activity constitutes a 'Plan or Project (PP)' as defined in the Habitats Directive.	Apply Habitats Regulations 48-53 ('appropriate assessment'...).
<b>F2</b>	There is no known mechanism for the activity to affect the feature, no known causal relationship, and no evidence that it is having a significant adverse effect.	Not considered further at present.
<b>F3</b>	There is no known mechanism for the activity to affect the feature, but there is evidence that there may be a causal relationship and/or it is having a significant adverse effect.	<ul style="list-style-type: none"> <li>▪ Research</li> <li>▪ Activity surveillance</li> <li>▪ Experimental or trial management</li> <li>▪ Identify and implement operational limits</li> </ul>
<b>F4</b>	There is a known mechanism for the activity to have an effect, but there is insufficient evidence at present to determine whether or not it is having a significant adverse effect.	<ul style="list-style-type: none"> <li>▪ Activity surveillance</li> <li>▪ Precautionary management including use of operational limits</li> <li>▪ Research to determine whether there is an effect or not and inform operational limit setting</li> </ul>
<b>F5</b>	There is a known mechanism for the activity to have an effect, but evidence shows that it is not having a significant adverse effect at present.	<ul style="list-style-type: none"> <li>▪ Activity surveillance</li> <li>▪ Identify and implement operational limits</li> </ul>
<b>F6</b>	There is evidence to suggest that an activity is having a significant effect on the feature, but it is outside management control (e.g. it is an indirect effect from large scale human activity - climate change), or there is no current mechanism for management.	<ul style="list-style-type: none"> <li>▪ Activity/factor surveillance</li> <li>▪ If necessary, seek appropriate management mechanism, then implement appropriate management</li> </ul>
<b>F7</b>	There is evidence to suggest that an activity is having a significant adverse effect and the mechanism is known.	<ul style="list-style-type: none"> <li>▪ Identify and implement management measures</li> <li>▪ Identify and implement operational limits</li> </ul>

**Table 2** lists those activities, based on current available information, known to be currently occurring within the site and those that are likely to occur in the future. They are not listed in any priority order. Activities identified as having the potential to cause deterioration or significant disturbance to the SAC features are noted here as issues. It is these that are considered further in this Management Scheme. Each activity was assigned a management response code by the Relevant Authorities Group (RAG) based on the best available information. This categorisation of management helped to steer the type of actions detailed within the Action Plan (**Section 6**). For example, where there was seen to be a lack of information about an existing activity and on its potential affects to SAC features, then some research into that activity and its possible impacts should be conducted.

**Table 2 Management response to activities occurring or likely to occur within the site**

Activity	Currently within the SAC?	Future prospects in the SAC?	SAC Issue <sup>60</sup> ?	F Code
<b>CULTIVATION OF LIVING RESOURCES</b>				
<b>Algae Farming</b>	no	unlikely	no	-
<b>Crustacean Farming</b>	no	unlikely	no	-
<b>Molluscan Farming</b>	no	possible	yes	F1
<b>Molluscan Ranching</b>	no	unlikely	no	-
<b>Non-salmonid Farming</b>	no	unlikely	no	-
<b>Salmonid Fish Farming</b>	no	unlikely	no	-
<b>Wild Stock Enhancement</b>	no	unlikely	no	-
<b>EXPLOITATION OF LIVING RESOURCES</b>				
<b>Algae</b>				
<i>Intertidal (non-commercial)</i>	yes	continuing	yes	F4
<i>Subtidal (non-commercial)</i>	unknown	unlikely	no	-
<i>Drift-line gathering (non-commercial)</i>	unknown	unlikely	no	-
<b>Bait Collection:</b>				
<i>Boulder turning</i>	yes	continuing	yes	F4
<i>Manual digging</i>	yes	increasing	yes	F4
<i>Mechanical digging</i>	unknown	unlikely	yes	F4
<i>Lug worm pump</i>	no	unlikely	no	F4
<i>Salting</i>	no	unlikely	no	F4
<i>Other (e.g. crab tiles...)</i>	no	unlikely	no	F4
<b>Collection for Aquarium &amp; Curio Trade</b>	unknown	unknown	yes	F4
<b>Dredging:</b>				
<i>Hydraulic dredging</i>	no	likely	yes	F4
<i>Intertidal mechanical dredge</i>	no	unlikely	no	-
<i>Mussel dredge</i>	no	unlikely	no	-
<i>Oyster dredge</i>	no	unlikely	no	-
<i>Scallop dredge</i>	yes	likely	yes	F4

<sup>60</sup> Definition: The RAG considers it necessary to account for activities marked as 'yes' within this Management Scheme at the time of publication. Activities will be re-evaluated on an annual basis.

Activity	Currently within the SAC?	Future prospects in the SAC?	SAC Issue?	F Code
<b>Hand Gathering:</b>				
<i>Boulder turning</i>	yes	likely	yes	F4
<i>Digging</i>	yes	continuing	yes	F4
<i>Diving/Snorkelling</i>	yes	continuing	yes	F4
<i>Raking</i>	unknown	possible	yes	F4
<i>Spearfishing</i>	yes	unlikely	yes	F4
<b>Line Fishing (commercial):</b>				
<i>Rod and Handline</i>	yes	continuing	yes	F4
<i>Longline</i>	unknown	possible	yes	F4
<b>Netting:</b>				
<i>Beach seine</i>	yes	likely	yes	F4
<i>Demersal</i>	unknown	possible	yes	F4
<i>Fyke</i>	unknown	unlikely	no	-
<i>Fixed, gill, tangle &amp; trammel</i>	yes	increasing	yes	F4
<i>Salmon</i>	yes	continuing	yes	F4
<b>Potting:</b>				
<i>Inkwell</i>	yes	continuing	yes	F4
<i>Parlour</i>	yes	continuing	yes	F4
<i>Whelk</i>	yes	continuing	yes	F4
<b>Trawling:</b>				
<i>Beam</i>	yes	continuing	yes	F4
<i>Otter</i>	unknown	possible	yes	F4
<i>Pair</i>	no	possible	yes	F1
<b>EXPLOITATION OF NON-LIVING RESOURCES</b>				
<b>Aggregate Dredging:</b>				
<i>Sand &amp; gravel</i>	no	unlikely	yes	F1
<i>Metalliferous sediments</i>	no	unlikely	no	-
<b>Alternative Energy Production:</b>				
<i>Coastal wave &amp; tidal current</i>	no	unlikely	no	-
<i>Tidal barrage</i>	no	unlikely	no	-
<i>Wind</i>	no	possible	yes	F1
<b>Coastal Quarries &amp; Mines</b>	no	unlikely	no	-
<b>Oil &amp; Gas Exploration/Production:</b>				
<i>Drilling operations</i>	no	possible	yes	F1
<i>Operational &amp; accidental discharges</i>	no	possible	yes	F1
<i>Seismic surveys</i>	no	possible	yes	F1
<b>Oil Spill response:</b>	no	possible	yes	F7
<b>Water Resources &amp; Storage:</b>				
<i>Desalination</i>	no	unlikely	no	-
<i>Estuarine reservoirs</i>	no	unlikely	no	-
<i>Freshwater abstraction</i>	yes	increasing	yes	F1

Activity	Currently within the SAC?	Future prospects in the SAC?	SAC Issue?	F Code
<b>USE OF COASTAL LAND/WATER SPACE</b>				
<b>Animal Sanctuaries</b>	no	possible	yes	F1
<b>Artificial Reef Construction</b>	no	unlikely	no	-
<b>Civil Engineering</b>	yes	continuing	yes	F1
<b>Coastal Forestry</b>	no	unlikely	no	-
<b>Coast Protection/Defence:</b>				
<i>Beach replenishment</i>	yes	likely	yes	F1
<i>Breakwater</i>	yes	possible	yes	F1
<i>Drainage</i>	no	unlikely	no	-
<i>Groynes</i>	yes	likely	yes	F1
<i>Infill</i>	no	possible	yes	F1
<i>Managed retreat</i>	no	likely	yes	F1
<i>Seawall</i>	yes	continuing	yes	F1
<b>Docks, Marinas &amp; Shipping:</b>				
<i>Anchoring</i>	yes	continuing	yes	F4
<i>Antifoulant use</i>	yes	continuing	yes	F7
<i>Capital dredging</i>	no	possible	yes	F1
<i>Cargo losses</i>	yes	possible	yes	F4
<i>Discharge of ballast water</i>	unknown	possible	yes	F4
<i>Operational spills</i>	yes	possible	yes	F4
<i>Maintenance dredging</i>	yes	continuing	yes	F1
<i>Mooring</i>	yes	increasing	yes	F4
<i>Refuse disposal</i>	yes	continuing	yes	F4
<i>Sewage disposal</i>	yes	continuing	yes	F4
<i>Navigation</i>	yes	continuing	yes	F4
<b>Marine Archaeology &amp; Salvage</b>	yes	possible	yes	F1?
<b>Military Activities:</b>				
<i>Aircraft</i>	yes	continuing	yes	F4
<i>Dumping/Dumps</i>	no	unlikely	no	-
<i>Exercise Area</i>	yes	continuing	yes	F4
<i>Ordnance ranges</i>	yes	continuing	yes	F1?
<i>Underwater acoustics</i>	no	unlikely	yes	F1
<b>Power Station:</b>				
<i>Fossil fuel</i>	no	unlikely	no	-
<i>Nuclear</i>	no	unlikely	yes	F1
<b>Recreation:</b>				
<i>Aircraft (incl. hand gliders)</i>	yes	continuing	no	-
<i>Angling</i>	yes	continuing	yes	F4
<i>Casual shore recreation</i>	yes	continuing	yes	F4
<i>Coasteering</i>	no	possible	yes	F4
<i>High speed power craft</i>	yes	continuing	yes	F4
<i>Hovercrafts</i>	no	possibly	yes	F1
<i>Low speed power craft</i>	yes	continuing	yes	F4
<i>PWCs</i>	yes	continuing	yes	F4
<i>Scuba diving/Snorkelling</i>	yes	continuing	yes	F4
<i>Vehicles</i>	yes	continuing	yes	F4

Activity	Currently within the SAC?	Future prospects in the SAC?	SAC Issue?	F Code
Underwater Cables & Pipelines	yes	increasing	yes	F1
<b>WASTE DISPOSAL</b>				
Agricultural run-off	yes	continuing	yes	F4
Dredge spoil dumping	no	possibly	yes	F1
Effluent disposal (industrial)	yes	continuing	yes	F4
Effluent disposal (sewage)	yes	continuing	yes	F4
Inorganic refuse & litter	yes	continuing	yes	F4
Sludge dumping	no	unlikely	no	-
Urban and industrial run-off	yes	continuing	yes	F4
<b>EDUCATION AND SCIENTIFIC STUDIES</b>				
Repeated site visits	yes	continuing	yes	F4
Experimental manipulation	no	possible	yes	F4
Experimental observation	yes	continuing	yes	F4
Sample collection	yes	continuing	yes	F4
Animal welfare	yes	continuing	yes	F4
<b>CLIMATIC CHANGE</b>				
Current change	yes	increasing	yes	F6
Sea Level change	yes	increasing	yes	F6
Temperature change	yes	increasing	yes	F6
Weather patterns	Yes	increasing	yes	F6

#### **4.1.7 Natural Processes**

##### **4.1.7.1 Description**

SAC features are subject to broadscale and local natural influences such as climate variation, competition amongst and between species and chance random events. The significance of these “natural” effects and how they interrelate with human activities in the SAC is highly complex and poorly understood.

##### **4.1.7.2 Current Management**

Natural influences, particularly climatic factors, fall outside SAC management control.

##### **4.1.7.3 Issue Rationale**

All human activity, natural variation and management are subject to global influences, whether natural or human induced. Global climatic change may be manifested by increased storminess and changed sea level as well as any change in temperature. Natural changes to these processes are outside any management control and negative impacts on the features as a result of this are considered acceptable. However such influences must be acknowledged and accommodated by the Management Scheme. Further, as many of these natural processes can be influenced by humans, to a lesser or greater degree, management controls may exist to provide a means of managing these activities. Although control of adverse global influences caused by human action is far beyond the scope of local Management Schemes, attention is drawn to the importance of local contributions in addressing global problems.

##### **4.1.7.4 Type of response**

**F6:** There is evidence to suggest that the factors are having a significant effect on the feature, but they are outside management control (i.e. natural process, or there is no current mechanism for management).

##### **4.1.7.5 Action Needed**

See sections: 6.22 a-c

#### **4.1.8 Climate change**

##### **4.1.8.1 Description**

5 Climate change occurs naturally, but in recent years it has become clear that human activities also have the potential to modify the earth's climate. An increase in 'greenhouse gas' emissions such as carbon dioxide and methane has resulted in an increase in global warming. Other effects of climate change include increased ultraviolet light exposure, resulting from reductions in stratospheric ozone due to break down by Chlorofluorocarbons (CFCs). As a result of particulate emissions into the atmosphere the phenomenon of 'global dimming' has occurred. This has reduced potential impacts of increased ultraviolet light exposure at the earth's surface. As particulate emissions are reduced through pollution limiting measures, it is likely that the impact of increased ultraviolet light due to ozone depletion will be more significant.

##### **4.1.8.2 Current Management**

Managing the impacts of climate change on site features, resulting from anthropogenic activities, is not within the capabilities of the site's RAs and CAs. Nevertheless, such changes may be a significant factor affecting the feature, and these authorities should contribute accordingly to help reduce climate change and take account of its potential effects when managing the site.

##### **4.1.8.3 Issue Rationale**

Changes in environmental conditions can result in significant changes to the health and distribution of marine flora and fauna. The types of changes that climate change could cause in the UK are reasonably well predicted, but the rate and extent of the impacts are uncertain. Changes in ultraviolet light exposure, sea temperature, currents, sea level rises, turbidity, sediment transport, wave exposure and the frequency and intensity of extreme climatic conditions all have the potential to have an impact on the features of the SAC.

##### **4.1.8.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

**F6:** The factor is considered to have (the potential) to have significant effect on the feature, but it is entirely outside any local management control.

##### **4.1.8.5 Action Needed**

See sections: 6.21 a

## 4.2 Assessment of activities

At the beginning of each of the following sections assessing the impacts of different activities there is a table showing which features have the potential to be affected by the activity.

The legend for the table is as follows:

<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Bottlenose dolphins – <i>Tursiops truncatus</i>	Atlantic Grey seals – <i>Halichoerus grypus</i>	Sea lamprey – <i>Petromyzon marinus</i>	River lamprey – <i>Lampetra fluviatilis</i>	Submerged and partially submerged Sea caves	Reefs	Sandbanks which are slightly covered by seawater all the time

The information contained in the tables originates from the “Countryside Council for Wales advice given under Reg.33(2) of the Conservation (Natural Habitats & c.) Regulations 1994. For further details please consult the original Reg.33 advice document for Cardigan Bay which can be downloaded from the Cardigan Bay website at the following link:

[http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice\\_draft\\_June05.pdf](http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice_draft_June05.pdf)

## 4.2.1 Education and interpretation

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓			✓	✓	

### 4.2.1.1 Description

Education and interpretation (E & I) activities relating to the marine and wider environment were well established in the area prior to the designation of the SAC. A summary table of organisations and institutions involved in education and interpretation work are listed in **Table 3** in **Appendix 6**. Activities range from the production of leaflets and static and interactive displays to the organization of guided walks, way marked trails, special events and illustrated talks to schools, colleges and other interest groups.

### 4.2.1.2 Current Management

It is accepted that the demand to experience the environment for oneself is a growing trend. It is also clear that there is a greater demand for more detailed information about the environment to which the public are visiting. Through the implementation of the Cardigan Bay SAC Education and Interpretation Strategy attempts are being made to support and strengthen the work of organisations providing awareness raising activities and publications and target user groups not currently accounted for. It is hoped that this will minimise duplication of activities while consolidating an integrated framework of E & I provision that is of direct relevance to the site.

Over the years the E & I Programme has included the production of an SAC newsletter, the development of materials for the SAC roadshow, the creation of the SAC website, the production of panels and leaflets as well as the creation of the Cardigan Bay Boat Place. Opened in 2006 by Ceredigion County Council's Coast and Countryside Section, the Boat Place is a small information centre aimed at raising awareness amongst tourists and boat owners about Ceredigion's marine wildlife and Recreational Boat User's Code of Conduct. The Code, which has been printed in various formats since 1993, has been re-published in a dedicated leaflet in 2006. It is also included in the Tide Table as well as within information produced by the Council for resident and visitor recreational boat users. Information panels with the Code are sited at launch sites on the Teifi, and at Aberporth, Tresaith, Llangrannog, New Quay, Cei Bach, Aberaeron, and Llarhystud.

The E&I Strategy, which was developed in 2004, outlines plans for awareness raising activities to 2010. Financial support from The Crown Estate came to an end in March 2006. Efforts will be made to secure additional funds for the final years of implementation before a major review of the effectiveness of the Strategy will be carried out.

### 4.2.1.3 Issue Rationale

Increased awareness about the features of the site may result in a high demand to see them in their natural environment. At sea this may lead to a greater level of recreational boating traffic and increased demand for visitor passenger boat trips with potential impacts on bottlenose dolphins and Atlantic grey seals. On land, this could lead to visitor pressure on sites known as good sites for seeing the features. Grey seals use some foreshore areas to breed and haul-out to rest. These animals may be unintentionally or intentionally disturbed by people or their dogs approaching or interacting with them. Trampling by large numbers of people visiting specific locations may result in compaction and erosion of features and possible damage to certain

species, such as the honeycomb worm (*Sabellaria alveolata*) reef in the intertidal area<sup>61</sup>. Numerous organisations are involved in education and interpretation activities in areas adjacent to the site. However, it is unlikely that these will have any direct impacts on the features of the SAC and will rather engender wider support for the conservation of our natural heritage and is therefore thought to be beneficial.

#### **4.2.1.4 Type of Response**

F4: There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.1.5 Action Needed**

See section: 6.1 a-d

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<sup>61</sup> Hill et al, 1998; Holt et al, 1998

## 4.2.2 Coastal development (including shoreline management and coastal defence)

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.2.1 Description

Development along the coast is generally focused on existing settlements. Along the coastline there are also a number of caravan sites and other forms of holiday accommodation that were developed principally during the 1960s. Water-based development within the SAC is generally associated with the existing harbours at Aberaeron and New Quay. There are marina facilities at Aberystwyth (to the north of the SAC) and new facilities within the Teifi Estuary at Cardigan as part of the Aberteifi Objective 1 project. The Welsh Development Agency, in response to development opportunities arising from EU Objective 1 funding have prepared a Draft Scoping Study (March 2006) for a Strategic and Sustainable Framework for Coastal Regeneration in Cardigan Bay.

### 4.2.2.2 Current Management

The development of land (to mean low water mark) is regulated through the planning system. The planning system is operated primarily by local authorities; Ceredigion County Council, Pembrokeshire County Council and Pembrokeshire Coast National Park Authority. The National Assembly for Wales has reserve and appellate powers, together with advisory functions. The system of plans also provides a framework for dealing with coastal defence. Shoreline Management Plans (SMPs) set out a strategy for sustainable coastal defence. Operations identified within SMPs must be compatible with the conservation requirements of the SAC. Coastal development, including flood defence and coastal protection works also require a number of additional marine consents (see **Appendix 9**). The Habitat Regulations require that development and development plans are considered against the conservation importance of the SAC.

### 4.2.2.3 Issue Rationale

Coastal developments, especially those that relate to harbours and foreshores have the potential to have a variety of significant impacts on the features of the site. The scale, location, timing, construction methods, and operational requirements of the development will determine the degree of impact on each of the features. There are potential impacts both during and post construction. Intertidal and subtidal communities and species may be directly impacted by the structures themselves or the construction works (e.g. use of heavy plant), and there may be changes to and sometimes loss of, existing habitats. Marine mammals may be affected by noise and possibly vibration generated during development, as well as changes to the habitats they rely on. Any physical modification of the shoreline, built or natural, may act to alter the transport of sediment and change wave reflection. This may cause alterations to the environmental characteristics influencing the adjacent shore and intertidal communities. Suitable sediment supply is particularly important for some habitats or species e.g. the reef-forming honeycomb worm *Sabellaria alveolata*.

### 4.2.2.4 Type of Response

**F1:** The activity constitutes a Plan or Project (PP)

### 4.2.2.5 Action Needed

See sections: 6.2 a & 6.2.1 a-c

## 4.2.3 Aggregates extraction

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓		✓	✓	✓

### 4.2.3.1 Description

A variety of dredging methods are used for aggregates extraction. The degree to which operations may impact on the SAC is in part determined by the equipment and methodology employed.

### 4.2.3.2 Current Management

No marine aggregate is currently occurring within the Cardigan Bay and at present there are no known plans for exploitation of this resource within or adjacent to the site. However, the Bay consists largely of sands and gravels which may potentially be suitable for future extraction.

### 4.2.3.3 Issue Rationale

Aggregate dredging operations have the potential to cause a change in the topography and characteristics of the seabed which may affect the physical processes in and around the dredged area. The reduction and /or removal of sand supply could have an impact on sub-tidal sandbanks and also coastal areas such as sand dune systems. Pollutants may be remobilized either in solution or bound to fines. Pollutants may also be released from the dredger and associated shipping.

### 4.2.3.4 Type of Response

**F1:** The activity constitutes a Plan or Project (PP)

**F5:** Whilst there is a known mechanism for this activity to have an effect on the features of the site, the activity does not occur at present within or adjacent to the SAC.

### 4.2.3.5 Action Needed

See section: 6.3 a

## 4.2.4 Dredging and dredge spoil disposal

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.4.1 Description

Dredging is a fundamental requirement for most harbours and ports. Dredging can be defined as the excavation of material from the seabed and the relocation of the excavated material elsewhere for disposal. In general, dredging may be undertaken for a variety of purposes including navigation, flood control and for beach nourishment purposes. Maintenance dredging is the routine/periodic removal of material in approach channels and basins to assist safe access for vessels. Capital dredging is the excavation of sediments for the first time so as to increase water depths in an area to accommodate vessels.

### 4.2.4.2 Current Management

Dredging and dredge spoil licences are issued by the Marine & Fisheries Agency (MFA) in consultation with CCW.

At the time of writing (2007) maintenance dredging at New Quay and Aberaeron harbours is as follows:

*New Quay:* Some 3000 tonnes of sand are removed annually from the main harbour and Penpolion and are deposited at Traeth y Dolau for beach replenishment purposes. These operations are carried out at low tide, using shore plant.

*Aberaeron:* Material has been removed from the main gravel bank within Aberaeron Harbour and used as beach nourishment on a routine basis at approximately 4 year intervals. In 2006 Ceredigion County Council (CCC) was licensed to annually dredge 100 m<sup>3</sup> of sediment from the gravel bank and deposit the material on Aberaeron beach as recharge for 3 years. The operation is carried out by land-based machinery at low tide and the licence will be reviewed every 3 years. Sediment samples taken from the Gravel bank are below the Interim Sediment Quality Guideline (ISQG)<sup>62</sup> and Probable Effects Levels (PEL) of concern. Contamination loads and presence of PCBs taken from samples at Pwll Cam and Doc Bach areas of the harbour are above the levels of concern considered likely to have an adverse biological effect. As part of the Aberaeron coast protection scheme, there are proposals for beach nourishment at Aberaeron North Beach.

*Cardigan:* A one off dredging operation was carried out at Pen Yr Ergyd spit in the Teifi Estuary near Cardigan early in 2007. Around 3,200m<sup>3</sup> of material was dredged for deposition elsewhere in the estuary as agreed with CCW. The removal of the sand and silt was to facilitate the construction of a floating pontoon jetty for use by commercial fishermen and recreational boat users on the Teifi Estuary.

### 4.2.4.3 Issue Rationale

Potential effects include loss and or disturbance of habitats and species. The physical effects include visual, noise, abrasion, smothering and displacement with associated knock-on biological effects. Elevated suspended sediments (and possible contaminants) can also affect benthic fauna.

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<sup>62</sup> Grimwood & Dickson 1997

#### **4.2.4.4 Type of Response**

**FI:** The activity constitutes a Plan or Project (PP)

#### **4.2.4.5 Action Needed**

See sections: 6.4.1 a-e; 6.4.2 a

## 4.2.5 Water abstraction

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity	✓	✓	✓	✓		✓	

### 4.2.5.1 Description

Water abstraction is widespread and there are numerous points at which water is removed from the freshwater inputs into the SAC. The largest freshwater input into the SAC is from the Afon Teifi at Cardigan. The river and its tributaries have a total catchment area of 1012 km<sup>2</sup>. The valley is mainly rural with agriculture and forestry accounting for the majority of land use. The main pressures on water resources are from public water supply, hydropower and agriculture. Resources at Llechryd and Teifi Pools are used to supply water to the coastal belt lying to the west of the area, as well as throughout the catchment. Tourism contributes significantly to the rural economy of West Wales. The demand for public water supply increases during the summer months with large numbers of visitors staying in Ceredigion. The second largest input of freshwater is from the Afon Aeron which enters the sea at Aberaeron.

### 4.2.5.2 Current Management

Abstraction of water is regulated by the Environment Agency and there is a requirement for any landowner to obtain an abstraction licence for anything other than minimal use. Depending on the nature and the scale of the abstraction, an Environmental Impact Assessment (EIA) may be required. Catchment Abstraction Management Strategies (CAMS) provide information on the availability of water and identify changes needed to the abstraction regime to achieve the sustainable long-term use of water resources.

### 4.2.5.3 Issue Rationale

As river and sea lamprey are dependent on freshwater spawning beds and nursery areas within their lifecycle it is vital that even in dry years the volumes of freshwater within natural watercourses are maintained at a level that will support them. Significant reductions in freshwater inputs into the SAC as a result of over extraction will result in changes in sediment transport, temperature regimes and water chemistry. As habitat communities have adapted to live within certain environmental parameters (such as temperature, salinity, turbidity) changes of this sort could potentially result in a modification of marine species variety, distribution and composition within the existing zone of influence of the input. Reductions in sediment transport may reduce the availability of suspended particles to dependent species such as *Sabellaria alveolata*. Reductions in flow rates may also result in higher concentrations of land-associated pollutants within freshwater entering the site. This may lead to increased rates of biological assimilation within the food chain, with ramifications for species features at higher trophic levels.

### 4.2.5.4 Type of Response

F1: The activity constitutes a Plan or Project (PP)

### 4.2.5.5 Action Needed

See sections: 6.5 a-c

## 4.2.6 Cables and pipelines

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.6.1 Description

Around the UK, submarine cables have been installed for many years for the transmission of electrical power and for telecommunications. Submarine pipelines on the site are limited to outfalls used for the discharge of effluents to coastal waters. The *Environmental Assessment of Plans and Programmes Regulations 2004* implement Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive). For information on offshore oil and gas licensing in the Irish Sea by the Department of Trade and Industry (DTI) **section 4.2.14**

### 4.2.6.2 Current Management

Projects that are likely to have an effect on the features of the SAC, including the installation of cables and pipelines, regardless of whether they are located inside or outside the site, are subject to appropriate assessment under the Habitats Directive, as well as EIA. These arrangements provide the ability to withhold approval for a project, or to require mitigation measures to be put in place to prevent adverse effects on habitats and species. Designation of an area as an SAC does not automatically exclude an activity or development from taking place in or near that area. It ensures that the effects of a proposed project upon the site, and the features for which the site is designated, are fully assessed before the project is allowed to proceed. A project that will have adverse effects, or whose effects cannot be predicted, may not proceed unless there are no alternative solutions and it is necessary for imperative reasons of over-riding public interest. Some projects can also be amended following assessment to enable them to be implemented without having adverse effects. There are a number of marine pollution contingency plans in operation that are of relevance to a marine pollution incident that occurs in or threatens Welsh waters.

### 4.2.6.3 Issue Rationale

Cables emitting electro-magnetic fields may modify the natural behaviour of mobile marine wildlife species with potential implications on food availability and site use by species features. Prior to installation, operators will need to survey the sea bed to establish ground conditions and determine routes. Such surveys are directed at the sediment surface using sonar equipment. Cables and pipelines may be laid across the surface of the seabed but are more usually laid in a trench. The excavation of trenches would result in damage to benthic habitats at the site of excavation, and would also be likely to result in temporary increases in turbidity and sediment load in the water column. The extent, severity and longevity of the potential effect on SAC features will depend on the nature and scale of the operations and type of seabed being affected. Fractures to pipelines can occur which could lead to an oil pollution incident inside or outside of the SAC. This may lead to impact on SAC features, either directly as a result of oil contamination or indirectly from dispersants and the action of clean up operations. There is also the potential for issues arising from the infra-structure associated with the installation and long-term management of cables and pipelines. This may include noise and sediment disturbance and increased risk of pollution incidences.

### 4.2.6.4 Type of Response

**F1:** The activity constitutes a Plan or Project (PP).

### 4.2.6.5 Action Needed

See sections: 6.6 a

## 4.2.7 Offshore renewables

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.7.1. Description

This section covers the construction and operation of structures seaward of low water mark, for generating electricity from wind, wave or tidal power. Other types of operation (e.g. oil/gas exploration) are dealt with elsewhere. The types of structures may vary enormously – single turbines or “farms” of many tens or hundreds of turbines, placed anywhere from just offshore or in waters up to 20m deep, although 5 – 10 metres is more likely. Tidal structures usually make use of areas with high rates of tidal flow such as narrows, headlands and estuaries. Wave power generators require a good sea swell. Structures may be floating, self supporting or anchored to the seabed. There are currently no such structures either within the SAC or elsewhere in Cardigan Bay.

### 4.2.7.2. Current Management

The DTI have published an Atlas of UK Marine Renewable Energy Resources (<http://www.dti.gov.uk/energy/renewables/technologies/atlastechnicalreport.shtml>) which maps wind, wave and current resources for marine renewable energy. Cardigan Bay is identified as a suitable wind farm location, but is not ideal for wave or tidal electricity generation. In addition to significant environmental and landscape/seascape considerations, constraints on development include transport of the structures to the site and costs of connection to the national grid. The Government’s Energy Review, released on 11 July 2006, outlines its long-term aim of reducing carbon dioxide emissions by 60% by 2050. This includes promoting the use of renewable energy resources including offshore energy structures.

### 4.2.7.3. Issue Rationale

*Noise:* Pile driving constitutes the greatest potential source of sound production during the construction phase of wind turbine installation. Research shows that sound levels produced will vary with pile diameter, geology and bathymetry. Where seabed characteristics prevent the use of pile hammers during installation, a socket is drilled. The noise from drilling operations is highly variable, but it has been cited as producing an avoidance response from cetacean when received in high levels. Any structures with moving parts (e.g. wind or tide-driven turbines, wave-riding buoys) are liable to generate noise, which may interfere with marine mammals communication, navigation and prey location and in the long term may affect fish and other habitat communities.

*Water quality:* The construction/placement activities are likely to cause short term, localized changes in turbidity and sediment loads in the water column and may result in direct impacts on habitat features. A reduction in water quality may also affect the dolphins and seals by directly causing them to avoid the area, or if persisting over longer periods, through effects on habitat features.

*Pollution:* Depending on the maintenance requirements, there may be significant increases in vessel traffic, servicing the offshore structures. Contamination of water and or sediments by chemicals used on or within structures (e.g. grouting, antifouling coatings) or from ship-source pollution (e.g. accidental or deliberate discharges of fuel, rubbish and sewage). There may also be an increased risk of ship collisions resulting in accidental release of cargo, and also from ship-source pollution.

*Seabed effects:* The presence of the structures themselves may impact significantly on benthic and intertidal communities and species. In addition to the direct impact (usually gross modification or even total loss) of habitat in the immediate vicinity of the structures, the presence of structures on the seabed can alter physical processes. Modification of wave exposure and tidal streams may have implications for a wide area around the wind farm. Biological changes can also occur as a direct result of artificial structures, e.g. where the structures attract mobile species or provide substrate for colonization by plants and encrusting fauna. Impacts on the sites' habitats may affect abundance and distribution of dolphin and seal prey.

#### **4.2.7.4. Type of Response**

**F1:** The activity is considered to constitute a Plan or Project (PP) for the purposes of the Habitats Directive. Therefore the impact on the SAC of each proposed development should be assessed on its individual characteristics.

#### **4.2.7.5. Action Needed**

See sections: 6.7 a-c

## 4.2.8 Water quality

### 4.2.8.1 Effluent disposal

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

#### 4.2.8.1.1 Description

Effluent disposal points are found throughout the area of Cardigan Bay. Within and adjacent to the SAC there are a number of coastal discharges, the majority of which are Waste Water Treatment Works (WWTW), treating domestic sewage. Effluent disposal points can be classified into four categories: Waste Water Treatment Works (WWTW), Sewage Pumping Station (SPS) storm overflows, SPS emergency discharges and Combined Sewer Overflows (CSO).

#### 4.2.8.1.2 Current Management

There are 5 WWTW within the site, most of which carry out secondary treatment (See **Appendix 6** for a description of primary, secondary and tertiary treatment). **Tables 4, 5** and **Figure 10** in **Appendix 6** show the disposal points that discharge into coastal, estuarine or freshwaters within or immediately adjacent to the SAC.

Further, a number of overflows connected to sewage pumping stations (SPSs) in the area are designed to operate in cases of heavy rainfall in order to relieve pressure on the system.

There are also a number of combined sewer overflows (CSOs) within the area. These act as relief valves, designed to discharge diluted sewage during periods of heavy rainfall when the receiving watercourse provides high dilution. These overflows may contain both domestic and trade effluent and storm water. Details of these two types of intermittent discharges are shown in **Appendix 6, Table 4**.

Most industrial premises in the area connect to sewers passing to Dŵr Cymru Welsh Water's (DCWW) WWTWs. However there are also a number of small WWTWs belonging to the local authority and others, many of which serve holiday activities. In addition to these, there is one industrial site which discharges into the SAC, Quay Fresh and Frozen Foods at New Quay. Further, adjacent to the SAC there are numerous small WWTWs and some industrial sites which discharge effluent into rivers flowing directly into the SAC, such as the Teifi and the Aeron. Relative inputs from these are monitored directly, and by monitoring the quality of the rivers into which they flow.

All discharges are controlled through a statutory system of licences known as discharge consents, issued by Environment Agency Wales (EAW).

#### 4.2.8.1.3 Issue Rationale

The input of sewage effluent may add organic nutrients to the environment resulting in eutrophication. Any toxic and non-toxic contaminants within the effluent has the potential to be fixed within sediment or directly bio-accumulated within the food chain. Discharges with a high content of suspended material may affect the turbidity levels with the potential to affect sensitive communities (see Pollution and Physical Impacts).

It is possible that human and domestic stock pathogens can enter the sea via discharges from WWTW since no disinfection processes are absolute, and many viruses can survive a very long time, particularly in sediments. There is the potential for infection of bottlenose dolphins and

seals by some of these (see 'Pathogens'). Chemical inputs through effluent disposal can also affect marine mammals (see 'Pollution').

As well as effluent disposal points within the SAC itself, it is necessary to consider disposal points beyond the site boundary, which may have an influence on the water quality of the site. It is also possible, given movements of tidal waters, that discharges well beyond the SAC boundary may influence the quality of water within the site. However, it is obviously not feasible to examine every discharge at this stage, but investigations into any water quality problems experienced within the SAC will not be limited to those sites listed above, but to any potential source.

Complete removal of all human and stock derived bacteria and viruses from marine inputs is not an option. There are other sewage related issues, such as aesthetics, which are being dealt with under current Asset Management Plan (AMP) of DCWW's.

Although these discharges are not thought to currently pose a significant risk, the Habitats Directive requires a review of relevant consents and permissions (see 'Plans and Projects').

#### **4.2.8.1.4 Type of Response**

**F1:** The activity constitutes a Plan or Project (PP)

**F4:** There is a known mechanism for the activity to have an effect, but there is insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.8.1.5 Action Needed**

See section: 6.8.1 a-j

### **4.2.8.2 Land run-off**

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

#### **4.2.8.2.1 Description**

Contamination from land run-off can lead to localised environmental problems, such as impacts on river water quality and biology from farm effluents (e.g. sheep dips), run off from metal mines and/or spills from industrial estates. These diffuse inputs can enter the coastal streams or the Teifi and Aeron catchments with the potential of subsequently impacting on the SAC (see Pollution and Pathogens).

Agriculture is the major industry in the region, occurring directly adjacent to the SAC. Given the highly polluting nature of farm wastes, the collection, management and safe disposal of effluents, e.g. slurry, silage and sheep dip, are areas of concern as they can lead to the localised contamination of watercourses and potentially the SAC. Animal pathogens could also enter the SAC via this route. Changes in agricultural practices in recent years, often in response to European policy, have accelerated changes in land use.

The upper Teifi in particular has seen a marked increase in sheep numbers, which has consequently placed a greater emphasis on the proper disposal of sheep dip. With the middle and lower Teifi having predominantly dairy and livestock farms, it is slurry and silage effluents that are of greater concern there. The upper Teifi also suffers from the legacy of metal mining

where run off from the abandoned spoil tips results in contaminated water running off into local watercourses.

Activities on industrial estates or other sites can also lead to accidental spills which can contaminate surface waters, although the area concerned has relatively few sites with the potential to discharge directly into the SAC.

A particular issue can be the runoff off of agricultural pollution into terrestrial entrances to sea caves (e.g. through blow holes or streams). This may result in unusually concentrated pollutants entering cave ecosystems and may result in deleterious impacts on associated flora and fauna in and around the entrances to sea caves.

#### **4.2.8.2.2 Current Management**

EAW routinely monitors Teifi and the Aeron rivers and the water quality of each is considered to be of the highest standard. Some limited bacterial monitoring is also carried out at the EC Identified bathing beaches in the area in line with the requirements of the Bathing Waters Directive. Under the Welsh Metal Mining Strategy the EAW is also assessing the environmental impact of old mines and putting forward proposals for additional monitoring in order to produce feasibility studies for treatment projects in Ceredigion.

#### **4.2.8.2.3 Issue Rationale**

Land-use is obviously an important consideration as a large area of land drains to the SAC. Environmental impacts identified from current practices are largely well known and already subject to controls where they exist. For example, maintenance of bathing water is a key concern locally, and one where a number of organisations work together to minimise impacts from land run-off, amongst others. It is more likely that this factor will be considered and tackled for these other reasons than for features of the SAC, but this will ultimately mean risks to the marine environment are reduced.

#### **4.2.8.2.4 Type of Response**

F4: There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.8.2.5 Action Needed**

See section: 6.8.2 a-h

### **4.2.8.3 Leakage from point pollution sources (e.g. disused metal mines)**

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

#### **4.2.8.3.1 Description**

*Heavy metals:* Past metal mining activity on land adjacent to the SAC, especially in the catchments of the rivers Rheidol, Ystwyth, Clarach and the upper reaches of the Teifi, has left a legacy of spoil heaps of waste material at some sites. Discharges of metal contaminated water have, in many cases, had detrimental impacts on fish populations and the ecological quality of these water courses.

*PCBs:* The use of PCBs in applications ceased in the 1970s and they are now included in the UK Red List of substances identified as priorities for reductions because of their environmental impacts. Sources are most likely to come from way beyond the SAC boundary.

#### **4.2.8.3.2 Current Management**

*Heavy metals:* In July 2002, the Environment Agency published its Metal Mine Strategy for Wales. Investigations into remedial works to prevent or reduce the impact of heavy metals entering local watercourses are currently under way. At least one disused metal mine in the upper reaches of the Afon Teifi was cited in the report as being a source of water pollution into the river. The 2004 Environment Agency Metal Mines Project (EATW/04/02) found that the Rheidol and Ystwyth rivers, discharging north of the site, are loaded with levels of lead, copper and zinc above permitted Water Quality Standards and the Dangerous Substances Directive. Work was carried out during 2006 to divert stream water away from an old mine shaft as part of the Cwm Rheidol Metal mine remediation Scheme. Remediation work to reduce impact of heavy metals entering local watercourses is currently ongoing.

*PCBs:* Prior to any proposals that may result in the release of PCBs or other contaminants into the marine environment, an Environmental Impact Assessment would be required to determine significant impact on features of the SSSI and SAC. This includes for example, sediment analysis of samples of areas proposed for dredging e.g. at Aberaeron Harbour which is adjacent to the Cardigan Bay SAC.

#### **4.2.8.3.3 Issue Rationale**

Heavy metals such as lead, copper and zinc are persistent marine pollutants and can become toxic to marine species at high concentrations if bio-accumulated within the food chain. With PCBs, existing environmental burdens, dispersed in coastal waters attached to sediments, are undoubtedly being accumulated in the food chain to a level in dolphin and seal prey species that may have health implications for the animals themselves. PCBs are dispersed globally in the air, and this source will also contribute to the coastal water burden, both via rivers and directly to the sea.

#### **4.2.8.3.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.8.3.5 Action Needed**

See sections: 6.8.3 a-c

## 4.2.9 Recreational activities

### 4.2.9.1 Introduction

An important factor in effectively managing the Cardigan Bay SAC, and particularly recreational activities, is the level and quality of education and awareness held by those who use the SAC and other areas of Cardigan Bay. Many of the actions in the following recreation sections address the requirement to maintain awareness and education at a high level. As well as benefiting the management of recreational activities these will assist the management of many other activities addressed within this document.

#### 4.2.9.1.1 Action needed

See section: 6.9 (including 6.9.1 a)

### 4.2.9.2 Swimming, snorkelling and diving

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity	✓	✓			✓	✓	

#### 4.2.9.2.1 Description

The Ceredigion coast is important for tourism. The number of staying visitors in Ceredigion in 2004 was 2.8 million<sup>63</sup>. Many of these use the local beaches for recreation including swimming and snorkelling. SCUBA diving occurs along the coast and local diving clubs exist in Cardigan and Aberystwyth (and seasonally at Aberaeron). However, the quality of local diving does not attract many holidaying clubs, which prefer areas such as Pembrokeshire.

#### 4.2.9.2.2 Current Management

Bottlenose dolphins and Atlantic Grey seals:

There is the potential for interest to run a commercial venture to “swim with dolphins or seals” in Cardigan Bay. Such commercial scale activities are likely to become detrimental to the animals and should therefore not be permitted. There is also the potential for individuals to seek their own “close encounters”, and this might be encouraged if commercially organised interactions were available. To intentionally or recklessly disturb a bottlenose dolphin or Atlantic grey seal is an offence under the 1981 Wildlife & Countryside Act, the 1994 Habitats Regulations (as amended by the Countryside and Rights of Way Act 2000) except under certain defined circumstances. This legislation may be sufficient to discourage inappropriate commercial and non-commercial activity of this kind, although its effectiveness has been questioned (See ‘Harassment’). Seeking out dolphins and seals to swim with should be discouraged. However, it is appreciated that direct interactions with dolphins and seals may be initiated by the animals themselves and guidance for human behaviour under these circumstances should be available in a form which moderates human behaviour and does not encourage the activity.

Habitats and their communities:

The collection of certain commercially important shellfish species is regulated by the Sea Fisheries Committee (SFC) byelaws and through patrols by local fisheries officers. Due to the exposure of the coast in Cardigan Bay it is likely that diver/snorkelling pressure will have limited impacts on local marine communities. This, in addition to national campaigns within the diving press and by organisations such as the Marine Conservation Society (MCS) there is now a far

<sup>63</sup> Ceredigion County Council, STEAM Report 2004, Numeric executive summary, available on <http://tourism.ceredigion.gov.uk/stats/index.htm>

greater awareness amongst the majority of divers about the problems caused by the collection of marine curios and possible damage to sensitive marine species. As a result, it is unlikely that these potential impacts will affect the reefs of the SAC.

Divers are in a unique position amongst the recreational users of the SAC in that they come into direct contact with, and are therefore able to experience first hand, the reef and sea cave habitats and their wildlife. There is the potential for divers to contribute directly to the SAC management through participation in projects to record the marine wildlife of the site. Through the Management Scheme, divers should be encouraged to participate in and undertake appropriate projects and to raise awareness of others about the SAC.

#### **4.2.9.2.3 Issue Rationale**

There is the potential for people swimming in the sea to purposely or incidentally interact with the Bay's dolphins and seals. Close interaction, including physical contact, with these animals may result in: Harassment, physical injury to human or animal, increased risk of pathogen transfer between human and animal and vice versa, habituation of animals to close contact with humans. A loss of 'wildness' may result in altered behaviour, increased interaction with humans and all the potential impacts that these may cause. Use of a boat to provide access to enable swimming with dolphins and/or seals may result in harassment or collision between the animals and boats. See following section on recreational vessels as well as sections on 'Harassment', 'Noise', 'Pathogens', and 'Collisions'. Further information on interactions between recreation activities and SAC site features is obtainable from the Life report<sup>64</sup>.

Diving and snorkelling activities have the potential to affect some aspects of the reef communities if specimens are collected or damaged. Collection is particularly detrimental to species that are present in limited numbers and may be at the edge of their range, have limited mobility, have low rates of reproduction or take a long time to reach maturity. Significant changes in the populations of collected species may affect the associated community, particularly if the collected species plays a key role in the functioning of the community. One species in particular that would be sensitive to damage from hitting or crushing is Ross Coral - a bryozoan that forms large orange-coloured colonies and is present in some of the reef communities around Cardigan Bay. Damage caused by trampling or the launching of craft from informal access points is covered under Recreational boating and Pedestrian and vehicular use of the foreshore (**Sections 4.2.9.3 & 4.2.9.6**). Disturbance to marine wildlife as a result of scientific research is covered under section (**Section 4.2.11**).

#### **4.2.9.2.4 Type of Response**

**F4** : There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.9.2.5 Action Needed**

See section: 6.9.2 a-b

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<sup>64</sup> Saunders. C., Selwyn. J., Richardson. S., May. V. and Heeps. C. 2000. *Recreational User Interactions*.

### 4.2.9.3 Recreational boating

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

#### 4.2.9.3.1 Description

This section deals with non-commercial recreational craft such as motor cruisers, speed boats, personal water craft (jet skis), yachts, dinghies and canoes. Commercial trip boats are dealt with under **Section 4.2.9.4**.

There are mooring facilities for 133 boats at New Quay; 80 at Aberaeron; and 300 at Cardigan. The number of moorings available in the Teifi estuary was increased from 200 to 300 in 2006 following the success of the Teifi Estuary Environmental Tourism Development & Management Scheme Objective 1 bid (October 2004). This Scheme has improved both commercial and recreational access to the estuary therefore potentially increasing the number of vessels launched with direct access to the SAC. Yachting and boating clubs are located at Aberaeron, New Quay, Tresaith, and Cardigan. A Water sports Centre offering dinghy sailing, powerboat, canoe and windsurf tuition and hire operates from New Quay. Facilities for recreational vessels are more extensive outside the SAC at locations such as Milford Haven, Aberystwyth, Barmouth, Porthmadog and Pwlllelli. In addition to these, there are numerous small slips and beaches for launching small vessels. Vessels enter the SAC from launching sites and safe havens further north and south of the site. Whilst some of these vessels may be visiting SAC waters, a proportion are in transit through the SAC.

#### 4.2.9.3.2 Current Management

In response to the concerns about the perceived increase in boat numbers along Ceredigion's Marine Heritage Coast data has been collected and presented in "*Bottlenose dolphins & Boat Traffic on the Ceredigion Coast, West Wales*" reports since 1994. The reports can be downloaded from publications section of the Cardigan bay SAC website at <http://www.cardiganbaysac.org.uk/english/publications.shtml>.

Since 1994 extensive efforts have been made to engender support for the objectives of the marine conservation designations within Ceredigion. A number of publications, websites and information panels include, or are dedicated to providing advice and details of relevant legislation to coastal users advising appropriate behaviour in the presence of marine mammals and other marine wildlife. Publications are distributed to all mooring holders within the SAC and to every person launching vessels at the main launching sites of New Quay, Aberaeron and Aberystwyth. Information panels are sited at unmanned Council owned launching sites throughout the SAC. Further information is available at Tourist Information Centres and on the SAC and Ceredigion County Council website. In addition, Relevant Authority staff has been involved in an ongoing programme of outreach projects undertaken along the coast, all with the aim of raising awareness about the importance of the marine environment and ways that the public can assist in minimising their impacts. Whilst research has shown that there was a 90% compliance with the Code of Conduct (see **Appendix 7**) at sea in 2004 & 2005, the evidence also shows that compliance varies among sites and vessel types<sup>65</sup> indicating that further work is still needed. To improve awareness about the Code a small information centre (named the Cardigan Bay Boat Place) aimed at raising awareness amongst tourists and boat owners about

<sup>65</sup> Pierpoint C. & Allan, L. *Bottlenose dolphins & Boat Traffic on the Ceredigion Coast, West Wales 2004 & 2005*

Ceredigion's marine wildlife and Recreational Boat User's Code of Conduct was opened in 2006 on New Quay Pier (for info about the Code and the centre see:  
[http://www.cardiganbaysac.org.uk/english/events\\_CoC.htm](http://www.cardiganbaysac.org.uk/english/events_CoC.htm) ;  
[http://www.cardiganbaysac.org.uk/english/events\\_boatplace.htm](http://www.cardiganbaysac.org.uk/english/events_boatplace.htm) )

Whilst further research is clearly needed, it is considered necessary to adopt a precautionary approach to management. Within Ceredigion this is being tackled through the development of the Recreational Boating Scheme. Through this project it is intended that, following consultation, Ceredigion's coastal waters will be zoned in order to minimise user-user conflicts and user-wildlife conflicts. An additional post will be created primarily to raise awareness amongst users, but also enhance enforcement of the Marine Conservation Code of Conduct and local bylaws by having a boat based water ranger.

#### **4.2.9.3.3 Issue Rationale**

It is accepted that recreational use of these coastal waters will continue, and is likely to increase in the coming years. It is also clear that there is the potential for recreational vessels to have a significant impact on the dolphins and seals and an impact may currently be present of which we are unaware. Impacts on the other features are also likely although the extent is currently unknown. It will therefore be necessary for organisations to work cooperatively to ensure that recreational activities are non-damaging and consistent with the aims of the SAC. Education will continue to be an important management tool for achieving this objective. There should be an aim to ensure that all visitors, including boat users, are aware of the existence and purposes of the SAC. It was recognised at the formative stages of the development of this plan that this could be achieved, in part, by providing interpretation and education facilities for local people and visitors that will generate interest, appreciation and a commitment to conserve the SAC and the SAC features.

Vessel activity on the sea increases levels of noise within the water column. This may disrupt the ability of marine mammals to communicate, navigate and hunt prey. Boat activity close to dolphins and seals may result in an avoidance response where the animals cease their current activity and move away from the vessel. If disturbance is persistent this can affect the animal's energy budget and in the long term result in reduced health and/or displacement. An increase in boat activity and/or reckless speeding may result in inadvertent collision with dolphins and seals.

Intensive and irregular boat activity, through disruption of normal marine mammal activity, may deleteriously affect the animals' energy budget resulting in reduced survivorship and reproductive success (See 'Disturbance' and 'Collisions').

Further, vessel activity may impact habitat features and their communities through associated trampling (see **section 4.2.9.6** on Pedestrian and vehicular use of the foreshore), through physical damage from anchoring and mooring, through pollution, and through development and maintenance of infrastructure.

#### **4.2.9.3.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.9.3.5 Action Needed**

See sections: 6.9.3 a-n

## 4.2.9.4 Commercial boat trip operators

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.9.4.1 Description

Commercial tour boats operate in close vicinity to the dolphins and seals. This can have an impact on marine mammals in a number of ways: through noise pollution, disturbance & harassment, collision, chemical pollution and pathogen transfer. Participation in tour boat cruises may also generate a public attitude that disturbance caused by boats is acceptable. Further, the introduction of mooring chains may lead to localised scour of seabed communities. On the other hand the use of tour boats as a mechanism for increasing understanding and awareness of the features of the site and their requirements is a benefit. Adherence to, and explanation of, good practice by the boat operators can engender a more responsible public attitude to recreational boating.

### 4.2.9.4.2 Current Management

Currently there are five passenger pleasure boats operating within the SAC between Easter and October. Two passenger pleasure boats, 'Ermol V' and 'Ermol VI' have been operating out of New Quay since the 1970's and offer regular, daily one hour and two hour trips to Cwmttydu and Ynys Lochty. The 'Sulaire', owned by the manager of Cardigan Bay Marine Wildlife Centre, has also been operating for a number of years and offers longer trips around Cardigan Bay and caters for smaller groups who have a particular interest in various aspects of marine wildlife. Further a the "Humber" a blue RIB and "Dunbar Castle" offer fishing trips out of New Quay, and another red RIB, the Bay Explorer offers trips out from Gwbert and Aberporth. No regular commercial pleasure boat trips into or adjacent to the SAC from outside its boundary are known to occur.

In 1997, the commercial passenger boat operators agreed a Code of Conduct (see **Appendix 8**) for their operations. Some of the operators also participated in Cyngor Sir Ceredigion's survey and monitoring programme and this data was used to guide the Code's annual review. Results of the Cyngor Sir Ceredigion's twelve year study have revealed that separation distances for encounters between passenger boats and dolphins increased during the study period and were significantly greater after the introduction of the boat operator's code than before, with a 98% compliance with the code in 2004 & 2005<sup>66</sup>. A conclusion from this study has been that the successful adoption of a code of conduct appears to have reduced the likelihood that passenger boats will displace or otherwise adversely affect the behaviour of bottlenose dolphins.

Since 2007 the Wise Scheme, a nationwide accreditation is being promoted in Wales and with the financial support of CCW Wise courses have been available to skippers free of charge.

### 4.2.9.4.3 Issue Rationale

Despite the potential for commercial tour boat operations to significantly affect the dolphins and seals, it is clear that current voluntary mechanisms, such as the adoption of a boat operators' code of conduct, are at least partially counteracting this. In addition, most commercial trip operators currently provide some form of interpretative narration explaining marine mammals' requirements and the presence of the code of conduct.

<sup>66</sup> The report can be downloaded from publications section of the Cardigan bay SAC website at <http://www.cardiganbaysac.org.uk/english/publications.shtml>.

Whilst all wildlife tour boat operators currently known to be working in the Bay have signed up voluntarily to the boat operators' code of conduct (CoC), occasional transgressions of the code do occur. At present adherence to the voluntary code cannot be enforced, instead, abuses of the CoC have been addressed by the Harbourmaster and the Conservation Management Officer issuing verbal warnings as a deterrent. Ceredigion County Council can also withdraw launching facilities and moorings to persistent offenders. Where it works, a voluntary approach is the best solution. On a world wide basis however there has been a general shift towards the use of stronger financial deterrents either by the use of an effective accreditation scheme or, more commonly, the use of statutory measures such as fines or the removal of a licence.

The level of impact on the marine wildlife from commercial trip boats is primarily related to the numbers of boat trips. One means of regulating the number of boat trips is by limiting the number of boats operating. At present, however, there is no single effective means of limiting the number of commercially operating boats.

To provide a means of discouraging code of conduct defaulters a legal requirement to adhere to it is required. This should, ideally, be through the issuing of a revocable operating licence with clearly stated conditions under which the licence would be revoked and for how long. In addition, there is a need to fix an operational limit on the number of commercial trips in the bay. This could be achieved through limiting the number of operating licences. Both of these potential solutions require a review of current licensing arrangements.

It will continue to be important for the successes of the current regime to be maintained. This should include a regular review of the code of conduct; continued encouragement and support in the provision of interpretative information during boat trips; zoning of operations; and provision of training to commercial boat operators to facilitate their inclusion in dolphin monitoring and surveillance schemes.

The Port Waste Management Plan (1999) established good waste management practice including the use of waste control measures on commercial trip boats and appropriate disposal services for refuse and oil waste at the harbour side.

#### **4.2.9.4.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.9.4.5 Action Needed**

See section: 6.9.4 a-g

## 4.2.9.5 Angling

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### **Recreational Sea Angling content:**

- 4.2.9.5.1 Shore Angling
- 4.2.9.5.2 Boat angling
- 4.2.9.5.3 Bait collection (personal use)

### **4.2.9.5.1 Shore Angling**

#### **4.2.9.5.1.1 Description**

Sea Angling from the shore is a very popular and widespread hobby. Within the SAC it is very seasonal with the majority of the activity carried out in the summer. Main species caught are bass, plaice, dogfish, wrasse, mackerel, rays, dabs, whiting and flounder. There are very few major shore based fishing competitions held in the SAC, there are a couple of club matches occurring but the activity is mainly carried out by anglers who fish as a hobby.

#### **4.2.9.5.1.2 Current Management**

There is presently very little or no restriction on recreational sea angling from the shore. The activity is carried out under a public right to fish which dates to the Digest of Justinian, a Byzantine legal codification, in the sixth century AD. A rod licence is required to fish for Salmonids and the EA also have byelaws covering the catching of them. There are a number of voluntary codes of conduct covering all aspects sea angling.

#### **4.2.9.5.1.3 Issue Rationale**

Potential effects include depletion of target species, and species caught as a bycatch, impacts of lost or discarded tackle on habitats and species and disturbance to habitats through access and trampling.

#### **4.2.9.5.1.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.9.5.1.5 Action Needed**

See section: 6.9.5 a-m

### **4.2.9.5.2 Boat Angling**

#### **4.2.9.5.2.1 Description**

Recreational boat angling occurs mainly in the summer from privately owned day boats to larger charter boats. Aberaeron, New Quay and Cardigan are the main launch sites for boat-based anglers using the SAC. Angling also takes place from Aberystwyth. The main species targeted are similar to the species targeted by shore anglers but also include seasonal species like Black bream and tope, which are mainly caught further offshore. Privately owned craft can be day boats that are towed and launched each time or boats that are kept within a harbour on a mooring.

#### **4.2.9.5.2.2 Current Management**

The only regulations for this activity are EU legislation on fish species and SFC byelaws on minimum landing sizes for certain species.

#### **4.2.9.5.2.3 Issue Rationale**

Potential effects include the depletion of target species, disturbance to cetaceans and birds, by-catch, direct or indirect impact from fishing tackle (lost discarded or 'snagged' tackle). There could also be damage to the seabed habitat and species from anchoring when fishing (covered under boating).

#### **4.2.9.5.2.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.9.5.2.5 Action Needed**

See section: 6.9.5 a-m

### **4.2.9.5.3 Bait collection (personal use)**

#### **4.2.9.5.3.1 Description**

The collection of sea angling bait within the SAC is mainly the gathering of *Arenicola marina* (blow lug); 'peeler' crab is also collected under seaweed and on rockier grounds. Mackerel are caught for bait on artificial lures and jigs mainly during the summer. There are small amounts of shellfish gathered for bait at certain times of the year.

#### **4.2.9.5.3.2 Current Management**

There is currently no legislation that covers commercial bait collection other than a minimum landing size for shellfish and fish species such as mackerel. Byelaws can be used to restrict the areas used for bait collection, but are currently not used within the SAC.

#### **4.2.9.5.3.3 Issue Rationale**

Bait collection for personal use can have a significant direct or indirect affect on certain habitats such as digging for ragworm in muddy gravels or boulder turning for 'peeler' crabs. This can either be by the depletion of target species or by the damage done to the non-target species through trampling or rock turning. The current level of commercial bait collection undertaken in the SAC is unlikely to cause a significant effect to the features of the SAC.

#### **4.2.9.5.3.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.9.5.3.5 Action Needed**

See section: 6.9.5 a-m

## 4.2.9.6 Pedestrian, equestrian and vehicular use of the foreshore

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity		✓	✓	✓		✓	

### 4.2.9.6.1 Description

There are numerous access points around the coast of the SAC both for walkers and riders and for launching boats and other craft. Although exact numbers of vessels being launched from unregulated access points is unknown, it is thought to be increasing, with 4WDs now commonly being used to launch across beaches. This occurs at Gilfac-yr-Halen, Llangrannog, Penbryn, Aberporth and Poppit Sands. Further, horse riding is known to occur at Poppit Sands, Llanina Point (New Quay) and Aberporth.

### 4.2.9.6.2 Current Management

Both Ceredigion and Pembrokeshire County Councils lease the majority of the foreshore areas within the SAC. A condition of this lease is that persons wishing to launch vessels or use any vehicles at unmanaged sites require the express permission of the respective Council.

It is accepted that recreational use of the coastal foreshore will continue, and is likely to increase in the coming years. It is also clear that there is the potential for recreational activities to have an impact on seals and intertidal habitat features. This has already been the case at Cwmtedu, where the use of the beach by pupping seals has created much public interest. It is therefore necessary for organisations to work cooperatively to ensure that recreational activities are non-damaging and consistent with the aims of the SAC. As for all recreational activities, raising users' awareness of the possible impacts their activities may have on features of the site is seen as an important management tool for achieving this objective. (See **section 4.2.9.3** on recreational boating)

### 4.2.9.6.3 Issue Rationale

Grey seals use some foreshore areas to breed and haul-out to rest. These animals may be unintentionally or intentionally disturbed by people or their dogs approaching or interacting with them. This may result in similar impacts as outlined in **section 4.2.9.2** (swimming, snorkelling & diving).

Trampling by large numbers of people and/or horses, visiting specific locations or the launching of craft from informal access points may result in compaction and erosion of features and possible damage to certain species in the intertidal area. Studies<sup>67</sup> have shown that repeated trampling of animals and plants on a rocky shore can damage them. Within the SAC, some species e.g. the honeycomb worm *Sabellaria alveolata* are particularly sensitive to the effects of trampling<sup>68</sup>.

### 4.2.9.6.4 Type of Response

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence to determine whether or not it is having a significant adverse effect.

### 4.2.9.6.5 Action Needed

See sections: 6.9.6.1a and 6.9.6.2 a

<sup>67</sup> Hill et al, 1998

<sup>68</sup> Holt et al, 1998

## 4.2.10 Commercial filming and photography

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓					

### 4.2.10.1 Description

SAC status has already attracted increased media attention on the site, and future proposals for filming and photography of the dolphins and marine environment as a whole are likely.

### 4.2.10.2 Current Management

The means of regulation of this type of activity are uncertain and open to differing legal interpretation. Commercial filming and photography of marine wildlife, either in or outside SACs, is not regulated or managed under specific legislation. However, under Regulation 39 of the 1994 Conservation Regulations (as amended), it is an offence “deliberately or recklessly disturb” a European protected species (which includes bottlenose dolphins). It is open to legal question whether many filming or photography activities would constitute disturbance of the Cardigan Bay SAC dolphins or seals, and therefore whether a court would consider these activities to be proscribed. Clearly much would depend on the specific nature of the activities undertaken. Under Regulation 44 of the Conservation Regulations, licences may be granted (by CCW) for various purposes, including “scientific or educational purposes”, where CCW is satisfied that the action thus authorised will not be detrimental to the features of the SAC. A licensing protocol has been developed by CCW (July 2006) to minimise disturbance to marine mammals during filming and photography. It is not known whether filming and photography could be said to constitute scientific or educational purposes, but arguably by being for “commercial” purposes, they could not be considered scientific or educational. Responsibility for enforcing this legislation lies largely with the police and criminal courts. For obvious reasons - the ambiguity in the legislation, and the fact that these activities occur at sea - enforcement of this legislation would be very difficult.

While certain types of damaging activity are prohibited (unless a licence is obtained from CCW), there are many types of photography, filming or research that are essentially unregulated.

### 4.2.10.3 Issue Rationale

Direct and indirect effects of filming & photography can have both positive and negative effects on the features. Increased media coverage, publicity and interpretative literature of a responsible nature will raise public awareness of the features of the site and promote appropriate behaviour. This may result in reduced impacts from recreational activities, increased voluntary initiatives and increased levels of finance for site management. However, increased awareness may also result in an increase in recreational activities, especially in areas of known activity and an increased demand for commercial ‘dolphin watching’ boat trips. Most filming and photography requires use of boats to gain close access to marine mammals. This can increase levels of noise and harassment (see ‘Disturbance’). The key issues when filming dolphins or seals are the intensity and duration of interaction and the exact manner in which each interaction is conducted. These characteristics need to be carefully managed to ensure maximum benefit with minimal impact on the animals. Use of boats close to dolphins and seals may result in collision with the animals resulting injury or death (see ‘Collisions’).

A potential means of monitoring and managing these activities is to initiate and maintain an advisory and approvals system under which all persons wishing to undertake research, boat based photography or filming to seek the advice of CCW on whether a licence is required, and whether a licence can indeed be issued and under what conditions the activity should be carried out. This would provide a means of:

- where possible and appropriate, CCW issuing a licence and attaching conditions to it;
- where a licence cannot be issued, CCW advising on the conditions which should be adhered to if the activity is to be pursued;
- where appropriate, CCW advising against carrying out the activity
- monitoring the levels of such activities, and modifying the advice given if required.

A list of applicants and a summary of their work could be maintained and made available on request (subject to confidentiality requirements) to improve cooperation between projects and reduce duplication of effort.

The above approach would benefit from the development of an agreed Code of Practice, for example developed jointly by CCW and independent wildlife specialists, which can provide the basis for both licence conditions and project-specific guidance.

This advisory and approvals system could cover both commercial filming and research activities.

It is important that any public material about the features of the site provides information which engenders a responsible public attitude towards them. The benefits of increased awareness through use of film and photographic media could be overbalanced by detrimental pressures if public information merely increases interest and encourages exploitation.

#### **4.2.10.4 Type of response**

**F4** : There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.10.5 Action Needed**

See sections: 6.10 a-b

## 4.2.11 Marine research and surveillance

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity	✓	✓			✓	✓	

### 4.2.11.1 Description

The last two decades have seen an increased interest in marine mammal research within Cardigan Bay, particularly bottlenose dolphins. The research has taken a variety of forms, including acoustic studies, visual observations and photography, both on land and at sea. As a result of the SAC designation, research and monitoring is likely to continue for the SAC features and also to monitor changes such as the effects of climate change on species composition and distribution. The effects of disturbance to marine mammals from human activities such as recreational boating will also need continued monitoring as coastal tourism and wildlife watching trips may be promoted as part of Cardigan Bay's coastal regeneration strategy.

### 4.2.11.2 Current Management

Since the introduction of the CRoW Act, 2000 it is an offence to 'recklessly' or 'intentionally' disturb cetaceans in UK waters. Licences can be issued to approach and hence 'intentionally' disturb cetaceans for photo-identification only when it can be shown that the aims are to serve clear scientific purposes as specified under S16 (a) of the Wildlife and Countryside Act. Most often the anticipated results will provide supporting evidence for the conservation management of the species. The studies will be conducted by researchers and integrated wherever possible into existing research programmes and data archives. The anticipated benefits of the research in terms of quality and certainty of benefit need to outweigh the level of disturbance to the animals. A licensing protocol has been developed by CCW (July 2006) to minimise disturbance to marine mammals during research photography. CCW's licensing policy states that CCW must be satisfied that any risk associated with the long term nature conservation of the species affected by the licensed activity is outweighed by the benefits gained from the outcome of the proposed project. Following an agreed marine code of practice will also minimize disturbance to marine mammals.

### 4.2.11.3 Issue Rationale

Although it is not easy to determine what constitutes 'disturbance' to marine mammals, there is the potential for changes in behaviour as a possible result of research and monitoring activities. The degree of this change is likely to be determined by the level of human activity

### 4.2.11.4 Type of Response

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

### 4.2.11.5 Action Needed

See sections: 6.11 a-b

## 4.2.12 Military activities

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.12.1 Description

The Aberporth Range has been active on behalf of the Ministry of Defence (MoD) for 60 years. QinetiQ currently operate the Range on behalf of the MoD, but MoD must provide authorisation for all activities on site. QinetiQ aim to maintain the Range as a safe testing area for the MoD and other customers, and provide a variety of navigation, tracking and data processing facilities. This may include surface to air, air to surface, air to air and sea to sea guided weapon system firing trials. Trials may involve the use of ships, aircraft, and target structures out at sea. The Jindivik air target operations have been replaced (2004) by the Mirach 100/5 unmanned air vehicle target. Following a trial, all peripheral equipment will be recovered from the sea using a helicopter and Ridged Hull Inflatable Boat (RHIB) craft. The QinetiQ Aberporth testing range extends beyond the limits of the SAC. Most major testing of live ordnance is believed to occur some distance offshore, beyond the north western edge of the SAC.

### 4.2.12.2 Current Management

Trials managed by QinetiQ at MoD Aberporth are carried out on a regular basis but are not continuous. Inert ordnance is predominately utilized, however live ordnance may be used if an inert equivalent is not available or the trial specifically requires it. All operators carrying out trials at the Aberporth Range are required to abide by the procedures outlined in the Aberporth Range Standing Orders (RSOs). The RSOs include procedures to be observed in order to minimize risk to marine mammals. Where relevant, future revisions of the RSOs will be updated in consultation with CCW.

### 4.2.12.3 Issue Rationale

Explosions in the sea or adjacent to its surface may result in injury or death to marine mammals in the near vicinity. Objects 'falling from the sky' may cause injury. Disturbance may result from sudden bursts of underwater noise and the use of helicopters and RHIB when testing materials are recovered. Tests involving the use of active sonar may result in local disruption of marine mammal communication, navigation and feeding. There is also a risk of entanglement and ingestion of foreign objects in the sea resulting from military activity. The presence of toxic materials and their leakage from munitions or targets used in the Cardigan Bay sea area may result (or have resulted) in increased contamination of marine life. Bottlenose dolphins and seals are particularly at risk from any bio-accumulating substances present. There are targets anchored or moored to the seabed within the SAC. Anchoring and moorings may cause physical damage to certain marine communities depending on the location and communities present. The scour caused by mooring chains may disturb sediment communities within a localised area.

### 4.2.12.4 Type of Response

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

### 4.2.12.5 Action Needed

See sections: 6.12 a-c

## 4.2.13 Ports, Harbours, Shipping and Boating

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.13.1 Description

This section addresses the implications of commercial shipping as well as general boating and the maintenance of ports and harbours within and adjacent to the SAC. Fishing, recreational boating and military vessel movement as well as works associated with the maintenance of navigation (such as dredging) are further addressed in other sections of the plan (See **sections 4.2.17, 4.2.9.3, 4.2.9.4, 4.2.12 and 4.2.4**).

The site is used little by commercial vessels (other than fisheries and wildlife trip boats).

There are no major ports within the SAC. There are small harbours at New Quay and Aberaeron mainly used by fishing vessels and recreational craft, which are too small and shallow to be used by most commercial shipping. Larger vessels transiting the area would not generally enter Cardigan Bay itself, and their route would generally keep them well outside the SAC boundary.

The Irish Sea is an important route for commercial vessels. The number or types of vessels is unknown, but the Irish Sea to the west of Cardigan Bay is certainly heavily used by commercial shipping leaving or bound for ports in the Bristol Channel and Milford Haven, Liverpool Bay, east coast of Ireland, and further afield. Most, if not all of the larger vessels passing Cardigan Bay keep well west of Cardigan Bay itself (i.e. a line drawn between the Smalls and Holyhead), as there are no large ports or anchorages in the Bay and to enter it while transiting simply increases journey times.

The major exceptions to the above are the vessels using the port of Fishguard - the only major harbour in the area capable of taking large commercial vessels. There are around 8 ferry movements per day in/out of Fishguard, with most of the vessels rounding Strumble Head and sailing in an east-west direction between there and Rosslare. About half of all ferry movements are now high speed vessels. Other small harbours in Cardigan Bay but outside the SAC boundary include Aberystwyth, Aberdyfi, Barmouth, Porthmadog and Pwllheli. As with the harbours inside the SAC, these are all used mainly or entirely by fishing and recreational craft.

### 4.2.13.2 Current Management

Shipping in UK waters is regulated by a complex series of regulations contained in UK statutes and statutory instruments, and especially international conventions. It is not possible to summarise here even those that are relevant to environmental protection, since many of the regulations concerning safety of vessels and crews are relevant to the environmental impacts, and potential impacts of shipping. Of particular relevance are the international Conventions on Safety of Life at Sea (SOLAS), Preventing Collisions (COLREG) and prevention of pollution from ships (MARPOL). In the UK, statutory instruments, such as the Merchant Shipping Regulations, give effect to these international conventions. In practice, most routine or deliberate discharge of oil and litter from ships is prohibited in coastal waters (see **section 4.2.18** on litter).

The deliberate discharge of polluting substances from vessels is governed by a range of legislation at a national and international level. Most significant discharges would be illegal, and therefore very difficult or impossible to subject to any kind of systematic surveillance. However, pollution incidents in the SAC should be identified on an opportunistic basis, such as through

reporting by boat operators or the general public. Whilst pollution incidents within three nautical miles of the coast should be reported to EAW and incidents further out to the Coastguard, it appears that awareness of this, and an enthusiasm to report incidents, is lacking.

#### **4.2.13.3 Issue Rationale**

Shipping activities can affect the features of the site in the following ways: through noise & collision (this applies to bottlenose dolphins and grey seals), through pollution (including contamination by toxic antifoulant), through shipping accidents, through physical impacts such as use of anchors in emergency events or cargo loss from ships, and through invasion by non-native species within ballast water.

The very low level of commercial shipping in the SAC and its immediate vicinity suggest that it is presently not likely to be a significant factor affecting the features of the site, through any of the mechanisms identified above. In relation to ship-source pollution, whilst unacceptable, the small size of most routine discharges relative to the size of the receiving environment means that they are unlikely to pose a serious threat in their own right but will act cumulatively with other similar impacts. However, shipping-related effects might become of concern if there were a significant increase in vessel operations or vessel-source pollution in the area, so some form of surveillance is required

It is not possible at present to undertake any systematic surveillance of commercial vessel activity, either within the site or in adjacent areas of the Irish Sea. However, it is worth noting in this context that among the recommendations of the Donaldson report “Safer Ships, Cleaner Seas” is that vessels, particularly those carrying potentially hazardous cargoes, should be monitored while in UK waters. There are also initiatives at a European and international level to improve the quality of data on vessel movements around the coast, for vessel safety and environmental protection purposes. This may take place through reporting by vessels to the Coastguard, automated vessel identification or even radar surveillance of busy shipping lanes. In due course therefore, data on vessel operations in and near Cardigan Bay may improve.

In the meantime, it is likely that any significant increases in vessel activity in the immediate area would almost certainly be associated with other operations, for example the development of offshore energy structures, oil/gas platforms or coastal developments requiring the carriage of material by sea. Any such developments may constitute Plans and Projects (PP) and be subject to the Appropriate Assessment (AA) provisions of the 1994 Habitats Regulations, and probably require an Environmental Impact Assessment (EIA) under the EIA Regulations. Competent Authorities (CAs) should therefore ensure that the potential impacts of associated vessel traffic would be addressed in such assessments.

#### **4.2.13.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.13.5 Action Needed**

See sections: 6.13 a-e, 6.13.1a, 6.13.2a-b, 6.13.3a-b, 6.13.4a

## 4.2.14 Offshore oil and gas exploration and exploitation

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.14.1 Description

There are currently no oil and gas exploitation structures within Cardigan Bay, the nearest being in Milford Haven. One block within the SAC was licensed for oil and gas exploration by the DTI resulting in a number of wells being drilled in the Bay in the late 70s, mid 80s and early 90s and seismic surveys being carried out by ARCO in the early 1990 (see <http://www.ukdeal.co.uk/gis/DEAL> for detail) but companies holding oil exploration licences have since surrendered these to the DTI.

However it is thought that Bay may hold some gas reserves that could be exploited in the future. During the 24<sup>th</sup> Licensing Round in 2006 two companies made a joint application for a licence in blocks 107/21, 107/22 and 106/30 of the SEA 6 (see the BERR website at <http://www.offshore-sea.org.uk/site/index.php> for updated details).

### 4.2.14.2 Current Management

Licences for Oil and gas exploration are issued by the Department for Business Enterprise and Regulatory Reform (BERR), formerly DTI. The procedure is carried out in two phases: The issuing of a Strategic Environmental Assessment (SEA) under the (Environmental Assessment Directive 2001/42/EC) and the carrying out of an Appropriate Assessment (as outlined in the Habitats Directive (92/43/EEC)). If a licence is issued this gives the licensee exclusive rights to a block and associated data. The licensee can then evaluate whether to proceed with a proposal which will be evaluated by BERR in accordance with the Plans & Projects procedures of the Habitats Directive.

### 4.2.14.3 Issue Rationale

The aspects of offshore oil and gas exploration, which can have a negative impact on the Cardigan Bay SAC features range from seismic surveys of the seabed, construction operations, shipping movements, drilling and exploitation to pollution incidents. The bottlenose dolphins and seals that use the SAC are highly mobile, and (probably) range throughout the Cardigan Bay/southern Irish Sea areas. Oil and gas exploration & exploitation together with associated activities, e.g. shipping could have a significant influence on those animals using the SAC, even though these activities are/would be taking place outside the SAC. Dolphins and seals are potentially "at risk" from disturbance caused by noise (seismic shooting in particular, but also noise caused by shipping and drilling) and from oil and other forms of pollution. Increases in shipping movements may also put individual animals at risk from collisions. All features of the site may be affected by oil and other forms of pollution.

Oil and gas exploration (and any subsequent exploitation) in waters adjacent to the SAC could give rise to concern: risks of disturbance, direct effects on individual animals from pollution, collisions etc. and degradation of the site's habitats could become significant. Future licensing rounds and seismic surveys proposals should be monitored, and Competent Authorities (CAs) should ensure that all potential impacts on the features within the SAC are properly addressed in EIAs and via the Appropriate Assessment provisions in the 1994 Habitats Regulations. Competent Authorities (CAs) should also satisfy themselves that oil spill and other emergency contingency plans adequately address the sensitivity of the SAC and the requirement to protect the habitat as well as the feature of European importance. Surveillance and/or monitoring of the influences of this factor can only be carried out on a reactive basis, i.e. when exploratory or

exploitative activities are notified/planned and then carried out. General surveillance of marine mammal activity, numbers and distribution within and adjacent to the SAC should be established. All data collected about the features of the site will help to provide the information required for impact assessment.

In December 2007, as part of the 24th Licensing Round Appropriate Assessment, BERR concluded that, in light of there being insufficient information about the bottlenose dolphin populations that inhabit Cardigan Bay, there is no certainty that the plan would not adversely affect the integrity of the Cardigan Bay SAC.' The Blocks within Cardigan Bay which were offered as part of the 24th Licensing Round and are the subject of an ongoing public consultation on the Appropriate Assessment have also been excluded from the 25th Licensing Round.

#### **4.2.14.4      Type of response**

**F1:** The activity constitutes a Plan or Project (PP).

#### **4.2.14.5      Action Needed**

See sections: 6.14a

## 4.2.15 Marine pollution incidents (from land & at sea)

	Tt	Hg	Pm	Lf	SC	Rf	SB
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.15.1 Description

Pollution incidents from land vary widely but can be divided into water, waste and air pollution incidents. Water pollution incidents range from run-off from point sources (chemical spills, sewage overflows, run-off from fire sites) to diffuse pollution (e.g. agricultural run-off, sheep dip problems or related to quarry/mining activities). Sources of water pollution incidents include agricultural and industrial premises (see **sections 4.2.8** on water quality). Waste pollution may involve fly-tipping incidents, hazardous waste issues, regulated waste premises including landfills, scrap yard, skip firms or waste treatment processes. Air pollution may include incidents from oil refineries or fires. Within Cardigan Bay incidents are most likely to involve agricultural run-off from point sources or diffuse pollution (e.g. slurry run-off to sheep dip problems) and sewerage issues such as sewage pipeline bursts and pumping station overflows. Pollution Incidents are classified by the Environment Agency for Wales (EAW) according to the Common Incident Classification Scheme (CICS) which consists of a two tier system. The first tier measures the Agency's physical response in dealing with the incident whilst the second tier describes the actual impact the incident has on the environment.

The origin of pollution incidents at sea can range from cargo losses to accidents during military operations and during construction and operation of offshore energy structures.

### 4.2.15.2 Current Management

The Environment Agency for Wales (EAW) has the power under the Environment Act 1995 to investigate and remediate pollution incidents and whenever possible to carry out appropriate enforcement action. It is responsible for regulating pollution incidents within controlled waters from either land-based sources or from the marine environment (territorial waters up to 3nm seaward of the territorial baseline). For incidents at sea the lead agency will be the Maritime Coastguard Agency (MCA) and the EAW will only be involved if pollution occurs. The EAW key priorities are to mitigate the impact on the environment, people and property (i.e. stop, contain, control, warn); investigate the cause of the pollution, collect evidence and consider enforcement action; seek remediation, clean up or restoration of the environment.

In response to a marine pollution incident the EA will: Liaise with other incident responders to ensure its actions are undertaken in a co-ordinated manner; Provide appropriate representatives to response units established under the National Contingency Plan and/or other command and control centres established; Provide advice on environmental sensitivity, impact of the incident and action required to mitigate (e.g. booming) or remediate the impact; Regulate any waste management activities arising and provide advice on disposal options.

The Environmental Health Department of Ceredigion County Council is the lead authority for issues relating to public health. Other regulatory bodies contribute to specific contingency plans.

### 4.2.15.3 Issue Rationale:

Potential effects include toxic contamination, physical disturbance, and loss/ modification of habitats and species.

#### **4.2.15.4 Type of response**

**F7:** There is evidence to suggest that an activity is having a significant adverse effect and the mechanism is known.

#### **4.2.15.5 Action Needed**

See section: 6.15a (as well as actions related to water quality in section 6.8.1)

## 4.2.16 Underwater recovery operations

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓			✓	✓	✓

### 4.2.16.1 Description

This section addresses potential impacts from underwater recovery operations including both archaeological and commercial salvage. It should be noted that whilst they have been grouped together here there can be significant differences between the two types of operation. Marine archaeology and salvage from wrecks has taken place in the past within and adjacent to the Cardigan Bay SAC. Levels have generally been very low and no known projects are currently in progress.

### 4.2.16.2 Current Management

Whilst there is some degree of regulation of both archaeological sites (e.g. ancient wrecks) and salvage operations e.g. recovery of a sunk or stranded vessel, the main management issue is the potential use of explosives. Codes of conduct do not approve the use of explosives in archaeological studies, and for large scale salvage operations where they may be required there are strict licensing procedures for their use. However, licensing of explosives is regulated by the Police<sup>69</sup> and relates to possession and use simultaneously. This effectively means that someone licensed to possess explosives in York by the local Police force may then use them off the Cardigan Bay coast without requiring any further consent. As a result there is currently no effective means of regulating the use of explosives. Changes to the legislation regarding the control of explosives are clearly required.

### 4.2.16.3 Issue Rationale

Underwater operations (in particular use of tools) and associated boat traffic may cause localised disturbance to bottlenose dolphins and grey seals and will increase underwater noise levels. Use of explosives may in addition result in direct injury or death to marine mammals in the locality. Disturbance to or removal of substrate during salvage or archaeological operations is likely to result in direct disturbance to habitat structure and their communities, and may indirectly cause localised smothering of adjacent sea bed communities and possible remobilisation of pollutants bound within the sediments. The use of explosives may cause short term disturbance to vertebrate species, and may cause damage to benthic communities and habitat structure. At coastal sites, there may also be an adverse impact from trampling in the intertidal area.

Underwater marine archaeological or salvage work will usually also result in increased small boat traffic to and from the site. Larger vessels may be required for some salvage operations such as the recovery of cargo or the vessel itself. Both of these and any associated underwater operations are likely to result in an increase in underwater noise. Commercial salvage will by its nature generate far more disturbance than scientific archaeological studies. There is also the potential for pollution events to occur either from a vessel under salvage or through increased shipping movements. Current levels of disturbance are minimal (and expected to remain so) as very little archaeological or salvage work takes place. Most normal impacts are likely to be insignificant as far as the dolphins and seals are concerned. However, the use of explosives,

<sup>69</sup> Under The Control of Explosives Act (1991)

whilst very infrequent, has the potential to result in a significant direct impact, the extent of which will vary according to the sensitivity of communities and the nature of the seabed.

Whilst levels of this activity are unlikely to reach significant levels there is the potential for individual operations in sensitive areas to be a problem. Surveillance of the current levels of the activity through liaison with archaeological societies and diving clubs should therefore be conducted.

#### **4.2.16.4      Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.16.5      Action Needed**

See section: 6.16 a-b

## 4.2.17 Fishing

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

It should be noted that the information given in relation to the current management of commercial fisheries and recreational sea angling (incl. bait collection) could possibly change in the near future due to the forthcoming Marine Bill and a possible change in the way fisheries are managed in Wales. A consultation by the Welsh Assembly Government on the future of fisheries management in Wales did not happen in 2007 and should take place in 2008.

### Commercial Fisheries section content:

- 4.2.17.1 Dredging
- 4.2.17.2 Trawling
- 4.2.17.3 Potting
- 4.2.17.4 Netting
- 4.2.17.5 Commercial rod & line fishing
- 4.2.17.6 Commercial bait collection
- 4.2.17.7 Aquaculture
- 4.2.17.8 Hand gathering of Shellfish
- 4.2.17.9 Collection of seaweed

#### 4.2.17.1 Dredging

##### 4.2.17.1.1 Scallop Dredging

##### 4.2.17.1.1.1 Description

Scallop dredging within the SAC has taken place mainly in an area off Cardigan between 6-12 miles. This activity has occurred since the 1970s, when a number of boats from Pwllheli down to Fishguard took part in the fishery. Since its heyday in the 1970s the number of boats declined. Boats still operating in the area came mainly from North Wales and Scotland, although several local inshore boats carried out small scale scalloping to subsidise income in the winter months. From 2001, effort increased and then dropped again after a byelaw was introduced restricting vessel length in 2005/06. Scallop dredging in the Bay has seen a significant increase in 2007/8 and NWNWSFC now have 37 vessels authorised to fish within their District (0-6 miles). More vessels are coming up from the South West and there are now 17 local vessels with authorisations. There is some gear conflict with the potting industry.

##### 4.2.17.1.1.2 Current Management

The Scallop Fishing (Wales) Order 2005, prohibits fishing for King scallops (*Pecten maximus*) between 1st June to 31st October, sets a minimum size of 110mm and restricts the number of dredges and size of tow bars (0-12 miles). SFC byelaws prohibit scallop fishing in Cardigan Bay until 31st December, restrict the size of vessel and issue authorisations to dredge within their District (0-6 miles). There are areas closed to scallop dredging within SFC districts and NWNWSFC have recently (25<sup>th</sup> March 2008) closed the inshore area (1A) between Cardigan and Newquay, to protect SAC features. Authorised vessels within the NWNWSFC District are issued with maps and co-ordinates of closed or restricted areas but SFCs cannot limit the number of authorisations issued.

##### 4.2.17.1.1.3 Issue Rationale

Scallop dredging is considered to be one of the most destructive methods of fishing in the UK. Potential effects include physical disturbance to the seabed, damage to sensitive habitats and non-target species. There may be decreased species diversity in the fished area. Scallop

dredging has been banned in the Firth of Lorne SAC in Scotland. The potential damage that could be caused by 34 small vessels allowed in the inshore (0-3mile) area triggered the closure of area 1A by NWNWSFC.

#### **4.2.17.1.1.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.17.1.1.5 Action Needed**

See section: 6.17 a-l

### **4.2.17.1.2 Hydraulic Dredging**

#### **4.2.17.1.2.1 Description**

There is currently no hydraulic dredging occurring in the SAC. This would be of a concern if the activity were to occur in shallow, sheltered areas of the SAC.

#### **4.2.17.1.2.2 Current Management**

There are SFC byelaws that restrict vessel size within the 3nm limit.

#### **4.2.17.1.2.3 Issue Rationale**

Potential effects include physical disturbance to the seabed and to target and non-target species.

#### **4.2.17.1.2.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.17.1.2.5 Action Needed**

See section: 6.17 a-n

### **4.2.17.2 Trawling**

#### **4.2.17.2.1 Beam Trawling**

##### **4.2.17.2.1.1 Description**

Large foreign beam trawlers have fished in the SAC but mainly in the area between the 12nm and the outer limit of the SAC (which in some areas extends to 13nm), there are no large welsh beam trawlers currently operating within the SAC.

##### **4.2.17.2.1.2 Current Management**

There are SFC byelaws that restrict the size of vessels that can operate in the 0 – 6nm zone and the larger Belgian trawlers that operate in the Irish Sea cannot fish within the 0 – 12nm.

##### **4.2.17.2.1.3 Issue Rationale**

Potential effects include physical disturbance to the seabed and to target and non-target species.

##### **4.2.17.2.1.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

##### **4.2.17.2.1.5 Action Needed**

See section: 6.17 a-l

#### **4.2.17.2.2 Other demersal trawling**

##### **4.2.17.2.2.1 Description**

There are a small number of inshore fishing boats that occasionally fish using otter trawls from 0-12nm in the SAC. The trawls used are lightweight trawls that are used seasonally, targeting rays or to gather bait for potting. There may be occasionally larger non-local boats fishing between 6nm and the outer boundary of the SAC that will trawl mainly for rays at particular times of the year.

##### **4.2.17.2.2.2 Current Management**

There are SFC byelaws that restrict the size of any vessel and the gear used between 0-6nm. Trawling is also regulated by a range of EU and national measures on gear restrictions, fish quotas and minimum landing sizes.

##### **4.2.17.2.2.3 Issue Rationale**

Potential effects include physical disturbance to the seabed and to target and non-target species. Although the smaller lightweight trawls will not cause as much physical disturbance to the seabed.

##### **4.2.17.2.2.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

##### **4.2.17.2.2.5 Action Needed**

See section: 6.17 a-n

#### **4.2.17.3 Potting**

##### **4.2.17.3.1 Description**

Lobsters and brown crab are the traditional main target species for potting in the SAC, although in recent years there has been an increase in potting for whelks and prawns. There are also markets for spider and velvet crabs. Potting is possibly the most important fishery within the SAC economically. Potting for lobsters takes place mainly close inshore on rough ground, while the potting for brown crab and prawns could occur within the whole area of the SAC. The main concern for the pot fishermen is the possible loss of gear by the scallop dredging vessels.

##### **4.2.17.3.2 Current Management**

There is legislation that covers this fishery both at EU and National level, the SFCs have a number of byelaws that cover the pot fishery such as a minimum size, restrictions on the number of pots by 'hobby' fishermen and the protection of 'V- notched' lobsters.

##### **4.2.17.3.3 Issue Rationale**

The current level of potting undertaken in the SAC is unlikely to cause a significant affect on the features of the SAC.

##### **4.2.17.3.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

##### **4.2.17.3.5 Action Needed**

See section: 6.17 a-n

#### **4.2.17.4 Netting**

##### **4.2.17.4.1 Description**

The netting carried out in the SAC is mainly undertaken by small inshore day boats or beach set at low water. The fishing is very seasonal with drift or set gill nets for bass and mullet or tangle sets set mainly for rays or occasionally for spider crabs.

##### **4.2.17.4.2 Current Management**

There is legislation that covers this fishery both at EU and National level; the SFCs have a number of byelaws that cover the mesh size of the nets and how the nets are set. All set nets have to have the owner's name, vessel number or other identifying mark visible.

##### **4.2.17.4.3 Issue Rationale**

Set nets are known to entangle diving birds and cetaceans such as porpoises and dolphins. Lost or discarded nets, which can continue to 'ghost fish', could be of a concern to both the habitats and species in the SAC. Due to the exposure of the majority of the SAC it is unlikely that any lost or discarded nets would only continue to 'ghost fish' for a short period of time.

##### **4.2.17.4.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

##### **4.2.17.4.5 Action Needed**

See section: 6.17 a-n

#### **4.2.17.5 Commercial rod & line fishing**

##### **4.2.17.5.1 Description**

Commercial rod and line fishing is very seasonal; this form of fishing is usually targets mackerel and bass during the summer months. It is usually carried out to supplement income or to supply a local market.

##### **4.2.17.5.2 Current Management**

There is legislation that covers this fishery both at EU and National level; the SFCs have a number of byelaws that cover the size of the vessel used and the minimum landing sizes of the fish caught. There is currently no legislation for shore caught fish on rod and line.

##### **4.2.17.5.3 Issue Rationale**

Commercial rod and line fishing is not known to adversely affect the species or habitats of the SAC directly. It is possible that the removal of the targeted fish species might affect the food chain but further work is required to understand this.

##### **4.2.17.5.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

##### **4.2.17.5.5 Action Needed**

See section: 6.17 a-n

#### **4.2.17.6 Commercial bait collection**

##### **4.2.17.6.1 Description**

There is currently little or no commercial bait collection in the SAC, there may be occasional collections to supply a local shop with lugworm/crab or mackerel. This would be very seasonal.

##### **4.2.17.6.2 Current Management**

There is currently no legislation that covers commercial bait collection other than a minimum landing size for shellfish and fish species such as mackerel. Byelaws can be used to restrict the areas used for bait collection, but are currently not used within the SAC.

##### **4.2.17.6.3 Issue Rationale**

Commercial bait collection can have a significant affect on certain habitats such as digging for ragworm in muddy gravels or boulder turning for 'peeler' crabs. The current level of commercial bait collection undertaken in the SAC is unlikely to cause a significant affect to the features of the SAC.

##### **4.2.17.6.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

##### **4.2.17.6.5 Action Needed**

See section: 6.17 a-n

#### **4.2.17.7 Aquaculture (Finfish/shellfish farming)**

##### **4.2.17.7.1 Description**

There is currently no finfish or shellfish farming occurring in the SAC. The exposed coastline may restrict this activity within the SAC.

##### **4.2.17.7.2 Current Management**

Land based aquaculture systems will require planning permission and possibly an Environmental Impact Assessment, discharge consent will also be required. Sea based aquaculture would require the consent of the seabed or foreshore owner and possibly an Appropriate Assessment would be need to be carried out. 'Several Areas' may be established for cultivating shellfish under the Sea Fisheries (Shellfish) Act 1967.

##### **4.2.17.7.3 Issue Rationale**

The discharges from any finfish/shellfish farming could affect the SAC habitat adjacent to the farm through an increase in nutrient levels or alternation of local seabed habitats. There is also the possibility of introduction of alien species through certain farming methods.

##### **4.2.17.7.4 Type of Response**

**F1:** The activity constitutes a Plan or Project (PP).

##### **4.2.17.7.5 Action Needed**

See section: 6.17 a-n

#### **4.2.17.8 Hand gathering of Shellfish**

##### **4.2.17.8.1 Description**

Hand gathering of shellfish either for personnel consumption or commercially is very limited in the SAC. There are no cockle or mussel beds within the SAC that are targeted by commercial collectors; winkles are collected from suitable intertidal habitat within the SAC. Subtidally there may also be some hand gathering of shellfish such as lobsters and scallops for personnel use by divers.

##### **4.2.17.8.2 Current Management**

There are SFC bylaws covering the collection of some shellfish. There is also national legislation covering the water quality for the collection of shellfish for sale.

##### **4.2.17.8.3 Issue Rationale**

Trampling and the physical disturbance on the habitat are the main concerns. Access especially in relation to ATV's could cause damage to certain SAC habitats and species.

##### **4.2.17.8.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

##### **4.2.17.8.5 Action Needed**

See section: 6.17 a-n

#### **4.2.17.9 Collection of seaweed**

##### **4.2.17.9.1 Description**

Hand gathering of seaweed has occurred in the SAC but the intensity at present is minimal, mainly collected by individuals for use as fertiliser.

##### **4.2.17.9.2 Current Management**

There is currently no management of this activity, but can be restricted under LA byelaws.

##### **4.2.17.9.3 Issue Rationale**

Potential effects are loss of target species and degradation of habitats and loss of non-target species.

##### **4.2.17.9.4 Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

##### **4.2.17.9.5 Action Needed**

See section: 6.17 a-n

## 4.2.18 Litter

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.18.1 Description

Refuse and litter enters the marine environment from a variety of sources including; boats and shipping, down watercourses and drains, from beaches and blown off the land. Precise details on the distribution of litter within the SAC are not known. Litter on Welsh beaches averaged 2524.8 items per kilometre in 2006, a 40% increase compared to Welsh beaches in 2005 and the highest litter density recorded<sup>70</sup> in the UK in 2006. Beach visitors litter was the main source of litter on Welsh beaches with a density of 739 items/km. Fishing debris was the second most common source of litter with a density of 322.7 items/km, much higher than the UK average (223.2/km). Sewage Related Debris was the third biggest source of litter in Wales (131.4/km) and shipping litter was the fourth source, with a density of 41.5/km<sup>69</sup>. Trends from annual beach clean surveys show a rapid increase in the amount of litter on our beaches. Within the UK as a whole the MCS Beach-watch identified a 40% increase in number of items per kilometre between 1997 and 1998 and a near 99% increase between 1994 and 2003.

### 4.2.18.2 Current Management

Litter is an amenity issue on public beaches within the SAC. Those that have secured or are being put forward as Blue Flag or Green Coast Award beaches are cleaned to ensure that they attain the standards necessary to fulfil the requirement of the Award. In Ceredigion the Council (CCC) clean all amenity beaches (which include Blue Flag beaches as well as Aberaeron North, Llanrhystud, Clarach and Cei Bach) during the bathing season (may to September). In addition, Keep Wales Tidy (KWT) work towards setting up local groups (Coastcare groups) to keep all amenity beaches clean year round (see **Table 7** in **Appendix 6** for further information).

Marine litter can enter the site from a wide variety of sources and from some distance away. Whilst most types of littering at sea are offences under the Merchant Shipping Regulations, (the UK's transposition of Annex V of MARPOL) and it is an offence to drop litter in any public place, (including beaches) under section 87 of the Environmental Protection Act (EPA), 1990, there is little policing of these and significant littering still occurs. The Merchant Shipping Regulations 1988 apply to all shipping and boating, as well as to offshore platforms. They prohibit the disposal of plastics anywhere in UK territorial waters and the disposal of other types of pollutant within specific distances from nearest land. In the Atlantic Ocean and Irish Sea the dumping of specific waste types is prohibited within specific distances. A summary of the prohibition on disposal of garbage in the Merchant Shipping Regulations, 1988 is shown in **Appendix 6 (Table 6)**.

### 4.2.18.3 Issue Rationale

Dolphins, seals and lamprey may become entangled in certain kinds of litter. This may restrict movement and result in injury, starvation and for marine mammals drowning. Line and netting are of particular hazard (see 'Entanglement & Ingestion'). Dolphins and seals are known to occasionally ingest items of litter directly or through their prey. These may cause internal injury or blockage and result in death. Sea bed communities and prey species may be damaged through entanglement or ingestion. Sessile organisms can be smothered by plastic debris which may affect their ability to feed and may cause sediments to become anoxic (see 'Habitat

<sup>70</sup> MCS Beachwatch '06

Impacts'). Mechanical cleaning of beaches can result in direct damage to sensitive intertidal communities e.g. *Sabellaria alveolata*, while hand picking is less likely to have any impact.

Education is an important management tool for achieving this objective. There should be an aim to ensure that all visitors, including boat users, are aware of the existence and purposes of the SAC. It was recognised at the formative stages of the development of this plan that this could be achieved, in part, by providing interpretation and education facilities for local people and visitors that will generate interest, appreciation and a commitment to conserve the SAC and the SAC features. Improvements are needed both in the attitudes of coastal users to littering and also to the provision of services to facilitate removal of waste in ports and harbours. Reductions in litter on beaches are made through beach cleaning operations including local council and voluntary beach cleaning events as well as improvements in waste water treatment facilities by DCWW. Removal of beach litter might appear to only address the problem once litter has come ashore and is of reduced risk to marine life. However, it is likely that a certain amount of beach litter is remobilised into the marine environment and so any removal from beaches is likely to be beneficial.

Whilst the scale of any current ill effects on the Cardigan Bay features is unknown, levels of marine litter are increasing within the UK and will therefore become an increasing threat to them. An example of a strategy for the reduction of marine litter (the Minch Project) is summarised under "Litter" in **Appendix 6**.

#### **4.2.18.4      Type of Response**

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

#### **4.2.18.5      Action Needed**

See sections: 6.18 a-q

## 4.2.19 Non-Native Marine Species

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓	✓	✓	✓	✓	✓

### 4.2.19.1 Description

The introduction of new non-native species to the site may result in changes which impact upon the species and communities of the SAC. On the whole, very few introduced marine species become established in British waters and of those that do, only a small proportion prove to be a threat to the environment. However, the potential effect of an introduction is hard to predict in the long term and control methods are generally ineffective. It is therefore important that relevant and Competent Authorities (CAs) work together to try and ensure that non-native introductions do not gain entry into the marine environment in the first place.

### 4.2.19.2 Current Management

There is a variety of international and national legislation aimed at preventing or controlling the introduction and spread of non-native species. Procedural guidelines and best practice are provided by the 1994 International Council for the Exploration of the Sea Code of Practice (ICES 1994 and the International Maritime Organisation (IMO)). Further information can be found under “Non-native species” in **Appendix 6**.

### 4.2.19.3 Issue Rationale

The introduction of non-native species into the marine environment has the potential to have a detrimental impact on habitat and species features, in a number of ways (see **Appendix 6** for further information and case study). An introduction may result in competition with native species and trophic alterations, including dietary competition and predation. There may be competition for space, habitat alteration, provision of new niches and changes in water quality. There may be concomitant introduction of new pests, diseases and parasites that are harmful to native resident species. There may also be gene pool deterioration through hybridization. Secondary effects may occur, such as damage to the sea bed from subsequent fishing/harvesting activities.

### 4.2.19.4 Type of Response

**F4:** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

### 4.2.19.5 Action Needed

See sections: 6.19 a-g

## 4.2.20 Animal welfare operations and sanctuaries

	<b>Tt</b>	<b>Hg</b>	<b>Pm</b>	<b>Lf</b>	<b>SC</b>	<b>Rf</b>	<b>SB</b>
Features potentially affected by activity	✓	✓					

### 4.2.20.1 Description

Live strandings of cetaceans within Cardigan Bay are rare and there are only 2 reports of live bottlenose dolphins strands in the last 13 years. Grey seals are the most common species of marine mammal handled by animal welfare organizations but few of them originate from within the SAC area. The most common beaches from where injured or sick seals are recovered from within the site are Cwmtedu and Gilfach yr Halen in Ceredigion.

### 4.2.20.2 Current Management

The Royal Society for the Prevention of Cruelty to Animals (RSPCA) is the first contact for live strandings and also responds to sick or injured seals. In the case of seals, the RSPCA will tend to take animals to an assessment facility in Swansea. It is here that it will be determined whether there is a need for long-term care, and if so animals are transported to Norfolk. Animals are then transported back to the west coast where to be released.

In addition to the RSPCA, there are two facilities in the vicinity of the SAC that are equipped to deal with injured or sick marine animals. The New Quay Bird and Wildlife Hospital is based adjacent to the site and in the past has rehabilitated a number of grey seals and sea birds, as well as responding to local cetacean strandings. The Hospital now operates on a more limited scale and diverts larger animals to the Welsh Marine Life Rescue at Pembroke. Both facilities have a policy of returning animals in their care back to the wild. In the past, when the New Quay Bird and Wildlife Hospital was more active, seals were released from the immediate area where they were recovered. Due to logistical pressures, unless a large number of seals are recovered from the same area within the SAC, rehabilitated seals taken to Pembroke will be released closer to the Marine Wildlife Rescue Centre in Pembrokeshire.

### 4.2.20.3 Issue Rationale

The handling of sick or injured animals by humans, especially unqualified individuals, may cause increased levels of stress to animals that may recover without any assistance. The release of animals that have been handled or rehabilitated within a human environment especially in which the animals come into close contact with domesticated animals may expose wild populations to microbial pathogens. Whilst increasing the burden of existing parasites will be detrimental to dolphins and seals, it is the introduction of a virulent novel parasite strain, one to which they are not already exposed which may have the most rapid and serious effect (see Pathogens).

Animals taken in by welfare organisations are likely to have died without their care. Therefore there is the potential that releasing rehabilitated animals back into the wild may reintroduce weaker animals back into the breeding population which may have an impact on the physiological health of the wider population. Rehabilitated animals may have become habituated to human contact and this may put them in greater danger from human activities such as recreational and commercial boating and fishing through collision or disruption of normal feeding behaviour etc. Seals habituated to being fed by humans may also be more inclined to cause damage to fishing gear and so may contribute towards accentuating an antagonistic view between fishing and conservation interests.

**4.2.20.4      Type of Response**

**F4** There is a known mechanism for the activity to have an effect, but insufficient evidence at present to determine whether or not it is having a significant adverse effect.

**4.2.20.5      Action Needed**

See section: 6.20 a-c

## **4.3. Resources**

### **4.3.1. Description**

The development, implementation and review of the Cardigan Bay SAC Management Scheme document has placed a considerable financial burden on those organisations responsible. These new responsibilities have not come with any new resources. Whilst the EU LIFE II project helped support the development of the original Management Scheme document there has still been the need for a major resource investment by some of the site's Relevant Authorities (RAs). To date this has largely been in the form of financial contribution to the SAC Officer's post/outputs and RA staff time. Considerable resources have also been required to support community involvement and research. New management initiatives, improved surveillance and monitoring are all considered essential, requirements for an effective site management.

### **4.3.2. Current Management**

The issue of core funding support has been raised repeatedly at a high level within the Welsh Assembly Government. There are several mechanisms for securing short term funding for specific projects, such as The Crown Estate Marine Stewardship Fund. Whilst limited in their application, opportunities to make use of these sources of grant aid are being addressed by the sites Relevant Authorities (RAs).

### **4.3.3. Issue Rationale**

There is the need for each relevant authority to be supported in carrying out its responsibilities under the Habitats Directive and UK Habitats Regulations. As the responsibilities are on-going and now form part of each organisations core work, this support needs to come through core funding mechanisms. A lack of sufficient core support for such work inevitably results in a compromise to site management as each organisation's responsibilities compete for existing resources.

### **4.3.4. Type of response**

Not applicable

### **4.3.5. Actions Needed**

See section: 6.23 a-c

## 5 RECORDING, REVIEWING AND REPORTING

Site management will require regular review as circumstances in Cardigan Bay change over time. This section explains the mechanism and timetable for such a review process. At any given time the current version of this scheme can at best, only be based on the current state of knowledge. As our understanding of the site improves and changes take place in the physical, biological and socio-economic environment, it will be important to review and revise the Management Scheme. The Action Plan (**Section 6.24**) identifies specific actions arising from the parts of the scheme dealing with conservation objectives, monitoring and consideration of the factors affecting the features. The actions provide the basis for recording and review of the Management Scheme.

### 5.1 Recording

It is essential that records are kept of all the steps taken towards each action identified in the Action Plan. In particular, the following must be recorded:

- results of survey and research projects
- results of monitoring of the condition of the features of the site
- results of surveillance or monitoring of factors
- the implementation of all of the actions in the Management Scheme

It is also important to record any significant “events” that may affect the site and ultimately the SAC’s features. Events might include unforeseen environmental events or human actions that would not already be identified through on-going surveillance of the processes and activities identified in **Section 4**, and also socio-political events that might affect the arrangements through which this Management Scheme is implemented (e.g. developments in legislation or policy affecting the functions and priorities of relevant and other Competent Authorities (CAs)).

In general, responsibility for recording actions and results associated with an area of work resides with the body responsible for the project. This information will be reported to the Relevant Authorities Group (RAG) at regular intervals so that a complete summary of the state of implementation of the Management Scheme can be maintained. Ideally records should be made as soon as possible after completion of a project. For on-going or composite projects (e.g. monitoring or surveillance programmes, or research projects), a suitable interval for recording progress needs to be defined. Ideally, record keeping will be part of the specifications for each individual project.

### 5.2 Reviewing

#### 5.2.1 Review of condition of the features of the site against the conservation objectives

Ultimately, this is the most important element of the review of the Management Scheme: whether it is achieving what it is meant to achieve. The purpose of the projects concerned with monitoring the condition of the features of the site is to provide the information required for this aspect of the review.

If the objectives are met, changes in management actions are not required. If the objectives are not met, it is necessary to review other elements of the Management Scheme, in order to determine what steps, if any, are required. A failure to meet the objectives may be for many different reasons, such as:

- agreed actions may not have been implemented
- agreed actions may have been implemented but may be inappropriate to the achievement of the objectives
- actions may be required but have not been agreed or implemented
- influence of factors outside any management control
- the objectives may not be achievable

As can be seen from CCW's Reg.33 advice document (see **Section 3** of this plan for reference), the conservation objectives are not precisely defined at present, and are, themselves, subject to review (see **Section 5.2.5**). Even if the objectives were precisely defined, it may not be possible to determine with any certainty whether they are being met or not for a considerable period of time, owing to the difficulties of monitoring the relevant attributes.

**Timescale:** The frequency with which it is possible and desirable to undertake this element of the review will be determined largely by the time-frame within which the monitoring can provide the necessary information. Ideally, this element of the review should take place as frequently as possible (up to annually), and should not in any case be less than once every 6 years. Monitoring of the condition of the features of the site is at present a long term project and the first review of this type may not be worthwhile for several years.

### **5.2.2 Review of implementation of management actions**

It is necessary to determine whether or not the agreed management actions have been implemented. Each action identified in the action plan should be recorded and any agreed actions not implemented need to be identified. The Relevant Authorities (RAs) (and other Competent Authorities (CAs)) are the bodies responsible for most, if not all, of the actions arising from the Management Scheme document, and each is therefore responsible for ensuring that the projects in the action plan are implemented.

**Timescale: This should take place annually.**

### **5.2.3 Review of the effectiveness of management actions on factors**

All of the management actions that are not concerned with the gathering of information are concerned with managing factors rather than directly influencing the features of the site. It is essential therefore to review whether the actions are having the desired effect on the factor - this requires monitoring of the factor. For example, it is important to know whether a litter awareness campaign (which can be recorded as an action taken) is having the desired effect in reducing litter.

**Timescale:** As with the monitoring of the condition of the feature, the timescale for this type of review is determined largely by the type of action and monitoring required. In general, review should be **as frequent as possible (up to annually) and not less than once every 6 years.**

### **5.2.4 Review of what management is required**

The need to review what management actions are required can come either from the determination of whether or not the objectives are being achieved, or from other sources of information which suggest that the prescribed management actions should be changed. None of the actions in this plan arise from a recognition that the species or habitat features are in an unfavourable condition and that site management therefore needs to be changed. Our knowledge of the species populations, their condition and the factors affecting them is limited, and therefore many of the actions arise from a precautionary approach and the need to improve our understanding of the habitat features of the site. Research work, either on this site or relating to the same species and habitats elsewhere, can provide valuable information which may warrant re-examination of the actions set out in this plan.

**Timescale: Annually.**

### **5.2.5 Review of the conservation objectives**

As mentioned above, the conservation objectives themselves need to be subject to review. At present they are not precisely defined and an important area of work arising from this plan (see **section 6.24**) is to enable the objectives and associated monitoring to be refined. As our knowledge of the population improves, and techniques for monitoring its attributes are developed, it should be possible to improve the precision with which the objectives are expressed, both in terms of the attributes used and the targets and limits identified.

**Timescale:** The objectives should ideally be revised as soon as there are grounds to do so. However, as with monitoring of the condition of the features of the site, the process of improving the objectives is a long term one and significant revisions of the objectives at frequent (e.g. annual) intervals is not possible.

### 5.3 Reporting

Under the Habitats Directive, the UK is required to report to the EC every six years, on the measures taken under the Directive and on the conservation status of the habitats and species identified in the Directive. Therefore for each SAC, including Cardigan Bay, the equivalent information is likely to be required, i.e. the measures taken, an evaluation of their effectiveness in conserving the features of the site and the condition of the site.

This statutory requirement for reporting serves several important functions:

- It provides a means of evaluating the effectiveness of SACs in contributing to the aims of the Habitats Directive, namely the achievement of favourable conservation status of habitats and species of European importance;
- It enables the EC to monitor progress with the implementation of the Directive across all member states, including through SACs and other measures;
- It provides a means for the Relevant Authorities (RAs) for each UK marine SAC to be held accountable for their actions, against the requirements of the legislation and, most importantly, against the condition of the habitats and species for which the sites are selected. Note that the government (In Wales, this means the Welsh Assembly Government) has powers to intervene in management schemes;
- Where factors are outside the control of the RAs, it enables them to report this to the Government, as it is the Government that is ultimately responsible for the implementation of the Habitats Directive in the UK.

The precise type and format of information that will need to be provided by RAs and CAs to the UK government in relation to individual SACs has not yet been determined. However, this Management Scheme is intended to contain all the information necessary to satisfy the Habitats Directive's requirement in relation to this site. Therefore it is likely that a copy of the plan itself, together with the information to be documented under **sections 5.1** and **5.2** above, can itself constitute the "report" for this site.

**Actions needed:** See section 6.24 a-n

## 6 ACTION PLAN

### Introduction

This section outlines the actions which have been identified as needing to be taken by the individual Relevant Authorities (RAs), Competent Authorities (CAs) and other interests, either working alone or in partnership, to manage the Cardigan Bay Special Area of Conservation (SAC) to secure the features at Favourable Conservation Status (FCS). Attempts have been made to ensure that actions are, wherever possible, specific, measurable, attainable, realistic and have a timescale. The key principles agreed by the Relevant Authorities Group (RAG) (see **section 1.3**) form the common framework from which all actions have been built.

As far as possible the actions have been linked to existing strategies, plans and initiatives (detailed in **Appendix 4 & 5**). This has been done to avoid duplication and to highlight the extent and relevance of current management measures and the strong links that already exist between the Relevant Authorities (RAs) and other groups and initiatives.

The Action Plan is recognition that many ongoing established management practices contribute directly or indirectly to protecting SAC features from damage. This said, it is important to note that those actions listed will not necessarily need to stand alone, but may require modification of existing practice or integration of additional management measures. The process of determining the contents of the Action Plan is described in more detail in **Section 1.6**.

It is important to note that identification of required actions does not necessarily imply there are adequate resources available, appropriate legislation in place, or a mandate for taking action. A constraints column has been included within the Action Plan (Excel spreadsheet) in which constraints on delivery of actions can be inserted by each RA as and when they are identified.

**This plan should be read in conjunction with the advice Regulation 33(2) document of the Conservation (Natural Habitats & c.) Regulations 1994 from the Countryside Council for Wales, which can be downloaded at the following link:**

[http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice\\_draft\\_June05.pdf](http://www.cardiganbaysac.org.uk/pdf%20files/Reg33%20advice_draft_June05.pdf)

## Action Plan Layout

The table layout has been kept as simple as possible. Explanations for each of the columns are given below.

### ACTION REFERENCE

This column indicates for each action what Section it belongs to and assigns a letter to each action. As the action columns also contains Management Statements, these are indicated in the action reference as MS.

### MANAGEMENT ACTIONS (WHAT?)

This column lists general and specific actions which have been identified as necessary to contribute to the achievement of the management objectives. The identified actions are described in broad terms and make no attempt to predetermine or dictate the precise procedures to be taken by any relevant authority in order to achieve them.

The column also contains **Management Statements** which summarize the specific outcome necessary to contribute to securing the SAC features at favourable conservation status.

### ORGANISATIONS TO WHICH ACTIONS ARE ATTRIBUTED (WHO?)

This column indicated which CAs and RAs will be responsible or may be involved in achieving the action. Those who should do it are the authorities under whose jurisdiction/responsibility the action lies. This is not always clear, in which case those listed are those who *could* do it. To ensure actions are delivered one authority (in some cases two) has been identified as the lead for a particular action; **suggested lead agencies are in shown in bold**. Many actions will require the Relevant Authorities (RAs) and others such as Competent Authorities (CAs) and interest groups to work together in partnership. (Abbreviations and acronyms can be found in **Appendix 2**).

### PRIORITY TIMETABLE (WHEN?)

This column indicates the timescale by which the action is to be completed. This shows the urgency of the action and therefore reflects priorities. The activities marked as on-going are those where actions are already in place or are those which will always require an action.

***In this document, timescales are simply:***

- ***high priority (within 1 or 2 yrs)***
- ***medium priority (within next 3yrs)***
- ***low priority (within next 5yrs)***
- ***essential on application***

***Relevant and competent authority input in particular is necessary to further refine this timetable, in order to allow the insertion of more specific/certain dates into the agreed SAC Management Scheme document.***

## Action Plan, Revised April 2008

General Principle to this Management Scheme: Where an activity has the potential of having an adverse effect on the SAC features, any significant change in distribution or intensity of such an activity, or new proposal for such an activity should be treated as or in a way analogous to that for a Plan or Project (and therefore should not be viewed as acceptable until it has been shown that it will not adversely affect site integrity).

<b>ACTION REF. N°</b> (Section N°, Action letter and MS if a Management Statement)	<b>MANAGEMENT ACTIONS</b> (Including subheadings and management statements)	<b>ORGANISATIONS</b> to which actions are attributed	<b>PRIORITY TIMETABLE</b> (High: within 1 or 2 yrs; Medium: within 3 yrs; Low: Within 5yrs; essential on application)
<b>6</b>	<b>General</b>		
<b>a</b>	RA to create annual timetable for implementation of actions in the plan	<b>RAG (SAC Officer)</b>	<b>High</b>
<b>b</b>	CCW to keep SAC Officer updated on all Plans & Projects applications related to the Cardigan Bay SAC as they occur.	<b>CCW through SAC Officer</b>	<b>Medium, ongoing</b>
<b>6.1</b>	<b>Education and interpretation</b>		
<b>MS</b>	<i>Management statement: Increase awareness amongst stakeholders and the general public of the conservation objectives of the SAC.</i>		
<b>a</b>	Develop a database on educational activities in the SAC. SAC officer to report annually to RAG and raise any concerns on negative effects of activities as appropriate.	SAC Officer via RAG	<b>Medium, ongoing</b>
<b>b</b>	Develop phase II of Education and Interpretation strategy	SAC Officer	<b>High, ongoing</b>
<b>c</b>	Liaise with Outdoor Charter Group to develop a code of conduct for educational establishments on procedures for field studies within Cardigan Bay. Proactive liaison with education bodies to raise awareness of the Code.	<b>CCW</b> , SAC Officer, Field Studies Council (Outdoor Charter Group)	<b>Medium, ongoing</b>
<b>d</b>	SAC Officer to facilitate optimal distribution of relevant educational material produced by RAG		<b>Medium, ongoing</b>
<b>6.2</b>	<b>Coastal development</b>		
<b>MS</b>	<i>Management statement: Ensure assessment of all coastal development with the potential to cause unfavourable effects on the site's features (such as sea-defence, land-claim, artificial reef or power generation plant construction) is carried out.</i>		
<b>a</b>	Ensure that the Strategic Land-use Plans and individual projects derived from those plans are subject to Appropriate Assessment, where relevant	<b>CCC, PCNPA, PCC, CCW (advisor)</b>	<b>High, ongoing</b>

<b>6.2.1</b>	<b>Shoreline management planning and coastal defence</b>		
<b>MS</b>	<i>Management statement: Ensure a co-ordinated approach to coastal development/defence via the Shoreline Management Plan and the Local Development Plan.</i>		
<b>a</b>	Ensure that Shoreline Management Plans are subject to Appropriate Assessment as a Plan or Project.	<b>CA</b> responsible for producing SMP - CCW (advisory)	<b>High, ongoing</b>
<b>b</b>	Ensure that any new projects arising from the Shoreline Management Plan (SMP) are subject to Appropriate Assessment as a Plan or Project	CCW (advisor), <b>CCC, PCC</b> , (landward planning), <b>PCNPA</b>	<b>Essential on application</b>
<b>c</b>	Ensure that any maintenance carried out on shoreline defences does not adversely impact SAC features.	<b>CCC, PCC, CCW</b>	<b>Essential on application</b>
<b>6.3</b>	<b>Aggregates extraction</b>		
<b>MS</b>	<i>Management statement: Ensure assessment of all aggregates extraction with the potential to cause unfavourable effects on the site's features is carried out.</i>		
<b>a</b>	Ensure that any aggregate extraction is subject to Appropriate Assessment as a Plan or Project.	<b>WAG, CCW</b> (advisory)	<b>Essential on application</b>
<b>6.4</b>	<b>Dredging and dredge spoil disposal</b>		
<b>6.4.1</b>	<b>Dredging</b>		
<b>MS</b>	<i>Management statement: Ensure assessment of all dredging and dredge-spoil disposal with the potential to cause unfavourable effects on the site's features is carried out.</i>		
<b>a</b>	Treat all maintenance and capital dredging as a plan or project.	<b>Harbour or Port Authority, LA, MFA, CCW</b> (advisory), <b>WAG</b>	<b>Essential on application</b>
<b>b</b>	Review extant maintenance dredging operations and produce Dredging Plans to provide a framework/procedure for proposals for dredging within the SAC.	<b>LA, MFA, EAW, CCW, WAG</b>	<b>Medium, ongoing</b>
<b>c</b>	Ensure that the potential presence – and consequent re-suspension – of persistent sediment contaminants does not affect SAC features.	<b>MFA, EAW, CCW, WAG</b>	<b>Essential on application</b>
<b>d</b>	Establish a code of practice for dredging and disposal in and adjacent to the SAC.	<b>CCC, CCW</b>	<b>Medium, ongoing</b>
<b>e</b>	Undertake hydrographical surveys as and when required in order to identify areas within harbours where dredging is essential and where it can be reduced (or not carried out at all)	<b>CCC, CCW</b>	<b>Essential on application</b>
<b>6.4.2</b>	<b>Spoil dumping</b>		
<b>MS</b>	<i>Management statements: Ensure assessment of all spoil dumping with the potential to cause unfavourable effects on the site's features is carried out.</i>		
<b>a</b>	Treat any spoil dumping as Plan or Project	<b>MFA, CCW, WAG</b> (advisory)	<b>Essential on application</b>

<b>6.5</b>	<b>Water abstraction</b>		
<b>MS</b>	<i>Management statements:</i> Ensure assessment of all water abstraction with the potential to cause unfavourable effects on the site's features is carried out.		
<b>a</b>	Ensure all new abstraction licence applications are assessed for likely significant effect on SAC features via Appendix 11 pro-forma. Treat as Plan or Project where assessment identifies proposal likely to have significant effect.	<b>EAW, CCW</b>	<b>Essential on application</b>
<b>b</b>	Review existing and previous consents for abstraction (review of consents process).	<b>EAW, CCW</b>	<b>High, Ongoing</b>
<b>c</b>	Continue to promote efficient water usage	<b>EAW, DCWW</b>	<b>Medium, ongoing</b>
<b>6.6</b>	<b>Cables and pipelines</b>		
<b>MS</b>	<i>Management statements:</i> Ensures assessment of all proposals to lay cables and pipelines with the potential to cause unfavourable effects on the site's features is carried out		
<b>a</b>	Treat the installation of pipelines or cables as a plan or project.	<b>DTI, CEC, CCW (advisory), CCC, PCNPA, PCC, (landward planning)</b>	<b>Essential on application</b>
<b>6.7</b>	<b>Offshore renewables</b>		
<b>MS</b>	<i>Management statement:</i> Ensure assessment of all proposals for offshore renewables (wind, tidal and wave power generation) with the potential to cause unfavourable effects on the site's features is carried out.		
<b>a</b>	Treat any proposal (for commissioning and decommissioning of offshore renewables) as a Plan or Project.	<b>DTI, CCW/JNCC (advisory), CCC, PCC, PCNPA (landward planning)</b>	<b>Essential on application</b>
<b>b</b>	Monitor the development of UK government policy/strategy with respect to the development of offshore alternative energy generation, and ensure that the SAC is appropriately considered in the development of such a policy, e.g. in any consultation exercises.	<b>CCW</b>	<b>High, Ongoing</b>
<b>c</b>	CCW to report to RAG on findings of research on offshore renewables (e.g. from COWRIE)	<b>CCW</b>	<b>Medium, ongoing</b>
<b>6.8</b>	<b>Water quality</b>		
<b>6.8.1</b>	<b>Effluent disposal</b>		
<b>MS</b>	<i>Management statements:</i> Ensure that assessment, management and monitoring is in place to ensure no adverse effect on the SAC features occurs as a result of effluent disposal.		
<b>a</b>	Treat any discharge consent for effluent disposal as a plan or project	<b>EAW, CCW</b>	<b>Essential on application</b>
<b>b</b>	Maintain and keep under review existing routine chemical and biological monitoring in accordance to EU Directives.	<b>EAW, CCC, PCC</b>	<b>High, ongoing</b>
<b>c</b>	All RAs to be informed annually of compliance with relevant EC Directives and water quality targets via RAG meeting	<b>EAW, CCC, PCC, SAC Officer</b>	<b>Medium, ongoing</b>

<b>d</b>	Continue the water quality sampling programme on identified bathing beaches.	<b>EAW, Keep Wales Tidy, CCC, PCC</b>	<b>High, ongoing</b>
<b>e</b>	Continue the water quality sampling programme on non-identified bathing beaches by the Green Seas project.	<b>Keep Wales Tidy, CCC, PCC</b>	<b>High, ongoing</b>
<b>f</b>	Seek to expand water quality monitoring/reporting programmes to routinely include currently unsampled open coast areas.	<b>LA</b>	<b>Low</b>
<b>g</b>	Continue to raise public awareness of the importance of reporting pollution at sea to the MCA or the EAW (if within 3 nautical miles of the coast).	<b>MCA, RYA, EAW</b>	<b>Medium, ongoing</b>
<b>h</b>	Seek to improve the quality of treated effluent into the SAC.	<b>DCWW, EAW, WAG</b>	<b>High, ongoing</b>
<b>i</b>	Continue to maintain and improve sewage treatment works, outfalls and intermitted discharges through the Asset Management Plan of DCWW.	<b>DCWW, EAW, WAG</b>	<b>Medium, ongoing</b>
<b>j</b>	Continue to raise awareness of the problems that diffuse pollution from private drainage systems can cause and what people can do to remediate	<b>EAW, PCC, CCC, PCNPA</b>	<b>Medium, ongoing</b>
<b>6.8.2</b>	<b>Land runoff</b>		
<b>MS</b>	<i>Management statements: Ensure that assessment, management and monitoring is in place to ensure no adverse effect on the SAC features occurs as a result of land runoff.</i>		
<b>a</b>	Continue to monitor river and coastal water quality in the area	<b>EAW, CCW</b>	<b>High, ongoing</b>
<b>b</b>	Share existing information on the scale, location and seasonality of diffuse pollution inputs annually with the RAG.	<b>EAW, CCC, DEFRA, WAG</b>	<b>High, ongoing</b>
<b>c</b>	Promote and support research on the interaction between diffuse pollution inputs and the SAC features (e.g. possible long-term cumulative effects of known toxic substances & cumulative effects of bacterial, viral and antibiotics contamination on SAC features)	<b>CCW, EAW, DEFRA, WAG, Marine Environmental Monitoring (MEM)</b>	<b>High, ongoing</b>
<b>d</b>	Continue to raise awareness of pollution prevention and encourage best practice through schemes such as Tir Gofal and Cross Compliance. Ensure that best practice adequately addresses marine issues where applicable.	<b>WAG, CCW, EAW</b>	<b>Medium, ongoing</b>
<b>e</b>	Identify mechanism to minimise run-off from agricultural developments at the planning stage.	<b>CCW, PCC, CCC, PCNPA, EAW</b>	<b>Medium</b>
<b>f</b>	Maintain an ongoing programme of inspections of agricultural premises to ensure that risks are minimised and that owners/occupiers are aware of risks and implement best practice ([1] E.g. through use of The Water Code: Code of Good Agricultural Practice for the Protection of Water. 1998. MAFF, Welsh Office Agricultural Department. Available free from MAFF publications 0645-556000) A range of Pollution Prevention Guidelines (PPGs) for industry, and site specific guidance is available from Environment Agency Wales.	<b>EAW, WAG, CCW, NT</b>	<b>High, ongoing</b>
<b>g</b>	Continue to promote the creation of buffer strips alongside water courses to reduce run-off at source	<b>EAW, WAG, CCW</b>	<b>Medium</b>

<b>h</b>	Continue ongoing programme of inspections of industrial premises to ensure that pollution risks are minimised and that owner/occupiers are aware of risks and implement best practice.	<b>EAW</b>	<b>Medium</b>
<b>6.8.3</b>	<b>Leakage from point pollution sources (including disused metal mines)</b>		
<b>MS</b>	<i>Management statement:</i> Minimise pollution risk and consequent possible unfavourable effects to SAC features at source		
<b>a</b>	Continue to be vigilant over activities and pollutant sources which might threaten the integrity of the SAC, and take action based on a realistic assessment of risk.	<b>EAW, CCW, all RAs</b>	<b>High, ongoing</b>
<b>b</b>	Continue to routinely monitor the river systems to determine the inputs and loadings of contaminants being discharged into coastal waters.	<b>EAW</b>	<b>High, ongoing</b>
<b>c</b>	Promote, in partnership with others, the reclamation of disused metal mines where there is significant environmental benefit	<b>EAW, CCW, WAG</b>	<b>Medium</b>
<b>6.9</b>	<b>Recreational activities</b>		
<b>6.9.1</b>	<b>Recreational activities: general</b>		
<b>MS</b>	<i>Management statements:</i> Ensure that all current and future recreational activity with the potential of having an adverse effect on the SAC features is carried out at sustainable levels.		
<b>a</b>	Investigate the potential for new regulatory measures to improve the management powers of relevant and competent authorities, as required, to safeguard the SAC features from any unfavourable effects of recreational activities.	<b>WAG, CCW</b>	<b>Medium</b>
<b>6.9.2</b>	<b>Swimming, snorkelling and diving</b>		
<b>MS</b>	<i>Management statements:</i> Ensure that current and future swimming, snorkelling and diving activities do not have an adverse effect on the SAC features.		
<b>a</b>	Promote and implement and review existing byelaws and codes of conduct such as the Ceredigion Marine Conservation Code of Conduct, the Pembrokeshire Marine Code	<b>CCC</b>	<b>High, ongoing</b>
<b>b</b>	Provide information on the SAC and its wildlife to users through dive shops, clubs and associations (Link to Education and interpretation Programme, see action 6.1 b).	<b>SAC Officer</b>	<b>High, ongoing</b>
<b>6.9.3</b>	<b>Recreational Boating</b>		
<b>MS</b>	<i>Management statements:</i> Ensure that current and future recreational boating activities do not have an adverse effect on the SAC features.		
<b>a</b>	Develop and implement Ceredigion Recreational Boating Scheme	<b>CCC</b>	<b>High, ongoing</b>
<b>b</b>	Ensure that Beach Officer records are maintained	<b>CCC, PCC</b>	<b>High, ongoing</b>
<b>c</b>	Develop a proposal for a study to determine the carrying capacity for recreational boating activities within the SAC	<b>CCC &amp; CCW</b>	<b>High</b>

<b>d</b>	Work towards the harmonisation of marine Codes of Conduct for activities in all Welsh marine SACs	<b>SAC Officer</b> via, CCC, Pems Marine Code Group, PCNPA, PCC, CCW, RYA	<b>Medium</b>
<b>e</b>	Obtain better information on the distribution of bottlenose dolphins and Atlantic grey seals throughout Cardigan Bay to identify sensitive areas where speed restrictions are necessary.	<b>CCW, CCC, PCC, PCNPA</b>	<b>High</b>
<b>f</b>	Annual reporting of disturbance incidents and liaison amongst CCW, Wildlife Crime Officers (WCO), SAC Officer, Afon Teifi Fairways Committee (ATFC) and Harbour Authorities	<b>SAC Officer, CCW, Wildlife Crime Officers (WCO), Local Authorities, Afon Teifi Fairways Committee (ATFC) and Harbour Authorities, RYA</b>	<b>High, ongoing</b>
<b>g</b>	Continue efforts in predefining "disturbance" in terms of human, not cetacean, behaviour to ensure legislation is effective in tackling cetacean disturbance.	<b>DEFRA, CCW</b>	<b>Medium</b>
<b>h</b>	Maintain and improve information/code of conduct signs at Aberporth, Llangrannog, Tresaith, New Quay, Cei Bach and Aberaeron.	<b>CCC</b>	<b>Medium, ongoing</b>
<b>i</b>	Maintain and improve SAC information/code of conduct at the Teifi launching points (i.e. with Nature in harmony signs)	<b>CCW Afon Teifi Fairways Committee</b>	<b>High, ongoing</b>
<b>j</b>	Keep under review opportunities for provision of information on the SAC at appropriate sites	<b>PCC, PCNPA, CCC, RAG</b>	<b>Medium, ongoing</b>
<b>k</b>	Maintain and improve Ceredigion Marine Conservation information posters at beach display panels	<b>CCC</b>	<b>Medium, ongoing</b>
<b>l</b>	Maintain and improve MHC/SAC information for inclusion in the Ceredigion Tide Time Tables	<b>CCC</b>	<b>Medium, ongoing</b>
<b>m</b>	Ensure that the CCC Economic and Tourism Sections carry information about the MHC/SAC in their publications	<b>CCC</b>	<b>Medium, ongoing</b>
<b>n</b>	Raise awareness with recreational users of the relevant legislation and penalties for non-compliance (e.g. via the Cardigan Bay Boat Place)	<b>CCC, Afon Teifi Fairways Committee (ATFC), RYA</b>	<b>Medium, ongoing</b>
<b>6.9.4</b>	<b>Commercial boat trip operators</b>		
<b>MS</b>	<i>Management statements: Safeguard SAC features from any unfavourable effects of recreational boating activities.</i>		
<b>a</b>	Review and develop the Passenger Boat Code of Conduct with the boat operators at New Quay, Aberaeron & Cardigan.	<b>CCC</b>	<b>High, ongoing</b>
<b>b</b>	Continue to support the passenger boat operators in their Wildlife Boat Trips, by the preparation of information and the provision of regular training	<b>CCC</b>	<b>Medium</b>
<b>c</b>	Develop an accreditation scheme for passenger boat operators and encourage participation to accreditation schemes such as WISE for passenger boat operators.	<b>CCC, CCW, Pembrokeshire Marine Code Group</b>	<b>High</b>
<b>d</b>	Develop and support a proposal to define the carrying capacity for passenger boat operations within the SAC.	<b>CCW, MCA</b>	<b>High</b>

<b>e</b>	Identify a mechanism to limit/regulate the number of commercial recreational vessels operating within and adjacent to the SAC	<b>CCW, MCA, CCC, PCC</b>	<b>High</b>
<b>f</b>	Support the limitation of passenger boat licences to carrying capacity	<b>CCC, PCC, CCW</b>	<b>High, ongoing</b>
<b>g</b>	Continue efforts in predefining “disturbance” in terms of human, not cetacean, behaviour to ensure legislation is effective in tackling cetacean disturbance.	<b>DEFRA, CCW</b>	<b>Medium</b>
<b>6.9.5</b>	<b>Angling</b>		
<b>MS</b>	<i>Management statements: Safeguard SAC features from any unfavourable effects of angling and encourage anglers to contribute towards collecting baseline data on the SAC.</i>		
<b>a</b>	Promote awareness of existing relevant size limits and byelaws	<b>NWNWSFC, SWSFC, M&amp;FA, WAG, RAG, CEFAS, EAW</b>	<b>Medium, ongoing</b>
<b>b</b>	Enforce size limits and byelaws	<b>NWNWSFC, SWSFC, M&amp;FA</b>	<b>High, ongoing</b>
<b>c</b>	Promote and encourage use of existing codes of conduct -the national Tidy Tackle pack which includes the national ‘Conservation Code for Sea Anglers’ and the Environment Agency leaflet ‘Angling & Wildlife’, liaise with angling representatives/clubs to raise awareness about best practice	<b>RAG via SAC Officer, NWNWSFC, SWSFC, EAW,, Keep Wales Tidy, CCW, Welsh Federation of Sea Anglers (WFSA)</b>	<b>Medium, ongoing</b>
<b>d</b>	Promote and distribute existing codes of conduct within organisational publicity material (e.g Sea Fisheries byelaws booklets, permits issued), liaise with angling representatives/clubs to raise awareness about best practice	<b>NWNWSFC, SWSFC, EAW, WAG/DEFRA, Keep Wales Tidy, WFSA</b>	<b>Medium, ongoing</b>
<b>e</b>	Review the distribution and content of the Tidy Tackle pack as appropriate	<b>Keep Wales Tidy, CCW</b>	<b>Low, ongoing</b>
<b>f</b>	Review requirements for additional measures to manage recreational angling. (Review this action as NAW fisheries policy develops.)	<b>CCW, NWNWSFC, SWSFC, WAG</b>	<b>Medium</b>
<b>g</b>	Investigate the potential for new regulatory measures (e.g. bag limits) to safeguard SAC habitats and species from any potentially adverse effects. (Review this action as NAW fisheries policy develops.)	<b>NWNWSFC, SWSFC, CCW, WAG, RAG</b>	<b>Medium</b>
<b>h</b>	Provide interpretative material (This could include signs and leaflets, as appropriate) at popular access points	<b>CCW, CCC, PCC, EAW, PCNPA, NT, NW&amp;NWSFC, SWSFC</b>	<b>Medium, ongoing</b>
<b>i</b>	Encourage the development of ‘green’ gear (lead free weights, biodegradable line).	<b>CCW, NWNWSFC, SWSFC, EAW, RAG, Keep Wales Tidy</b>	<b>Medium, ongoing</b>
<b>j</b>	Promote as appropriate the adoption of ‘catch and release’, particularly as the basis for sea angling competitions within the SAC, rather than bag sizes and promote recording of catches to CCW	<b>CCW, Welsh Federation Sea Anglers (WFSA), NWNWSFC, SWSFC</b>	<b>High, ongoing</b>

<b>k</b>	Promote reporting of lamprey sightings through distribution of CCW leaflets and liaison with Environment Agency bailiffs	<b>CCW, EAW, NWNWSFC, SWSFC</b>	<b>High, ongoing</b>
<b>l</b>	Contribute to existing recording schemes, particularly of 'unusual' catches	<b>CCW, EAW, NWNWSFC, SWSFC, Welsh Federation Anglers (WFA)</b>	<b>Medium</b>
<b>m</b>	Encourage recording of angling catches of rays feeding into the data being collected by the Welsh Skate and Ray Group.	<b>CCW, CCC, WFA, NW&amp;NWSFC, SFC</b>	<b>High</b>
<b>6.9.6</b>	<b>Pedestrian, equestrian and vehicular use of the foreshore</b>		
<b>6.9.6.1</b>	<b>Pedestrian and equestrian use of the foreshore</b>		
<b>MS</b>	<i>Management statements: Safeguard SAC features from any unfavourable effect of pedestrian and equestrian use of the foreshore.</i>		
<b>a</b>	Promote awareness of sensitivity of honeycomb worm reef to trampling	<b>CCC, CCW</b>	<b>Medium</b>
<b>b</b>	Promote the code of conduct to highlight the sensitivity of grey seals to disturbance on shore, especially at pupping time.	<b>CCC, CCW</b>	<b>High, ongoing</b>
<b>6.9.6.2</b>	<b>Vehicular use of the foreshore</b>		
<b>MS</b>	<i>Management statements: Safeguard SAC features from any unfavourable effect of vehicular use of the foreshore.</i>		
<b>a</b>	Continue to promote awareness of and enforce owner/occupier rights and byelaws through the Tide Tables or other publications	<b>CCC, PCC, PCNPA, NT</b>	<b>Medium</b>
<b>6.10</b>	<b>Commercial Filming and Photography</b>		
<b>MS</b>	<i>Management statements: Ensure that management is in place to ensure no adverse effect on the SAC features occurs as a result of commercial filming and photography.</i>		
<b>a</b>	Maintain an advisory and approvals system for all research, photography and filming projects within Cardigan Bay SAC with the potential to disturb SAC features and keep SAC Officer informed of issued licences.	<b>CCW</b>	<b>High</b>
<b>b</b>	Ensure, as far as possible, that the production of all media about features of the site include as one of its aims the development of a responsible public attitude towards the SAC.	<b>SAC Officer and all RAs (where applicable)</b>	<b>High, ongoing</b>
<b>6.11</b>	<b>Marine research and surveillance</b>		
<b>MS</b>	<i>Management statements: Ensure that management is in place to ensure no adverse effect on the SAC features occurs as a result of marine research and surveillance work.</i>		
<b>a</b>	Maintain an advisory and approvals system for all research, photography and filming projects within Cardigan Bay SAC with the potential to disturb SAC features and keep SAC Officer informed of issued licences.	<b>CCW</b>	<b>High</b>

<b>b</b>	Ensure that all licensees (see above mentioned approvals system) receive copy of the Media Protocol	<b>SAC officer, CCW</b>	<b>High</b>
<b>6.12</b>	<b>Military activities</b>		
<b>MS</b>	<i>Management statements: Safeguard SAC features from any unfavourable effect of military activities through assessment and management of the activity.</i>		
<b>a</b>	MOD and CCW to liaise over the development of an acoustic monitoring and detection system for deployment in Cardigan Bay to support mitigation to protect marine mammals during trials.	<b>CCW, MOD</b> (incl.QQ- QinetiQ)	<b>High, ongoing</b>
<b>b</b>	MOD and Qinetiq to follow trial procedures outlined in the QinetiQ Aberporth Range Standing Orders (RSOs) as agreed with CCW to avoid disturbance to cetaceans or seals.	<b>MOD (incl.QQ)</b>	<b>High, ongoing</b>
<b>c</b>	Keep a record, where possible, of numbers and type (e.g. inert) of artillery entering the sea (fired directly or otherwise).	<b>MOD (incl QQ)</b>	<b>High, ongoing</b>
<b>6.13</b>	<b>Ports, Harbours, Shipping &amp; Boating</b>		
<b>MS</b>	<i>Management statements: Safeguard SAC features from any unfavourable effect of shipping activities through assessment and management of the activity.</i>		
<b>a</b>	Use SAC Management Scheme to flag up shipping related marine pollution issues in liaison with the MCA	<b>MCA</b>	<b>Medium</b>
<b>b</b>	Negotiate for amendment of any pilotage charts to include SAC feature and boundary information.	<b>CCW, MCA</b>	<b>Medium</b>
<b>c</b>	Provide adequate onshore reception facilities (oil, oil filter, batteries and general waste disposal/recycling facilities) and continue to raise awareness to encourage the responsible management of waste, including minimisation and recycling, at the point of generation on vessels.	<b>CCC, Teifi Fairways Committee, EAW, RYA, CBFA</b> (Cardigan Bay Fishermen's Association)	<b>High</b>
<b>d</b>	Advocate change in regulatory control to allow improved measures for management of power craft outside Port Authority jurisdiction (e.g. mandatory licensing)	<b>MCA, RYA</b>	<b>High</b>
<b>e</b>	Encourage all vessel users to report pollution incidents	<b>MCA, LA, RYA, EAW</b>	<b>Medium</b>
<b>6.13.1</b>	<b>Toxic antifoulant use</b>		
<b>MS</b>	<i>Management statements: Safeguard SAC features from any unfavourable effect of toxic antifoulant use in relation to shipping activities.</i>		
<b>a</b>	Raise awareness of the issues related to the use of toxic antifoulants and promote best practice	<b>EAW, CCC, PCC, CCW, MCA, Harbour Authorities</b>	<b>High, ongoing</b>
<b>6.13.2</b>	<b>Discharge of ballast water</b>		
<b>MS</b>	<i>Management statements: Safeguard SAC features from any unfavourable effect of discharge of ballast water in relation to shipping activities.</i>		
<b>a</b>	Raise awareness of the issues related to discharge of ballast water and promote best practice	<b>EAW, CCC, PCC, CCW, MCA, Harbour Authorities</b>	<b>Medium</b>
<b>b</b>	Promote and maintain adequate port waste facilities for oil contaminated ballast	<b>Teifi Fairways Committee, MCA</b>	<b>High</b>

<b>6.13.3</b>	<b>Discharge of bilge water</b>		
<b>MS</b>	<i>Management statements:</i> Safeguard SAC features from any unfavourable effects of bilge water discharge. Maintain Port Waste Management Plans.		
<b>a</b>	Maintain and review adequate port/harbour waste facilities for contaminated bilge water and enforce use by recreational boat users	<b>MCA, CCC, EAW</b>	<b>High</b>
<b>b</b>	Raise awareness with all users of the problems of dirty bilge discharge and of the actions necessary to avoid them	<b>MCA, CCC, EAW</b>	<b>Medium</b>
<b>6.13.4</b>	<b>Anchoring and mooring of vessels</b>		
<b>MS</b>	<i>Management statements:</i> Safeguard SAC features from any unfavourable effects of anchoring and mooring of vessels.		
<b>a</b>	Consider the need for anchoring free zones to safeguard fragile <i>reef</i> species in semi-sheltered near-shore areas	<b>CCW, CCC</b>	<b>Medium</b>
<b>6.14</b>	<b>Offshore oil and gas exploration and exploitation</b>		
<b>MS</b>	<i>Management statements:</i> Assessment of all new proposals with the potential to cause unfavourable effects on the site's features.		
<b>a</b>	Treat any offshore oil and gas exploration and exploitation proposal as a plan or project	<b>DTI/DfT, CCW/JNCC (advisory), MFA</b>	<b>Essential on application</b>
<b>6.15</b>	<b>Marine pollution incidents (from land and at sea)</b>		
<b>MS</b>	<i>Management statement:</i> Competent Authorities responding to marine pollution incidents should ensure through the advice given by WWEG (West Wales Environment Group) that the conservation objectives of the SAC are met.		
<b>a</b>	Ensure that there are appropriate marine pollution response plans to shoreline and at sea pollution in place, and that these are regularly exercised and updated.	<b>MCA, EAW, CCW, PCC, CCC, PCNPA</b> All CAs including Harbour Authorities (where applicable)	<b>High, ongoing</b>
<b>6.16</b>	<b>Underwater recovery operations</b>		
<b>MS</b>	<i>Management statements:</i> Safeguard SAC features from any unfavourable effect of underwater recovery operations.		
<b>a</b>	Review the legislation controlling the use of explosives (e.g. The Control of Explosives Act (1991)) and liaise with appropriate governmental bodies in order to enable better management of their use within or adjacent to Welsh waters supporting marine mammals, including the Cardigan Bay SAC.	<b>CCW, RAG</b>	<b>Medium</b>
<b>b</b>	Ensure that CCW are consulted on any salvage operations	<b>MCA, CADW/Cambria Archaeology (where appropriate), CCW</b>	<b>Essential on application</b>

<b>6.17</b>	<b>Fishing</b>		
<b>MS</b>	<i>Management statement:</i> Ensure fisheries are managed sustainably and that SAC features are safeguarded from any adverse impact of fishing activities (e.g physical damage to SAC habitats features, prey depletion of SAC species features)		
<b>a</b>	Continue logging extent/intensity of fishing activities (e.g. dredging, trawling, netting & potting) within the SAC.	<b>NW&amp;NWSFC, SWSFC, WAG</b>	<b>High, ongoing</b>
<b>b</b>	Supply Committee quarterly reports for inclusion in activities database	<b>NW&amp;NWSFC, SWSFC</b>	<b>High, ongoing</b>
<b>c</b>	Supply SFC survey reports in GIS format and contribute to discussions on improving reporting of fisheries in GIS format	<b>NW&amp;NWSFC, SWSFC</b>	<b>High, ongoing</b>
<b>d</b>	Annually inform RAG on extent and intensity of fishing activities within the SAC for inclusion in the activities database (see action 6.24 c)	WAG (Defra)	<b>High, ongoing</b>
<b>e</b>	Ongoing review of management of vessels using mobile gear (especially dredging) to fish in the SAC.	<b>WAG, SWSFC, NW&amp;NWSFC, MFA, DEFRA</b>	<b>High, ongoing</b>
<b>f</b>	Ensure all recorded cetacean bycatch incidents are reported to SAC Officer and promote recording of such incidents.	<b>NW&amp;NWSFC, SWSFC</b>	<b>High, ongoing</b>
<b>g</b>	Encourage development of sustainable fishing practises such as the 'degradable pot hook' and prawn pot project currently being developed by the fishermen.	<b>NWNWSFC, SWSFC</b> , Fishing Industry, RAG via SAC Officer	<b>High, ongoing</b>
<b>h</b>	Encourage collection of abundance and Landing per Unit Effort (LPUE) of fish and shellfish stocks	<b>MFA</b> , Fishing Industry	<b>Medium</b>
<b>i</b>	Encourage collection of abundance and Landing per Unit Effort (LPUE) shellfish (scallop) stocks .	<b>NWNWSFC, SWSFC</b> , Fishing Industry	<b>Medium</b>
<b>j</b>	Continue to raise awareness of fisheries information and byelaws within the SAC	<b>WAG, NW&amp;NWSFC, SWSFC</b> , RAG via SAC Officer, MFA	<b>High, ongoing</b>
<b>k</b>	Ensure that current management of fisheries activities does not cause deterioration to designated features.	<b>CCW, SWSFC, NW&amp;NWSFC, WAG</b>	<b>High, ongoing</b>
<b>l</b>	Assess impacts of fisheries management measures on SAC	<b>NWNWSFC, SWSFC, CCW, WAG</b>	<b>High, ongoing</b>
<b>m</b>	Continue to work towards achieving an international regulatory system to ensure fish stocks within the Irish sea are managed sustainably.	<b>WAG (DEFRA), European Commission, NWNWSFC, SWSFC, CCW, JNCC</b>	<b>High, ongoing</b>
<b>n</b>	Update RAG annually on fish stock trends and latest international development in fisheries management within the Irish Sea.	<b>WAG, NWNWSFC, SWSFC</b>	<b>High, ongoing</b>

<b>6.18</b>	<b>Litter</b>		
<b>MS</b>	<i>Management statements: Ensure adequate management and monitoring are in place to safeguard the SAC features from any unfavourable effects of inorganic refuse and litter.</i>		
<b>a</b>	Enforce the Environmental Protection Act (1990) on the foreshore and prosecute offenders, particularly with regard to fly-tipping	<b>LA, PCNPA, EAW</b>	<b>High, ongoing</b>
<b>b</b>	Raise awareness of relevant legislation with regards to litter pollution amongst all commercial and recreational vessel users through liaison with the harbour authority and relevant user groups and associations.	<b>LA, MCA, SWSFC, NW&amp;NWSFC, CCW, Fishing Industry, Keep Wales Tidy (KWT)</b>	<b>Medium</b>
<b>c</b>	Continue to enforce littering byelaws within the SAC and prosecute offenders	<b>CCC, PCC</b>	<b>High, ongoing</b>
<b>d</b>	Consider the inclusion of fishing vessels within current port waste management regulations in line with other commercial users	<b>MCA</b>	<b>Low</b>
<b>e</b>	Ensure sewerage systems can filter adequately, and undertake improvements where necessary	<b>DCWW, WAG</b>	<b>High, ongoing</b>
<b>f</b>	SAC Officer to monitor trends in littering in Cardigan Bay through liaison with Keep Wales Tidy and MCS	<b>SAC Officer, KWT, MCS</b>	<b>High, ongoing</b>
<b>g</b>	Undertake surveys on beaches to identify whether they contain marine debris likely to entangle SAC features, and, if so, identify where beach collections would be most appropriate	<b>KWT, PCC</b>	<b>High, ongoing</b>
<b>h</b>	Investigate the source of litter found during beach litter surveys in order to target action aimed at preventing littering at sea	<b>KWT, PCC</b>	<b>High, ongoing</b>
<b>i</b>	Conduct beach litter surveys to determine whether education programmes or other controls have led to reductions in marine debris.	<b>KWT, PCC</b>	<b>Medium</b>
<b>j</b>	Support community based volunteer CoastCare Projects and Adopt-a-beach schemes and encourage them to regularly record data on litter type and quantity, and to participate in the national Beachwatch survey	<b>MCS, KWT, PCC</b>	<b>Medium</b>
<b>k</b>	Further encourage public clean-ups to help reduce the quantities of marine litter within the SAC: Sensitive and manually clean amenity beaches of litter during the tourist season	<b>KWT, PCC, CCC</b>	<b>Medium</b>
<b>l</b>	Investigate extending cleaning of amenity beaches through the winter	<b>CCC, PCC, KWT, MCS</b>	<b>Low</b>
<b>m</b>	Encourage boat users, especially fishermen, to bring back any litter generated or found at sea for correct disposal, particularly debris likely to cause a hazard to navigation and safety, as well as potentially impacting on SAC features.	<b>CCC, KWT, WAG, RAs</b>	<b>High</b>
<b>n</b>	Provide adequate marine litter disposal facilities	<b>CCC</b>	<b>High</b>
<b>o</b>	Raise awareness amongst all marine users of codes of conduct which refer to littering at sea and on the coast and implement as appropriate	<b>Keep Wales Tidy, MCA, Ras, MCS</b>	<b>High, ongoing</b>
<b>p</b>	Raise awareness of the 'Navigate with Nature' scheme, particularly with regard to recreational users	<b>MCA</b>	<b>Medium</b>

<b>q</b>	Encourage the use of biodegradable materials in the manufacture of nets, long lines, lobster and crab pots and other gear to reduce the potential impacts of ghost fishing and littering.	<b>NWNWSFC, SWSFC, CCW, WAG</b>	<b>Medium</b>
<b>6.19</b>	<b>Non-Native Marine Species</b>		
<b>MS</b>	<i>Management statements: Manage activities to minimize the risk of introduction of non-native marine species, particularly where these may have an adverse impact on the SAC features</i>		
<b>a</b>	Improve understanding of the interaction between non-native species and the SAC features through research and case studies and raise awareness	<b>CCW</b>	<b>Medium</b>
<b>b</b>	CAs to keep updated with policy and advice on management and control of the spread of invasive non native species through liaison with DEFRA	<b>CAs</b> as appropriate, DEFRA	<b>High, ongoing</b>
<b>c</b>	All competent authorities should take due account of relevant national and international legislation on the control and prevention of the introduction/ spread of non-native and alien species.	<b>DfT/DTI, IMO, MCA</b>	<b>High, ongoing</b>
<b>d</b>	Ensure deliberate introductions (e.g. for aquaculture) are licensed and carefully monitored.	<b>DEFRA, CEFAS</b>	<b>High, ongoing</b>
<b>e</b>	Ensure that translocations and releases of bottlenose dolphins and other cetaceans within the range of Cardigan Bay dolphins are licensed and an Appropriate Assessment is undertaken and that IUCN guidelines on translocation are followed.	<b>CCW</b>	<b>High, ongoing</b>
<b>f</b>	Establish a Photo-identification procedure for all released seals.	<b>CCW, Marine Wildlife Rescue, RSPCA, SAC Officer</b>	<b>High, ongoing</b>
<b>g</b>	There is no provision in the WCA for controlling transfer and release of seals. The potential benefits of seeking greater powers to control the translocation and release of marine mammals should be investigated.	<b>CCW</b>	<b>High</b>
<b>6.20</b>	<b>Animal Welfare</b>		
<b>MS</b>	<i>Management statements: Facilitate those engaged in marine animal welfare to understand the impact they might cause to the SAC features and what actions they can take to reduce impacts.</i>		
<b>a</b>	Ensure best practice within animal welfare establishments, particularly in order to minimise human habituation and the potential transfer of disease during rehabilitation	<b>RSPCA, Welsh Marine Life Rescue, New Quay Bird &amp; Wildlife Hospital</b>	<b>High</b>
<b>b</b>	Ensure good communication and local partnerships with nature conservation bodies through a memorandum of understanding relating to marine mammal conservation and welfare intervention	<b>CCW, RSPCA, Welsh Marine Life Rescue, New Quay Bird &amp; Wildlife Hospital</b>	<b>Medium</b>
<b>c</b>	Raise awareness of wild animal needs and practical welfare potential	<b>RSPCA, Welsh Marine Life Rescue, New Quay Bird &amp; Wildlife Hospital, CCW</b>	<b>Medium</b>
<b>6.21</b>	<b>Climate Change</b>		

<b>MS</b>	<i>Management statements: Raise awareness about current predictions and impacts of climate change and promote an energy efficient use of resources.</i>		
<b>a</b>	Promote and encourage national initiatives and support relevant local action that contributes to addressing global problems that potentially impact the marine environment	<b>All RAs and CAs</b> (via WMCP) (where applicable), WAG	<b>High</b>
<b>6.22</b>	<b>Natural processes</b>		
<b>MS</b>	<i>Management statement: Ensure that the impact of anthropogenic activities on natural processes are monitored and as far as possible taken into account in the implementation of the Management Scheme.</i>		
<b>a</b>	Local Authorities (LAs) to report from Shoreline Management plans (SMP), co-ordinated by WAG, on natural processes in Cardigan Bay and the Irish Sea, noting alterations or trends that may be anthropogenically influenced.	<b>Local Authorities (CCC, PCC)</b>	<b>Medium, ongoing</b>
<b>b</b>	Ensure that consideration of plans and projects (see section 4.1.2) take full account of the potential for alterations to be made to natural processes and the potential effects these may have on the SAC features.	<b>CCW</b>	<b>Essential on application</b>
<b>c</b>	Promote research that aims to gain a better understanding of the key habitats that support the SAC features and the key natural factors that determine their importance.	<b>CCW, NERC</b>	<b>High, ongoing</b>
<b>6.23</b>	<b>Resources</b>		
<b>a</b>	Develop an annual RAG work programme based on collective actions in this plan that can be used as a basis for bidding for resources over and above individual work programmes.	All RAs (where applicable)	<b>High</b>
<b>b</b>	Liaison amongst RA to secure resources that will ensure the effective implementation of this Management Scheme	All RAs (where applicable), WAG	<b>High</b>
<b>c</b>	Develop links with other related plans (e.g. LBAP) to identify resource opportunities and avoid duplication of effort.	All RAs (where applicable)	<b>High</b>
<b>6.24</b>	<b>Recording, reviewing and reporting</b>		
<b>a</b>	Carry out an annual review of Action Plan, in consultation with CAs, and other appropriate stakeholders	RAG, CAs and other organisations via SAC Officer	<b>High</b>
<b>b</b>	Review current Management Scheme (by reviewing condition of the features against conservation objectives) every 5 years (in line with 6 yr FCS reporting to the EU, allowing for 1 year for the review)	RAG (via SAC Officer)	<b>High, (every 5 yrs)</b>
<b>c</b>	Create and update a database of all current activities within the SAC (e.g bait collections, angling hotspots, etc.) in order to keep a record of activities level and identify problem areas as and when they occur.	<b>RAG via SAC Officer</b>	<b>Medium, ongoing</b>
<b>d</b>	Create and annually update a register of all assessed Plans & Projects in order to measure effectiveness of the Management Scheme	<b>CCW, SAC Officer</b>	<b>Medium, ongoing</b>

<b>e</b>	Review the effectiveness of management actions on factors (see section 5.2.3)	<b>CCW</b>	<b>High</b>
<b>f</b>	Review the conservation objectives for the SAC and produce revised Regulation 33 advice as and when appropriate	<b>CCW</b>	<b>High</b>
<b>g</b>	Annual review of what management actions are required (see section 5.2.4)	<b>CCW, RAs</b>	<b>High</b>
<b>h</b>	Disseminate the results of research/monitoring studies widely to improve knowledge and understanding of the SAC in order to guide future management	<b>CCW, SAC officer</b>	<b>High</b>
<b>i</b>	Develop a photoidentification scheme for stranded seals & link to seal release scheme	<b>CCW, SAC Officer</b>	<b>High</b>
<b>j</b>	Develop a research register of all contracted, proposed & planned projects as well as desirable projects to aid SAC management	<b>CCW, RAs</b>	<b>High</b>
<b>k</b>	Promote and make available above-mentioned research register to students, Universities and other organisations wishing to undertake research projects within the SAC.	<b>SAC Officer</b>	<b>High</b>
<b>l</b>	Update SAC literature database for additional 6 features and for new papers since 2001 and make all papers available to SAC Officer for the creation of "SAC research library"	<b>CCW, RAs</b>	<b>High</b>
<b>m</b>	A research project should be considered to look at barriers to migration in terms of passability by river and sea lamprey and the affect and practicality of removing such obstacles.	<b>CCW, EA</b>	<b>High</b>
<b>n</b>	Further survey work should be carried out at previously sampled locations, on an annual/biannual basis, to improve understanding of the temporal patterns of river and sea lamprey.	<b>CCW, EA</b>	<b>High</b>

# APPENDICES

## Appendix 1 – Glossary

<b>Annex I habitats</b>	A natural habitat(s) listed in Annex I of the Habitats Directive for which Special Areas of Conservation can be selected.
<b>Annex II species</b>	A species listed in Annex II of the Habitats Directive for which Special Areas of Conservation can be selected.
<b>Assemblage</b>	A collection of plants and/or animals characteristically associated with a particular environment.
<b>Attribute</b>	Characteristic of an interest feature/sub-feature which provides an indication of the condition of the feature or sub-feature to which it applies.
<b>Benthos</b>	Animals attached to, or living on, in or near the sea bed, including that part which is exposed by the tide.
<b>Bioaccumulation</b>	The concentration of fat-soluble chemical substances in the tissues of animals. These can concentrate through the food-web, reaching particularly high levels in top predators.
<b>Biodiversity</b>	The total variety of life on earth. This includes diversity within species, between species and of ecosystems.
<b>Biotope</b>	The physical habitat and its biological community; a term which refers to the combination of the physical environment and its distinctive collection of species.
<b>Bivalve</b>	Class of molluscs, so called because the body is enclosed in a pair of shells or “valves”. Examples of species are the common mussel and cockle.
<b>Bryozoans</b>	Small marine colonial animals which resemble seaweeds. Sometimes known as moss animals, the individuals are called zooids. An example species is hornwrack.
<b>Characteristic</b>	Special to or especially abundant in a particular situation or biotope. Characteristic species should be immediately conspicuous and easily identified.
<b>Compliance monitoring</b>	Monitoring undertaken against accepted standards to ensure that agreed or required measures are being followed.
<b>Community</b>	A group of organisms occurring in a particular environment, presumably interacting with each other and with the environment, and identifiable by means of ecological survey from other groups.
<b>Competent authority</b>	Any Minister, government department, public or statutory undertaker, public body or person holding a public office that exercises legislative powers.
<b>Condition monitoring</b>	Monitoring undertaken against the conservation objectives to ensure that the site's interest features are attaining favourable condition as set out in the favourable condition table of the Regulation 33 advice. For those

	interest features of which there is little or no knowledge, it involves monitoring to establish a baseline against which future change in the condition of the features can be assessed.
<b>Conservation objective</b>	A statement of the nature conservation aims for a site, expressed in terms of the favourable condition that we wish to see the species and/or habitats for which the site has been selected to attain. Conservation objectives for European marine sites relate to the aims of the Habitats Directive.
<b>Epifauna</b>	Animals living on the surface of the seabed.
<b>European marine site</b>	A European site (SAC or SPA) which consists of, or in so far as it consists of, marine areas.
<b>Exposure</b>	Exposure is defined as a measure of the extent, seasonality and intensity of an activity across the whole site.
<b>Favourable conservation status</b>	A range of conditions for a natural habitat or species at which the sum of the influences acting upon that habitat or species are not adversely affecting its distribution, abundance, structure or function throughout the EU in the long term. The condition in which the habitat or species is capable of sustaining itself on a long-term basis.
<b>Favourable condition</b>	This is attained when the target condition for an interest feature in terms of the abundance, distribution and/or quality of that feature within the site is met.
<b>Flood defence</b>	Measures to help prevent flooding from the sea and inland (fluvial) watercourses including 'main river' and 'ordinary' watercourses. The Environment Agency has responsibility for main rivers although its powers to do works are often permissive not mandatory. Internal drainage boards, local authorities and riparian owners have responsibility for other watercourses.
<b>Habitat</b>	The place in which a plant or animal lives.
<b>Habitats Directive</b>	The abbreviated term for <i>Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora</i> . It is the aim of this Directive to promote the conservation of certain habitats and species within the European Union.
<b>Hydroids</b>	Colonial animals forming tuft-like growths on seaweeds etc. Also known as sea firs and includes species such as sea beard and whiteweed.
<b>Infauna</b>	Benthic animals which live within the seabed.
<b>Interest feature</b>	A natural or semi-natural feature for which a European marine site has been selected. This includes any Habitats Directive Annex I habitat, or any Annex II species for which a SAC has been designated under the Habitats Directive.
<b>Maintain</b>	The action required for an interest feature when it is considered to be in favourable condition.
<b>Management Scheme</b>	The framework established by the Relevant Authorities (RAs) at a European marine site under which their functions are exercised to secure compliance with the requirements of the Habitats Directive.

<b>Natura 2000</b>	The European network of protected sites established under the Birds Directive and the Habitats Directive
<b>Natural change</b>	Changes to the condition of interest features from natural causes. All habitats are dynamic, some more than others, so some change in the components of a habitat may be expected to change over time. Sea level rise is outside the control of Relevant Authorities (RAs) and is considered to be 'natural change'. However, sea level rise may affect the site where it is artificially constrained by sea walls, which are the responsibility of some Relevant Authorities (RAs).
<b>Operations which may cause deterioration or disturbance</b>	Any activity or operation taking place within, adjacent to, or remote from a European marine site that has the potential to cause deterioration to the natural habitats for which the site was designated or disturbance to the species and its habitats for which the site was designated. The Habitats Directive requires only consideration of activities that could lead to the deterioration of the natural habitats and habitats of species or significant disturbance of the species in terms of meeting the site's objectives.
<b>Polychaetes</b>	A group of marine worms including bristle worms (eg lugworm), tube worms (eg keelworm) and fan worms (eg peacock worm), with numerous bristles borne on projections of the body.
<b>Plan or Project (PP)</b>	Any proposed development that is within a relevant authority's function to control, or over which a competent authority has a statutory function to decide on applications for consents, authorisations, licences or permissions.
<b>Relevant authority</b>	The specific public authority which has powers or functions which have, or could have, an impact on the marine environment, or adjacent to, a European marine site.
<b>Restore</b>	The action required for an interest feature when it is not considered to be in a favourable condition.
<b>Sea defences</b>	Measures to help prevent flooding from the sea.
<b>Sensitivity</b>	The tolerance of a habitat, community or individual species to damage from an external force.
<b>Sub-feature</b>	An ecologically important sub-division of an interest feature.
<b>Vulnerability</b>	The exposure of a habitat, community or individual of a species to an external factor to which it is sensitive.

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Plaice, a species found on sand banks	Rohan Hold, CCW -
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Cardigan Bay Boat Place, view from window	Annalisa Bianchessi, Ceredigion County Council
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Bloody Henry starfish	CCW_SMNR
Surveying diver	Rohan Holt, CCW
Sea cave viewed from the inside	Rohan Holt, CCW
Razorbills on ledge	Janet Baxter
Cardigan coastline	Annalisa Bianchessi, Ceredigion County Council

## Appendix 2 – Abbreviations and acronyms

AA	Appropriate Assessment
AMP	Asset Management Plan
AONB	Area of Outstanding Natural Beauty
ATFC	Afon Teifi Fairways Committee
BAP	Biodiversity Action Plan
CA	Competent Authority
CAMS	Catchment Abstraction Management Strategies
CEC	Crown Estate Commissioners
CBFA	Cardigan Bay Fishermen's Association
CCC	Ceredigion County Council
CCW	Countryside Council for Wales
CE	Crown Estates
CEFAS	Centre for Environment, Fisheries and Aquaculture Science
CICS	Common Incidents Classification System
COLREG	Collision Regulations
CoC	Code of Conduct
CRoW Act	Countryside and Rights of Way Act 2000
DEFRA	Department for Environment, Food and Rural Affairs
DCWW	Dŵr Cymru Welsh Water
DTI	Department for Trade and Industry
EAW	Environment Agency Wales
EC	European Commission
E&I	Education and Interpretation
EIA	Environmental Impact Assessment
EMS	European Marine Site
EU	European Union
FEPA	Food and Environment Protection Act 1985
HAP	Habitats Action Plan
ICZM	Integrated Coastal Zone Management
IMO	International Maritime Organisation
IPC	Integrated Pollution Control
ISQG	Interim Sediment Quality Guideline
JNCC	Joint Nature Conservation Committee
KWT	Keep Wales Tidy
KWTC	Keep Wales Tidy Campaign
LA	Local Authority
LBAP	Local Biodiversity Action Plan
NW&NWSFC	North Western & North Wales Sea Fisheries Committee
MARPOL	Convention for the Prevention of Pollution from Ships
MCA	Maritime and Coastguard Agency
MCS	Marine Conservation Society
MEM	Marine Environmental Monitoring
MFA	Marine & Fisheries Agency
MHPA	Milford Haven Port Authority
MHWM	Mean High Water Mark
MLWM	Mean Low Water Mark
MoD	Ministry of Defence
NALG	National Aquatic Litter Group
NAW	National Assembly for Wales
NT	National Trust
PEL	Probable Effects Levels
PCB	Polychlorinated Biphenyl
PCC	Pembrokeshire County Council
PCF	Pembrokeshire Coastal Forum
PCNPA	Pembrokeshire Coast National Park Authority

PMCG	Pembrokeshire Marine Code Group ( <i>members include: wildlife boat operators, dive charter operators, Countryside Council for Wales, Pembrokeshire Coast National Park Authority, Pembrokeshire Marine SAC Officer, Pembrokeshire Coastal Forum, Pembrokeshire Biodiversity Implementation Officer, RSPB, Sea Trust – part of the Wildlife Trust for South &amp; West Wales, National Trust, Dyfed Powys Police, Pembrokeshire College</i> )
POCG	Pembrokeshire Outdoor Charter Group ( <i>members include: outdoor activity providers, Field Studies Council, Countryside Council for Wales, Pembrokeshire Coast National Park Authority, Pembrokeshire County Council, Pembrokeshire Coastal Forum, Wildlife Trust for South &amp; West Wales, National Trust, MoD, YHAs, Pembrokeshire College, Keep Wales Tidy</i> )
PP	Plan or Project
RA	Relevant Authority
RHIB	Ridged Hull Inflatable Boat
RSO	Range Standing Orders
RSPB	Royal Society for the Protection of Birds
RSPCA	The Royal Society for the Prevention of Cruelty to Animals
RTP	Regional Tourism Partnership
RYA	Royal Yachting Association
SAC	Special Area of Conservation
SAP	Species Action Plan
SFC	Sea Fisheries Committee
SMRU	Seal Mammal Research Unit
SPA	Special Protection Area
Spp	Species
SSSI	Site of Special Scientific Interest
SWSFC	South Wales Sea Fisheries Committee
TBT	Tri-n-butyl Tin
THLS	Trinity House Lighthouse Service
UWWTD	Urban Waste Water Treatment Directive
SOLAS	Convention on Safety of Life at sea
SPA	Special Protection Area
SWSFC	South Wales Sea Fisheries Committee
SWWTP	South West Wales Tourism Partnership
TGA	Tourism Growth Area
WAG	Welsh Assembly Government
WCMP	Wales Coastal and Maritime Partnership
WCO	Wildlife Crime Officers
WFSA	Welsh Federation of Sea Anglers
WTB	Wales Tourist Board
WWTW	Waste Water Treatment Works

## **Appendix 3 – Relevant Authorities (RAs), roles and responsibilities**

### **Relevant Authorities Group (RAG) members and contact information**

#### **Ceredigion County Council**

Penmorfa

Aberaeron, SA46 OPA

01545 572104

Contact names: Ms Liz Allan, Conservation Management Officer, Ceredigion  
Mr Ian Dutch, Principal Planner Coast & Countryside Section

#### **Countryside Council for Wales**

Plas Goyerddan

Aberystwyth, Ceredigion

SY23 3EE

08451 306 229

Contact names: Ms Jenny Higgins, Senior Conservation Officer, Aberystwyth  
Ms Mandy McMath, Senior Marine Vertebrate Ecologist, Bangor

#### **Environment Agency Wales**

Llys Afon,

Hawthorn Rise,

Haverfordwest,

Pembrokeshire, SA61 2BQ

Tel: 01437 760081

Contact name: Ms Kate Collins, Habitats Directive South Wales Marine Coordinator

#### **Dŵr Cymru Welsh Water**

Cilfynydd Environmental Education Centre

Cilfynydd WwTws

Cilfynydd, Nr Pontypridd,

CF37 4WX

Tel: 01443 492720

Contact name: Mrs Dusitaporn Thomas, Environment Manager

#### **Pembrokeshire Coast National Park Authority**

Llanion Park

Pembroke Dock,

Pembrokeshire, SA72 6DY

Tel: 0845 345 7275

Contact name: Ms Jane Hodges, Ecologist

#### **Pembrokeshire County Council**

County Hall,

Haverfordwest,

Pembrokeshire, SA61 1TP

Tel: 01437 764551

Contact name: Mr Trevor Theobald, Planning Assistant - Ecology

#### **North Western & North Wales Sea Fisheries Committee**

Lancaster University,

Lancaster LA1 4YY

t: 01524 68745; f: 01524 844980

Contact name: Dr Stephen Atkins, Chief Executive  
Ms Victoria Hickin, Marine Biodiversity Officer

**South Wales Sea Fisheries Committee**

Queen's Buildings,  
Cambria Place,  
Swansea, SA1 1TW  
Tel: 01792 654466  
Contact name: Mr Phil Coates, Director

**Trinity House Lighthouse Service**

Trinity House,  
The Quay,  
Harwich,  
Essex, CO12 3JW  
Tel: 01255245088  
Contact name: Mr Thomas Arculus, Estates and Property Officer

## Purpose and Terms of Reference

*The Cardigan Bay SAC Relevant Authorities Group (RAG) will:*

- *develop and implement a Management Scheme to achieve the conservation objectives for the SAC, which has the widest possible public understanding, agreement and ownership; and*
- *whilst recognising that decision making remains the responsibility of the individual Relevant Authorities (RAs), provide a means to assist those authorities in making decisions appropriate to the conservation requirements of the site.*

## TERMS OF REFERENCE

- 1 The Relevant Authorities Group (RAG) is established in accordance with Government guidance<sup>71</sup>.
- 2 The membership of the Group will comprise all of the Relevant Authorities (RAs), as defined in the Habitats Regulations<sup>72</sup>, for the Cardigan Bay Special Area of Conservation.<sup>73</sup>
- 3 The Group will establish a Management Scheme for the Cardigan Bay SAC as provided for in Regulation 34 of the Habitats Regulations and as outlined in DETR/Welsh Office guidance. The Group will publish and disseminate a Management Scheme document.
- 4 No Relevant Authority will have authority over any of the others. The roles of Chair and Secretariat of the group will be undertaken by agreement to assist the activities of the Group.
- 5 The Group will have no authority over any of the functions, duties or responsibilities of the member Relevant Authorities (RAs). Each of the Relevant Authorities (RAs) is jointly and equally empowered to establish a Management Scheme in partnership with the others.
- 6 The Relevant Authorities (RAs) will exercise their functions so as to secure compliance with the requirements of the Habitats Directive<sup>74</sup>.
- 7 The Group will ensure that there is wide participation in developing and ownership of the Management Scheme by: enabling and encouraging the creation of an advisory / liaison forum and establishing links with existing relevant groups and fora; consultation with Competent Authorities (CAs) who are not also Relevant Authorities (RAs); publication of appropriate information on the development and establishment of the scheme.
- 8 The Group may:  
establish such groups as will contribute to the wide participation in the development of the Management Scheme; and/or undertake such projects as are considered conducive to the development of the Management Scheme.
- 9 The Group will keep these Terms of Reference under review.

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<sup>71</sup>European Marine Sites in England & Wales. A Guide to the Conservation (Natural Habitats &c) Regulations 1994 and to the Preparation and Application of Management Schemes. DETR/Welsh Office. ISBN 1 85112 087 4

<sup>72</sup>The Conservation (Natural Habitats &c) Regulations 1994 (SI No 2716)

<sup>73</sup>The meaning of 'Relevant Authority' is as defined in Regulation 5 of the Habitats Regulations. For the Cardigan Bay site these comprise: Ceredigion County Council, Countryside Council for Wales, Dŵr Cymru Welsh Water, Environment Agency, Pembrokeshire Coast National Park, Pembrokeshire County Council, Trinity House, South Wales Sea Fisheries Committee, North Western and North Wales Sea Fisheries Committee.

<sup>74</sup>Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora

## Relevant Authority roles/responsibilities

### **Ceredigion County Council (CCC)**

General role & responsibilities: CCC is a multi-purpose authority with responsibilities covering the environment, transport, education, social services, housing and economic development. Duties and activities include town and country planning, coastal defence, economic development and tourism, coastal management, beach management, emergency planning, public health and water quality monitoring.

Responsibilities specific to the SAC: The County Council is the local planning authority for the area adjoining Cardigan and the Teifi Estuary to Aberarth, which covers most of the landward boundary of the SAC. The Planning function within the local authority covers both Development Control and the Development Plan. The Council is in the early stages of producing a Local Development Plan.

Jurisdiction: Planning jurisdiction normally only applies as far as Mean Low Water Marks (MLWM), but under certain circumstances can extend beyond in relation to structures above and below water that have a land origin.

The **Countryside Council for Wales (CCW)** is the executive authority for the conservation of wildlife habitat and geological sites, and for the protection of wild animal and plant species, in the sea and on land in Wales.

General role & responsibilities: It is the agent for the Government's fulfilment of international obligations and advises the UK Government on these matters through the Joint Nature Conservation Committee. The Council is required to keep the countryside of Wales under constant review and to offer its independent advice to Government and others as necessary about the protection of its natural beauty and amenity and their enjoyment by the people of Wales and its visitors. The Council promotes that enjoyment in a way which encourages understanding of the environment, and sustains public support for the conservation of natural resources.

Responsibilities specific to the SAC:

- participation in management groups;
- advising other Relevant Authorities (RAs) as to the conservation objectives for the SAC, and as to any operations or activities which may cause deterioration or disturbance to SAC features;
- consultation with Competent Authorities (CAs) over the implications of plans and projects;
- the making of byelaws (with the consent of the Secretary of State) for the regulation of activities not covered by other Relevant Authorities (RAs);
- monitoring and reporting on the condition of SAC features.

Jurisdiction: Out to the 12mile limit.

**Dŵr Cymru Cyfyngedig** which trades as **Dŵr Cymru/Welsh Water (DCWW)** is appointed by the Secretary of State for Wales to be the Water and Sewerage Undertaker for Wales under the Water Industry Act 1991.

General role & responsibilities: DCWW provides, operates, develops and maintains a system of water supply and also abstracts, treats and distributes a supply of water to domestic and commercial customers. DCWW also provides and maintains a system of public sewers and treatment works in order to remove, treat, and dispose of waste sewage sludge and other effluent both from domestic and commercial customers.

Responsibilities specific to the SAC: Whilst the Company has no water supply interest within the boundaries of the site it does have a number of sewage outfalls which dispose of treated effluent, directly or indirectly to the marine boundary of the site. DCWW is committed to undertaking all its work in such a way as to take account of the environment and the need for conservation, and with respect to sewage disposal is pledged to the eventual provision of full treatment and disinfection at all of its works which discharge to sea or estuary, including those to be found within the Cardigan Bay SAC.

Jurisdiction: case dependant

The **Environment Agency** (EA) was formed following Royal Assent to the 1995 Environment Act, amalgamating the National Rivers Authority (NRA), Her Majesty's Inspectorate of Pollution (HMIP), 83 Waste Regulation Authorities (WRA), and parts of the Department of the Environment (DoE).

**General role & responsibilities:** The Agency has a wide range of statutory duties and powers related to its functions. Many of these are relatively unchanged from those carried out by the NRA, HMIP and the WRAs. However, the 1995 Environment Act consolidated and amended inherited duties and added new duties including making a contribution to sustainable development, having regard to costs and benefits, compiling reports on the state of the environment, producer responsibility and contaminated land.

The Agency provides high quality environmental protection and improvement through an emphasis on prevention and education, and then vigorous enforcement where necessary. Principal functions are pollution prevention and control, water resources, flood defence (including responsibility for construction and maintenance of sea defences but not for coastal protection), fisheries, conservation, navigation and recreation.

**Responsibilities specific to the SAC:**

- The Agency is required to contribute to the development of a Management Scheme for the SAC.
- The Agency issues a range of consents and authorisations and undertakes operational work which could potentially impact on the SAC. It is a requirement that SAC features be taken into account when determining authorisations and carrying out Agency work. The Agency is required by DETR to review all existing consents and authorisations which may impact on SACs by 2004. The Agency has agreed in principle a staged process for completing this task with CCW.
- The Agency controls the exploitation of relevant fisheries (salmon, trout, freshwater and eel) via primary legislation, licensing and the creation of bylaws in order to optimise social and economic benefits from their sustainable exploitation.
- The Agency has a duty to further wherever possible the conservation of SAC features when carrying out water management activities, to have regard for conservation as part of Pollution Prevention and Control (PPC) activities, and generally to promote the conservation of natural beauty and amenity and the wildlife dependent on the aquatic environment.
- (The Agency does not have any specific powers in respect of its Recreation duty nor own any property relevant to the SAC.)

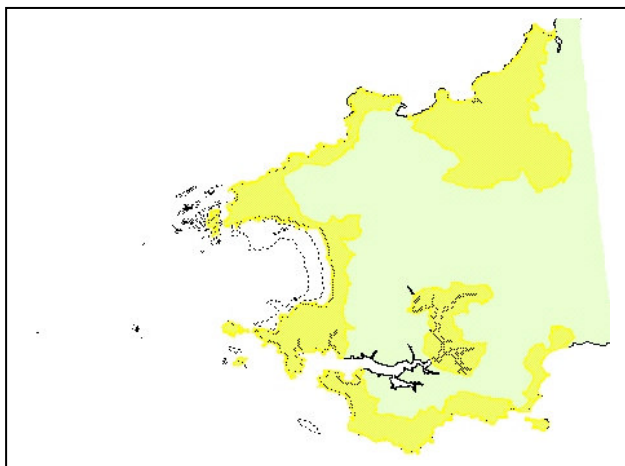
**Jurisdiction:** Pollution control and fisheries responsibilities extend to 3 and 6 nautical miles from the coast respectively.

**Pembrokeshire Coast National Park Authority** (PCNPA) is a special purpose authority set up in 1996, as part of local government re-organisation in Wales.

**General role & responsibilities:** The Environment Act 1995 sets out two purposes for National Parks in England and Wales. Conservation "to conserve and enhance the natural beauty, wildlife and cultural heritage of National Parks", and education and recreation "to promote opportunities for the understanding and enjoyment of the special qualities (of the Parks) by the public". The National Park Authority (NPA) also has a duty to foster the social and economic well being of communities within the National Park. The NPA is the sole local planning authority for the area within its boundaries (jurisdiction as local planning authority extends to Low Water Mark, ordinary tides only).

**Responsibilities specific to the SAC:** National Park byelaws for behaviour on access land apply to any and all land that is owned or otherwise legally occupied by the NPA. This includes land occupied by the NPA outside the National Park boundary. With reference to the Cardigan Bay SAC, the NPA leases the foreshore (between Low Water Mark and High Water Mark, ordinary tides) on the whole of the west and north coast of Pembrokeshire (excluding Fishguard and Goodwick), all the Milford Haven Waterway and Daugleddau Estuary within the Park (except Benton) and the south coast between Giltar Point and the National Park boundary at Angle (except MoD land).

**Jurisdiction:** see map.



Pembrokeshire Coast National Park Authority area of jurisdiction (shaded). Outside the Daugleddau Estuary the National Park boundary follows Low Water Mark, ordinary tides. Within the Daugleddau Estuary (above Burton), the National Park boundary includes the seabed below Low Water Mark, ordinary tides. (The presumption is, however, that all statutory functions of the NPA cease at Low Water Mark, ordinary tides).

### **Pembrokeshire County Council (PCC)**

**General role & responsibilities:** PCC is a multi-purpose authority with responsibilities covering the environment, transport, education, social services, housing and economic development. Duties and activities include town and country planning, coastal defence, economic development and tourism, coastal management, beach management, emergency planning, public health and water quality monitoring.

**Responsibilities specific to the SAC:** The County Council is the planning authority for the area adjoining Cardigan and the Teifi Estuary to Ceibwr Bay. The Planning function within the local authority is divided between Development Control and Development Planning

**Jurisdiction:** Planning jurisdiction normally only applies as far as Mean Low Water Marks (MLWM), but under certain circumstances can extend beyond in relation to structures above and below water that have a land origin.

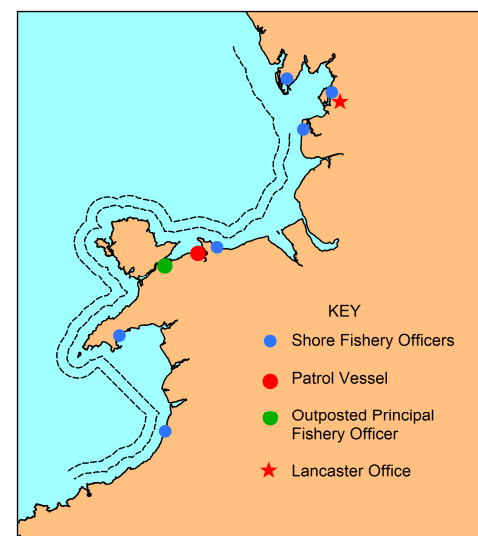
### **North Western and North Wales Sea Fisheries Committee**

(NW&NWSFC) is a statutory body constituted under the Sea Fisheries Regulation Act 1966.

**General role & responsibilities:** To regulate, protect and develop fisheries for shellfish and finfish. The Committee has the power to make bylaws to regulate fishing, and to enforce certain national and EC fisheries legislation.

**Responsibilities specific to the SAC:** Since 1992, SFCs have also been under a duty to have a regard for the conservation of the wider marine environment, in addition to more specific responsibilities recently introduced arising from the EU Habitats and Birds Directives.

**Jurisdiction:** The jurisdiction of NWNWSFC is between Haverigg Point, Cumbria to Cemaes Head, Cardigan, out to the 6 nautical mile offshore fishery limit. The Welsh part of the District starts from Point of Ayr, Flintshire as the Dee Estuary is managed by the Environment Agency.



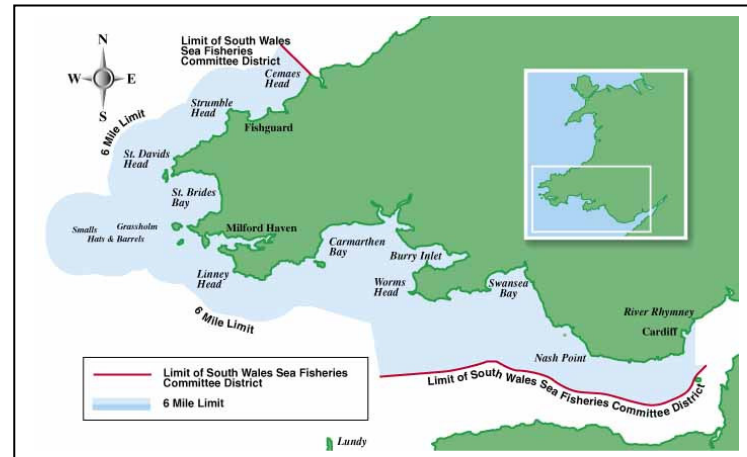
### South Wales Sea Fisheries Committee

(SWSFC) is a statutory body constituted under the Sea Fisheries Regulation Act 1966.

General role & responsibilities: SWSFC regulate, protect and develop fisheries for shellfish and regulate the fishing for or taking of sea fish.

Responsibilities specific to the SAC: Since 1992, SFCs have also been under a duty to have a regard for the conservation of the wider marine environment, in addition to more specific responsibilities recently introduced arising from the EU Habitats and Birds Directives.

Jurisdiction: see map.



The jurisdiction of SWSFC is currently between Cardiff and Cardigan, and to the 6 nautical mile offshore fishery limit which arising from outlying islands means up to 22 miles offshore in some areas.

### Trinity House Lighthouse Service

General role & responsibilities: Trinity House Lighthouse Service has a duty to deliver modern, reliable and economic aids to navigation service, to assist the safety of all classes of mariners in general navigation. Its principal activities include buoy laying, superintendence of and consent to local lights, wreck marking and/or dispersal, helicopter and lighthouse operations, and the provision of differential GPS.

## Competent Authorities (CAs) roles/responsibilities

The **Crown Estate** was established in its present form by the Crown Estate Act 1961. Under this Act, the Estate is managed by a Board of Commissioners who have a duty to 'maintain and enhance the value of the estate and the return obtained from it, but with due regard to the requirements of good management.' The Crown Estate grants licences/leases for activities to take place on its land (it does not licence activities). The Crown Estate is an estate in land which includes 55% of the foreshore and all the seabed out to the 12 mile limit.

The **Department for Business, Enterprise and Regulatory Reform (BERR)** was created in 2007 from the old Department of Trade and Industry. The main areas covered are essentially those previously covered by the DTI: Company Law, Trade, Business Growth, Employment Law, Regional Economic Development, Energy and Consumer Law. Licences for oil and gas exploration are issued by BERR.

The **Department for Environment, Food and Rural Affairs (DEFRA)** is the government department which deals with food, air, land, water and people. It plays an important role in co-ordinating marine environment policy. Its main aim is sustainable development, including a better environment and sustainable use of natural resources. DEFRA also aims to enhance opportunity in rural areas, improve enjoyment of the countryside and conserve and manage wildlife resources.

The **Marine and Fisheries Agency (MFA)** is an Executive Agency of Defra with responsibility for all sea fishing activity within British Fishery Limits off the coast of England and Wales and UK vessels operating outside those waters. The MFA is also responsible for the administration of a range of applications for statutory licences and consents to undertake works in tidal waters and at sea in UK waters and beyond; including marine developments, offshore energy, coast defences, dredging and waste disposal.

The **Maritime and Coastguard Agency (MCA)** is the government agency with responsibility for maritime safety, responding to maritime emergencies and minimising the risk and impacts of pollution from ships to the marine environment and UK interests.

The **Ministry of Defence** provide the defence capabilities needed to ensure the security and defence of the United Kingdom and the Overseas Territories, including against terrorism, and to support the Government's foreign policy objectives, particularly in promoting international peace and security.

The **National Assembly for Wales (NAW)** was established by the Government of Wales Act 1998 to take on the powers and responsibilities of the Secretary of State for Wales. The Assembly has the power and responsibility to develop and implement policy and make vital decisions in a range of areas including the environment.

The **National Trust** is the largest conservation organisation in Britain independent of Government. It is a registered charity founded in 1895. The National Trust is committed to preserving for the nation the finest countryside, coastline, historic buildings, landscape parks and gardens. The National Trust is also the largest private landowner in England and Wales, and owns and manages on the nation's behalf about 600 miles of coastline.

The **Welsh Assembly Government (WAG)** is the executive of the National Assembly for Wales and consists of the First Minister, the Counsel General and up to 12 ministers and deputies. The role of the executive is to develop and implement policy; exercise executive functions and make statutory instruments.

## Appendix 4 – Further information: bibliography and links to other documents

***This appendix contains a bibliography as well as links to other relevant documents. For ease of use, these are arranged under relevant section headings. For links to relevant useful websites see: [www.cardiganbaysac.org.uk](http://www.cardiganbaysac.org.uk)***

### General

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## **Appendix 5 – Complementary plans covering the Cardigan Bay SAC and Ceredigion Coastline**

### **DEVELOPMENT PLANS (WITH DIRECT BEARING ON COASTAL MANAGEMENT)**

Dyfed Structure Plan

Ceredigion Unitary Development Plan (UDP)

### **MULTI-SECTORAL PLANS & BYELAWS (WITH DIRECT BEARING ON THE COAST)**

Ceredigion Shoreline Management Plan

Ceredigion 2020 (Community Strategy)

WAG – draft Coastal Tourism Strategy

WAG – Draft Integrated Coastal Zone management (ICZM) Scheme

National Trust byelaws

### **ENVIRONMENTAL QUALITY / PUBLIC HEALTH**

Air Quality Strategy

Waste Management Strategy

Recycling Strategy

Beach Plans

Green Seas Strategy

Contaminated Land Strategy

### **NATURE / WILDLIFE / LANDSCAPE CONSERVATION**

Ceredigion Local Biodiversity Action Plan

(It should be noted that specific actions within the SAC action plan feed into the Ceredigion Biodiversity Partnership Local Biodiversity Action Plan (LBAP). The LBAP contains specific plans for species and habitats of national and local importance, outlining the threats, current action and planned action needed to conserve the biodiversity of Ceredigion. Ceredigion County Council (CCC), the Countryside Council for Wales (CCW) and the Environment Agency (EA) are involved in the consultation of draft marine Species Action Plans (SAPs) and Habitat Action Plans (HAPs) to ensure the plans complement each other and avoid duplication of effort.)

Natura 2000 marine and coastal site management schemes

Pen Llyn a'r Sarnau SAC Management Scheme

Draft Pembrokeshire Marine SAC Management Scheme

Intertidal and Coastal SSSI Management Plans

Cors fochno & Dyffi Biosphere Reserve

Dyfi Ramsar Plan

Pendinas & Traeth Tanybwld Local Nature Reserve (LNR)

Ynyslas National Nature Reserve (NNR)

### **FISHERIES REGULATIONS**

North Wales and North West Sea Fisheries Committee Byelaws:

**Byelaw 1:** Application of byelaws

**Byelaw 2:** Attachment to nets

**Byelaw 3:** Prohibition of seine netting

**Byelaw 4:** Mesh size – trawl nets

**Byelaw 5:** Cockle and mussel permit scheme

**Byelaw 6:** Shrimp and Prawns – restriction of fishing

**Byelaw 7:** Mesh sizes – nets other than trawls

**Byelaw 8:** Small mesh nets – other than trawl nets – restrictions

**Byelaw 9:** Mechanically propelled vessels – maximum length

**Byelaw 10:** Set and drift nets

**Byelaw 11:** Marking of fishing gear and keep pots

**Byelaw 12:** Restriction on fishing for bivalve molluscan shellfish

**Byelaw 13:** Cockles – minimum size

**Byelaw 13A:** Cockles and mussels – management of the fishery

**Byelaw 14:** Cockle fishery - seasonal closure

**Byelaw 15:** Mussels – minimum size

**Byelaw 16:** Shellfishery – temporary closure

**Byelaw 17:** Re-deposition of shellfish  
**Byelaw 18:** Foul hooking of sea fish  
**Byelaw 19:** Specified fish sizes  
**Byelaw 20:** Restriction of fishing for scallop in Cardigan Bay  
**Byelaw 24:** Fixed engines – prohibitions (Wales)  
**Byelaw 25:** Drift nets – prohibitions (Wales)  
**Byelaw 26:** Fixed engines – prohibitions and authorisations (England)  
**Byelaw 27:** Mobile nets - prohibitions and authorisations (England)  
**Byelaw 28:** Application of byelaws  
**Byelaw 29:** Minimum size of lobsters  
**Byelaw 30:** Fishing for lobster, crawfish, crab, prawn and whelk.  
**Byelaw 31:** Protection of V-notched lobsters

National and European fisheries legislation  
Bass Nursery Areas  
Salmon Action Plans (SAPs)  
Environment Agency Rod Fishing Byelaws  
Environment Agency Net Byelaws  
Environment Agency Net Limitation Order

#### **PORTS, SHIPPING & NAVIGATION REGULATIONS**

Aberystwyth Harbour Environmental Plan  
Aberystwyth Harbour Conservancy Policy  
Aberaeron Harbour Conservancy Policy  
New Quay Harbour Conservancy Policy  
Aberaeron Harbour Safety Policy  
New Quay Harbour Safety Policy  
Safety Management System Aberaeron Harbour  
Safety Management System Aberystwyth Harbour  
Safety Management System New Quay Harbour

#### **MARINE POLLUTION CONTINGENCY PLANS**

National Contingency Plan (NCP)  
West Wales Environment Group (WWEG) Plan  
West Wales Oil Pollution Advisory Group (WWOPAG) Plan

## Appendix 6 - Additional info on assessment of activities

### Education and interpretation

**Table 3 Organisations and institutions providing E & I conservation components**

<b>Centre/Programme</b>	<b>Organisation</b>
<i>Interpretation:</i>	
Adopt a beach	Marine Conservation Society
Cardigan Bay lookout	Crown Estate, Ceredigion County Council
Cardigan Bay Marine Wildlife Centre	Private / South & West Wales Wildlife Trust
Cardigan Island Farm Park	Private
Commercial Wildlife boat trips	Private
Coast Care	Keep Wales Tidy
Llanerchaeron & other sites	National Trust
Marine Heritage Coast	Ceredigion County Council
Pembrokeshire Coast National Park	Pembrokeshire Coast National Authority
Sea Search	Marine Conservation Society
Urdd Centre, Llangrannog	Urdd Gobaith Cymru
Welsh Wildlife Centre	South & West Wales Wildlife Trust
<i>Education:</i>	
Education Officer	Sea Watch Foundation Cymru/CCW
Eco-schools	Keep Wales Tidy
SAC related higher education courses / research	University of Wales
Welsh Wildlife Centre	Wildlife Trust of South & West Wales

## Effluent disposal

**Table 4. Dŵr Cymru Welsh Water Waste Water Treatment Works**

Site Name	NGR	Existing Treatment	Planned Treatment	Disinfection
Cardigan	SN 1720 4620	Membrane filtration		Yes
Aberporth	SN 2660 5152	Primary & microfiltration	None	Yes
Llangrannog	SN 3080 5420	Membrane filtration		No  Note: membrane filtration was installed as best available small footprint works, not to meet a disinfection requirement
Llanina (New Quay)	SN 5035 5957	Secondary		No
Aberaeron	SN 4570 6340	Secondary		

### Primary treatment

The purpose of primary treatment is to remove from the sewage much of the readily settleable material, such that the subsequent biological treatment is not overloaded. This is achieved in continuous flow tanks where the velocity of the sewage is reduced so that solids settle out and can be removed as sludge. The top liquor or 'settled sewage' passes forward to secondary treatment.

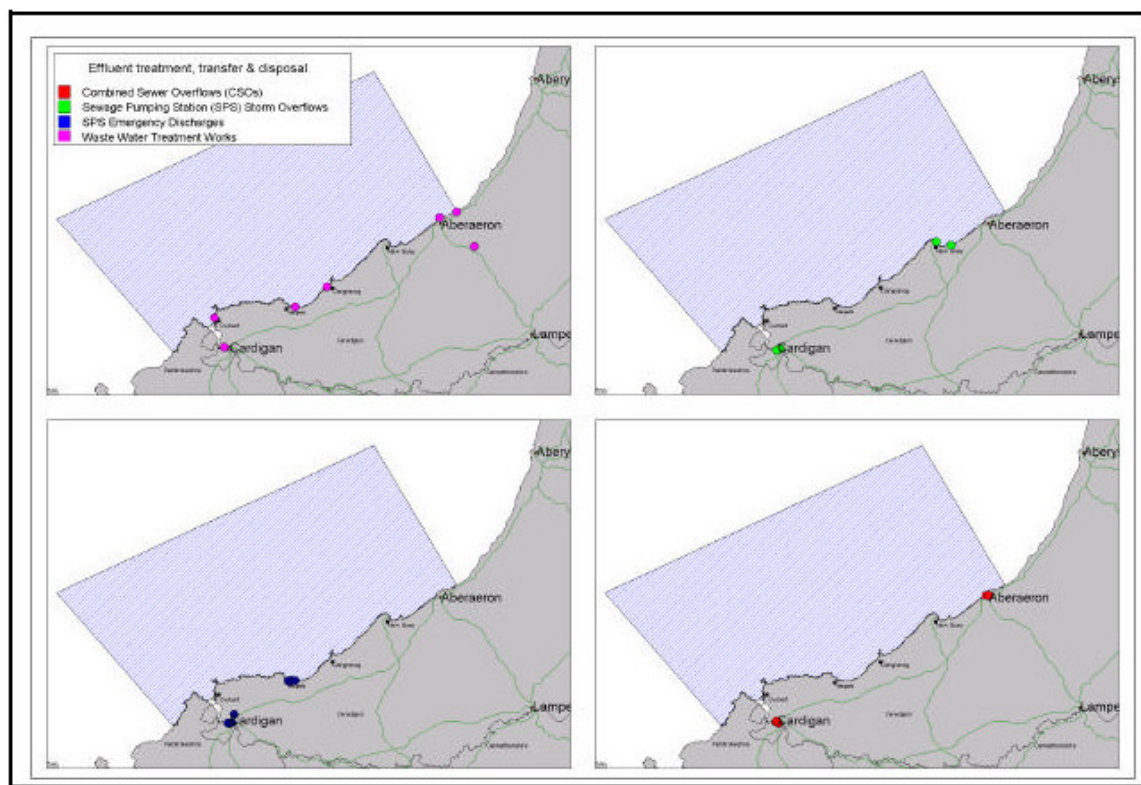
### Secondary treatment

Secondary treatment comprises biological oxidation of sewage by either (a) biological filtration (fixed bed reactor) followed by settlement of humus, or (b) the activated sludge process (suspended biomass reactor) followed by settlement of the sludge and separation of the surplus. The basic requirements for the viability of both processes are a food supply (the sewage), suitable organisms and an adequate supply of oxygen.

### Tertiary treatment

Additional stages of treatment to further polish the effluent include (a) filtration, (b) nutrient reduction, (c) phosphorus removal (d) reed beds, (e) microfiltration and (f) ultra violet disinfection.

**Figure 10 Effluent treatment, transfer and disposal sites in and adjacent to Cardigan Bay SAC**



**Table 5. Dŵr Cymru Welsh Water - Intermittent Discharges**

Location	NGR (of discharge)	Description
<b>Sewage Pumping Station (SPS) Storm Overflows</b>		
Aberarth	SN 4789 6409	Aberarth SPS
Aberaeron	SN4567 6368	Foreshore Car Park SPS
New Quay	SN3889 6023	Rock St SPS
Llangrannog	SN3089 5424	Ship Inn Car Park SPS
St Dogmaels	SN1637 4692	North End SPS
St Dogmaels	SN1665 4560	Main SPS (Jewson outfall)
Cardigan	SN 1825 4595	SPS No 1 Priory
Cardigan	SN 1800 4595	SPS No 2 Gloucester Row
Cardigan	SN 1775 4577	SPS No 3 South
New Quay	SN 3887 6018	Car Park SPS (Paragon)
New Quay	SN 4089 5968	Cei Bach SPS
<b>Combined Sewer Overflows (CSOs)</b>		
Aberaeron	SN 4548 6288	Wellington Street
Aberaeron	SN 4584 6283	Water Street
Aberaeron	SN 4576 6287	60m d/s A487 Road Bridge
New Quay	SN3901 6004	CSO 900 John Street
New Quay	SN3894 6010  To sea via surface water sewer	CSO 790 Junction Church Rd and Hill Street
		Chip Shop CSO
		CSO 800 Church Rd
St Dogmaels	SN1645 4621	CSO 2A
St Dogmaels	SN 1639 4623	CSO 2B
Cardigan	SN 1800 4595	SSO Gloucester Row
Cardigan	SN 1761 4605	No 4
Cardigan	SN 1796 4594	No 5
Cardigan	SN 1773 4618	Queens Terrace

<b>SPS – Emergency overflow</b>		
<b>Location</b>	<b>NGR (of discharge)</b>	<b>Description</b>
Aberarth	SN 4789 6409	Aberarth SPS
Aberaeron	SN4567 6368	Foreshore Car Park SPS
New Quay	SN3889 6023	Rock St SPS
Llangrannog	SN3089 5424	Ship Inn Car Park SPS
St Dogmaels	SN1633 4691	North End SPS
St Dogmaels	SN1665 4604	Main SPS (Jewson outfall)
Cardigan	SN 1796 4590	SPS No 5
Cardigan	SN 1823 4597	SPS No 1
Cardigan	SN 1780 4590	SPS No 3
Cardigan	SN 1766 4594	SPS No 4
Cardigan	SN 1850 4710	Felin Ban SPS
Gwbert	SN1592 5035	Gwbert SPS
Aberporth	SN 2609 5165	Headland pumping station
Aberporth	SN 2583 5137	SPS No. 1
Aberporth	SN 2567 5152	SPS No. 2
Aberporth	SN 2660 5152	Waste Water Treatment Works

## Litter

**Table 6. Summary of the prohibition on disposal of garbage in the Merchant Shipping Regulations, 1988.**

>25 nautical miles from land	12 - 25 nautical miles from land	3 -12 nautical miles from land	0-3 nautical miles from land
Plastics Oily wastes	Plastics, lining & packaging material that floats Oily wastes	Plastics, lining & packaging material that floats Oily wastes Garbage if not ground to <25mm	No waste or rubbish of any kind may be thrown overboard

**Table 7. Beached cleaned by in Ceredigion (2007).**

<b>Blue Flag Beaches</b>	<b>Cleaned by</b>
Aberporth	CCC (bathing season May to September) / Keep Wales Tidy (all year round)
Aberystwyth South	CCC (bathing season May to September) / KWT (all year round)
Aberystwyth North	CCC (bathing season May to September) / KWT (all year round)
Borth	CCC (bathing season May to September) / KWT (all year round)
Llangrannog	CCC (bathing season May to September) / KWT (all year round)
New Quay Harbour	CCC (bathing season May to September) / Keep Wales Tidy (all year round)
Tresaith	CCC (bathing season May to September) / Keep Wales Tidy (all year round)
<b>Green Coast Award</b>	
Clarach	CCC (bathing season May to September) / Keep Wales Tidy (all year round)
Llanrhystud	CCC (bathing season May to September) / Keep Wales Tidy (all year round)
Aberaeron South beach /Traeth y De Aberaeron	CCC (bathing season May to September) / Keep Wales Tidy (all year round)
Penbryn	National Trust
Mwnt	National Trust

**The Minch project:**

Littering studies and coordinated strategies for the reduction of marine litter such as the **Minch Project** propose methods such as the following for reducing litter:

**Reduction of litter from land based sources**

- i. Provision of adequate rubbish disposal and recycling facilities for the public, along with publicity on their location etc.
- ii. Incorporation of beaches in local authority waste management plans.
- iii. Stricter enforcement of anti-littering laws to deter fly-tipping and littering by businesses and the public.
- iv. Rapid improvement by water companies of combined sewer overflow systems which service coastal towns.
- v. Encouragement by local authorities and relevant land owners of voluntary local initiatives such as Adopt-A-Beach, Coastcare Schemes and river clean ups.

**Reduction of Pollution from Ships and Fishing Vessels**

- i. Effective development of comprehensive port waste management plans under the merchant Shipping (Port Waste Reception Facilities) Regulations 1997.
- ii. Further education and training of ship owners, ship operators, crews, port users, fishermen, and recreational boat users, with regard to their responsibility in preventing marine pollution.

**Reduction of the Input of Sewage Related Debris**

- i. Labelling of sanitary products with the correct disposal information: Bag It and Bin It - Please Don't Flush It.
- ii. Provision of information and education to encourage the public to 'Bag it and Bin It'.
- iii. Education in schools on the issue of sanitary waste and its correct disposal.
- iv. Provision of disposal facilities for sanitary waste in all public toilets.

## Non-Native Marine Species

### Extent of the activity

There are about 50 non-native marine species which have been introduced into British waters, including red algae, diatoms, angiosperms and invertebrates. Many of these still have a restricted distribution within the British Isles whilst several are widespread and occur, or are likely to occur, within the Cardigan Bay SAC. In recent decades most introductions occurred between 1970 and 1979, the rate of spread varying significantly with each species.

### Mechanism for effect on the features

Work by Rosenthal (1980) and Kohler & Coutenay (1986) categorised detrimental effects of introduced species, some of these, given in Eno *et al* (1997) include:

- Competition with native species,
- Concomitant introduction of new pests, diseases and parasites harmful to resident species,
- Habitat alteration, provision of new niches and changes in water quality,
- Trophic alterations, including dietary competition and predation,
- Spatial alteration, namely competition for space,
- Gene pool deterioration through hybridization.

The effects of some species may be beneficial, such as improvements to water quality and the provision of a new food source to native species.

### Management Response

#### *Rationale*

There is a variety of International and national legislation aimed at preventing or controlling the introduction and spread of non-native species, including:

- Bonn Convention
- Berne Convention
- Rio Convention
- Habitats Directive
- EC Fish Health Directive
- Wildlife and Countryside Act (1981)
- Import of live fish (England and Wales) Act (1988)

The introduction to the wild of any animal not ordinarily resident or regularly visiting Great Britain is an offence under section 14 of the 1981 Wildlife & Countryside Act. Schedule 9 of the Act also contains named species of animals and plants which may not be released. The power to grant licences for the release of such organisms is held jointly by the NAW and DETR. Note however that it is not generally an offence to translocate or release animals or plants to the wild if they are normally resident in Great Britain, and if they are not named on Schedule 9 of the 1981 Act.

Unfortunately, the effects of non-natives can be environmentally disastrous. The effects are compounded by activities associated with their presence. Where a species is commercially important and present in sufficient numbers, it may be exploited, and, depending upon the method of collection or intensity of cultivation, may have impact upon the nature conservation interest of the area. The control of species which become a nuisance can have quite far reaching effects. For instance, mechanical removal or use of pesticides on a non-native would almost certainly affect non-target species, and there are many historical terrestrial examples of the disastrous use of biological control where a second non-native

has been introduced to control the first only to preferentially or additionally target natives. Activities associated with introducing commercial species, for instance preparing the ground or installing culture equipment, also may have an important effect.

The potential effect of an introduction is hard to predict and control methods are generally ineffective. Indeed, no non-native has successfully been eradicated from British waters. The only way of preventing detrimental effects from occurring as a result of non-native introductions is to ensure they do not gain entry in the first place.

The greatest threat by non-natives to bottlenose dolphins and grey seals is probably through the introduction of a disease or parasite. The most effective means of controlling this is to prevent translocation or release of marine mammals into the Cardigan Bay animals range, or the range of other groups with which they interact. An operational limit for this type of activity should therefore be set to zero.

### Case study – *Sargassum muticum*

*Sargassum muticum* or wire weed naturally occurs in Japanese and Chinese waters where it is a small (up to 1m long) member of a larger group of similar brown algae. It first became an invasive species in the 1950's where plants 7m long were found off the west coast of North America and Canada. It was first found attached and living in the UK in Bembridge, Isle of Wight, in 1971 where it had arrived from France (Eno *et al* 1997). It was brought into France accidentally with Pacific oysters from Canada or Japan. It is thought to have spread from France by natural means such as spores in ballast water, on ships hulls but mainly by floating or 'stone walking' of fertile fragments or whole plants. From Bembridge the population has spread along the south coast of England to North Cornwall. Until recently Strangford Lough was the most northerly population in the UK but in April 2004 it was found on the South West coast of Scotland in Loch Ryan. In June 1998 (Davidson 1999), 12 well established plants were found in West Angle Bay in Pembrokeshire. Over the past seven years *S. muticum* has spread into Cardigan Bay, onto the North Llyn, Menai Strait and the west coast of Anglesey.

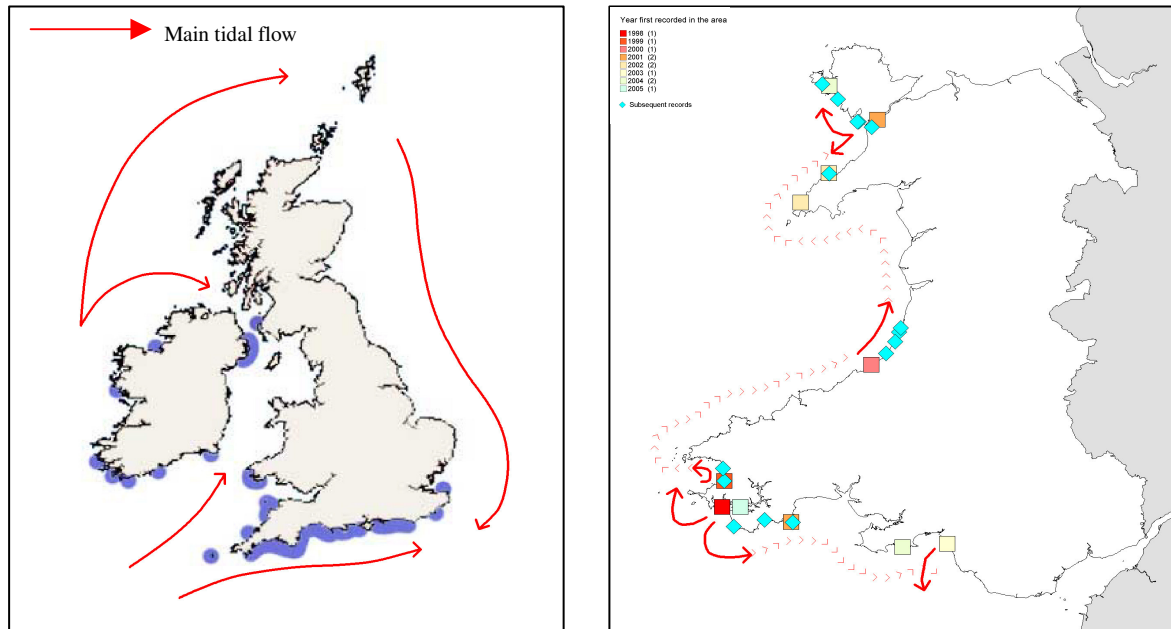


It has also spread into Milford Haven and south along the Bristol Channel as far as the Gower and Port Talbot. It is not known if this rapid spread northwards in Wales has all been from West Pembrokeshire or if there have been other introductions possibly via ballast water, aquaculture, mussel seed movements, aquaria or drift from Strangford Lough.

The spread of *Sargassum muticum* in Wales is of concern (see **Figure 11**). It is known to grow rapidly in shallow water shading out red and other brown algae (Sanchez 2005). It can out-compete local species because it is fast growing, can reproduce within the first year of life and being monocious can fertilise itself (MarLIN website). It can grow and reproduce in fully marine conditions but can also tolerate estuarine conditions. It is also known to affect grazers (Britton-

Simmons 2004) such as sea urchins by shading out their food. There were fears that *S. muticum* would shade out *Zostera* species, but this has not so far been shown to be the case (Davidson 1999).

**Figure 11. Theoretical Relationship between current *Sargassum muticum* distribution in the UK, net tidal flow and current distribution in Wales.**



## Appendix 7 - Boat users guide

English version:

### Ceredigion Recreational Boat Users' Code of Conduct

Make the most of your experience at sea.

This code of conduct has been designed to give you the best opportunities to see and spend quality time with wildlife at sea.

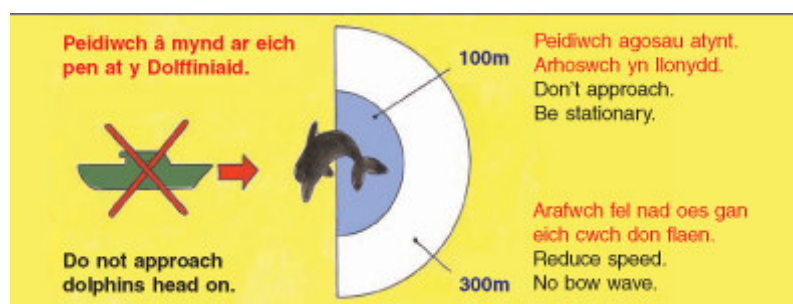
Please follow these simple rules and help protect dolphins, seals and birds in Cardigan Bay for generations to come.

**Keep a look out for marine wildlife and keep your distance. Do not approach marine mammals within 100m; rather let them come to you.**

#### Dolphins, Porpoises & Seals

If these creatures are encountered at sea please

- Do not steer directly towards them or approach within 100m (see illustration).



- Do not change speed & course in a sudden or erratic manner. Slow down gradually if stopping.
- Do not touch or feed them or attempt to swim with them.
- Take extra care to avoid disturbing dolphins and porpoises with their young.
- Do not interfere with seals resting on the shore, especially when with their young during the breeding season from August to the end of October.
- Do not discard litter and fishing tackle at sea
- Avoid any unnecessary noise near the animals

#### Birds

- Keep 100m out from cliffs in the breeding season, 1 March - 31 July.
- Avoid any unnecessary noise close to cliffs.
- Keep clear of groups of birds resting or feeding on the sea.

*This code applies to all recreational vessels including motor boats, RIBS & inflatables, sailing boats & yachts, dinghies, speed boats, personal watercrafts such as jet skis, kayaks and canoes. To report an incident of breach of the Code of Conduct please contact the Harbour Office on 01970 611433 or the Coast and Countryside Section on 01545 570881.*

*Note that Ceredigion Harbourmasters and Launch Control Officers are authorised to withdraw launching and/or mooring permits from vessels and/or individuals not observing local regulations, bylaws or the Ceredigion Marine Conservation Code of Conduct (see above). Deliberate or reckless disturbance of any protected species such as dolphins is an offence under the Wildlife and Countryside Act 1981 and the Countryside Rights of Way Act 2000.*

**Welsh version:**

## **Cod Ymddygiad Defnyddwyr Cychod Hamdden Ceredigion**

Gwnewch y mwyaf o'ch profiad ar y môr.

Cynlluniwyd y cod ymddygiad hwn er mwyn rhoi'r cyfleoedd gorau i weld a threulio amser gwerthfawr gyda bywyd gwyllt y môr.

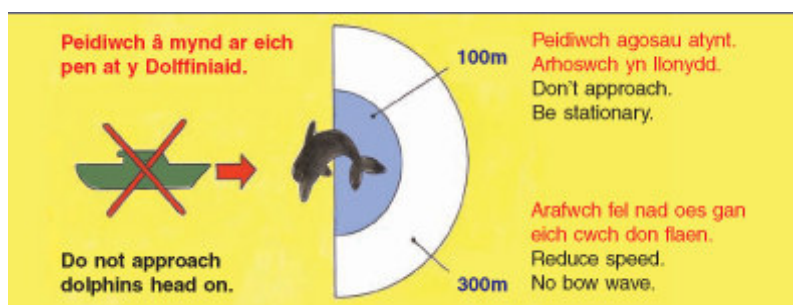
Dilynwch y rheolau syml hyn gan helpu i amddiffyn dolffiniaid, morloi ac adar ym Mae Ceredigion am genedlaethau i ddod.

**Gwylwch rhag creaduriaid gwyllt y môr a pheidiwch mynd yn agos atynt. Peidiwch â mynd yn agosach na 100m; yn hytrach gadewch iddynt ddod atoch chi.**

### **Dolffiniaid, Llamidyddion a Morloi**

Os dewch chi ar draws y creaduriaid hyn yn y môr:

- Peidiwch â llywio'r cwch atynt a pheidiwch â mynd yn agosach na 100m.



- Peidiwch â newid eich cwrs na'ch cyflymder yn sydyn nac yn afreolus. Arafwch yn raddol os ydych am stopio.
- Peidiwch â'u cyffwrdd, eu bwydo na cheisio nofio gyda nhw.
- Byddwch yn hynod o ofalus na fyddwch yn tarfu ar ddolffiniaid sydd gyda rhai ifanc.
- Peidiwch â tharfu ar forloi sy'n gorffwys ar y lan, yn enwedig os yw eu cenawon gyda nhw yn ystod y tymor bridio o fis Awst hyd ddiwedd Hydref.
- Peidiwch â gadael sbwriel a chyfarpar pysgota yn y môr
- Peidiwch â gwneud sŵn diangen ger yr anifeiliaid

### **Adar**

- Cadwch 100m rhyngoch chi a'r clogwyni yn ystod y tymor bridio, 1 Mawrth - 31 Gorffennaf.
- Peidiwch â gwneud sŵn diangen ger y clogwyni
- Cadwch draw oddi wrth grwpiau o adar sy'n gorffwys neu'n bwydo ar y môr.

*Mae'r cod hwn yn berthnasol i bob cwch hamdden gan gynnwys cychod modur, RIBS & chychod gwynt, cychod hwylio & iotiau, dingis, cychod cyflym, cychod personol megis beiciau dŵr, caiaic a chanŵod.*

*Os ydych am sôn am unrhyw achos o dorri'r Cod Ymddygiad cysylltwch â Swyddfa'r Harbwr ar 01970 611433 neu Adain yr Arfordir a Chefn Gwlad ar 01545 570881.*

*Nodwch fod hawl gan Harbwrfeistri a Swyddogion Rheoli Lansio Ceredigion i wrthod defnydd adnoddau lansio a/neu lanio i unigolion nad ydynt yn cydymffurfio â rheoliadau lleol, ag is-ddeddfau neu sydd yn tramgwyddo'r Côt Ymarweddiad Cadwraeth Morol (gweler uchod). Mae tarddu yn anystyriol ar rywogaethau gwarchodedig, tebyg i'r dolffin, yn drosedd o dan ddeddfwriaeth Cefn Gwlad a Bywyd Gwyllt 1981 a Deddf Cefn Gwlad a Hawliau Tramwy 2000.*

Since 2006 the Code is available as an A4 leaflet with an A3 cartoon poster inside from all Tourist Information Centre's along Ceredigion's coastline. It can also be downloaded from the following link:  
<http://www.cardiganbaysac.org.uk/english/publications.shtml>



## Appendix 8 - Passenger boat operators code of conduct

### Commercial Passenger Boat Code

This code has been produced by the owners and skippers of commercial passenger boats operating out of New Quay and Aberaeron, in conjunction with officers from Ceredigion County Council. It has been prepared with the best available advice/information on how to avoid disturbance to wildlife. The guidance applies to all licensed operators.

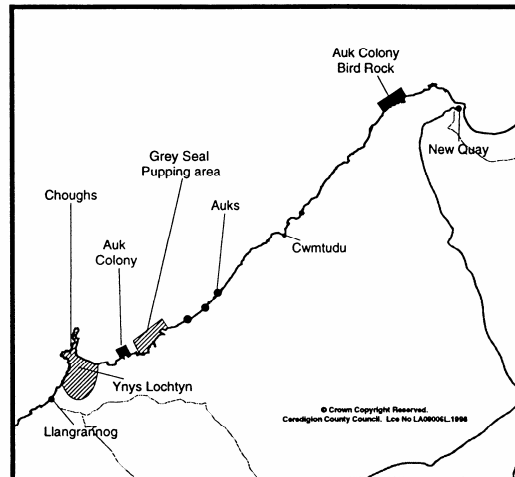
It is recognised that the Ceredigion Marine Heritage Coast (MHC) and candidate Cardigan Bay Special Area of Conservation (SAC) are important areas for marine wildlife, and the following practices should therefore be followed at all times within the area:

#### General

- Speed limit within the MHC of 8 knots
- Speed limit of 8 knots within 300m from high tide line along other stretches
- Adhere to Harbour speed limits
- Outside these areas be aware of wildlife and adopt suitable behaviours when coming into contact
- Approach coves as slowly as possible, i.e. throttle back before the boat enters the field of view. **NB** Onshore winds make boats audible long before they are in view
- Manoeuvre the boat as little as possible when close. Minimise the need to switch engines on/off and anchor or lodge the boat in a stationary position wherever possible. If conditions require frequent manoeuvring, limit time spent at site
- Explain appropriate behaviours to passengers before moving in close: i.e. no sudden movements, get cameras ready before hand, keep a low profile and keep voices low
- Do not ground the boat on the upper beach on the top of the tide. Keep a minimum of one boat length from the tide line. Leave the area slowly and with the minimum use of throttle

#### Seals

- Keep a distance of 50m away from those haul out sites indicated on map
- Keep a distance of 50m away from those pupping areas indicated on map from mid August
- Avoid pointing the bow of the boat at the seals on approach
- Watch for submerged cows on approach as the majority are on the bottom just a few metres offshore. Do not position the boat between mother and pups and avoid blocking beach access in narrow or shallow inlets
- Watch the seals for signs of disturbance; i.e. rapid swimming to and fro, looking wide-eyed at the boat, sudden panic dives. If animals remain nervous or alert, consider withdrawing. If animals



move back into the water, you have disturbed them, make an immediate withdrawal quietly to prevent an extended stampede

#### Birds

- Keep a distance of 50m away from those auk colonies indicated on map from March to mid July
- Approach quietly and with caution. Be prepared to back off quietly if there is any indication of distress (bobbing of heads, erratic movements) to colonies

#### Cetaceans

- Any individual should not be approached head on
- Throttle back from 300m when approaching
- Remain stationary or cruise by at 100m from any individual or group - let them come to you
- Do not circle around individuals or group
- Avoid "bunching" around animals
- Avoid deviating from agreed routes to see animals

#### Further information:

Liz Allan,  
Department of Environmental Services &  
Housing, Ceredigion County Council,  
Penmorfa,  
Aberaeron,  
Ceredigion  
SA46 OPA

## Côd I Ddefnyddwyr Cychod Masnachol

Lluniwyd y Côd hwn gan swyddogion Cyngor Sir Ceredigion ar y cyd â pherchnogion a chapteniaid cychod masnachol sy'n gweithio o Gei Newydd ac Aberaeron. Defnyddiwyd y cyngor / y wybodaeth orau bosib i baratoi y Côd hwn er mwyn sicrhau na therfir ar fywyd gwyllt yr ardal. Mae'r canllawiau hyn yn berthnasol i bawb sy'n rhedeg cychod masnachol.

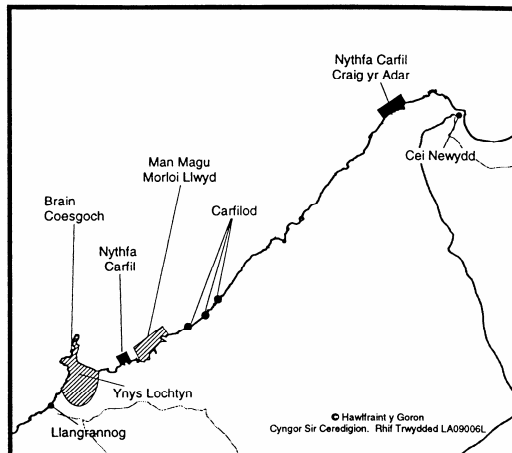
Rydym yn cydnabod fod Ardal Gadwraeth Forol Ceredigion a darpar Ardal Gadwraeth Arbennig Bae Ceredigion yn ardaloedd tra phwysig ar gyfer bywyd gwyllt morol, felly rhaid dilyn y canllawiau canlynol bob amser.

### Cyffredinol

- Cyfyngiad Cyflymdra o 8 not o fewn yr Ardal Gadwraeth Forol
- Cyfyngiad Cyflymdra o 8 not o fewn 300 metr o'r linell llanw uchel ar hyd rhannau eraill o'r Bae
- Cadwch at gyfyngiadau cyflymdra yr Harbwr
- Y tu allan i'r ardaloedd a nodwyd, dylid mabwysiadu ymddygiad priodol wrth ddod wyneb yn wyneb â bywyd gwyllt
- Dylid nesáu mor araf â phosib at unrhyw gildraeth h.y. lleihau'r pwysau ar y throthl cyn i'r cwch ddod i olwg y gildraeth. D.S. Os bydd gwyntoedd tua'r tir gall hyn olygu y gellir clywed cychod cyn iddynt ddod i'r golwg
- Ni ddylech symud y cwch yn ormodol pan fyddwch yn agos i'r traeth. Dylid osgoi diffodd a thanio injan y cwch yn aml yn ogystal ag angori'r cwch neu ei gadw yn ei unfan am amser hir. Os bydd yn rhaid symud llawer ar y cwch oherwydd yr amodau ar y pryd, ni ddylech dreulio gormod o amser mewn un safle
- Dylid esbonio ymddygiad priodol i ddefnyddwyr cyn agosáu at y cildraethau h.y. dweud wrthynt na ddylent symud yn sydyn, ond yn hytrach sicrhau bod eu camera ganddynt yn barod gan gadw proffil isel a'u lleisiau'n dawel
- Ni ddylid glanio'r cwch ar ran uchaf y traeth pan fydd y llanw'n uchel. Dylid cadw o leiaf pellter hyd cwch o linell y llanw. Gadewch y traeth yn araf gan ddefnyddio cyn lleied o throthl ag sy'n bosib.

### Morloi

- Cadwch bellter o 50 metr o'r safleoedd pysgota / hela a nodwyd ar y map
- O ganol mis Awst ymlaen cadwch bellter o 50 metr o'r safleoedd genl a nodwyd ar y map
- Dylid osgoi anelu pen blaen y llong yn union i gyfeiriad y morloi wrth nesáu atynt
- Gwyliwch wrth nesáu at y lan am forloi benyw a all fod o dan y dwr, gan fod y mwyafrif ohonynt ar y gwaelod, ychydig o fetrau oddi ar y lan. Peidiwch â gosod y cwch rhwng y fam a'i morloi bychan ac osgoi blocio mynediad i gildraethau cul a bas
- Gwyliwch am unrhyw arwyddion a fydd yn cyfleu fod y morloi yn aflonyddu h.y. nofio'n gyflym yn ôl



ac ymlaen, edrych at y cwch â llygaid mawrion, neu ddeifio'n sydyn fel petaent mewn panig. Os bydd yr anifeiliaid yn parhau'n nerfus neu'n wyliadwrs, dylech ystyried ymadael. Os byddant yn symud yn ôl i'r dwr, rydych wedi tarfu arnynt a dylech ymadael ar unwaith, gan wneud hynny mor dawel â phosib er mwyn osgoi rhuthrad pellach.

### Adar

- O fis Mawrth i ganol mis Gorffennaf dylech gadw pellter o 50 metr o nythfeydd y Carfilod a nodwyd ar y map
- Dylid nesáu â gofal a hynny mor araf â phosib. Dylech fod yn barod i fynd oddi yno yn dawel os byddant yn aflonyddu mewn unrhyw fodd (pennau'n siglo yn ôl ac ymlaen, symud yn sydyn).

### Morfilod

- Ni ddylid mynd ymlaen at unrhyw forfil unigol yn uniongyrchol
- Ni ddylid defnyddio'r throthl o fewn 300 metr i gyrraedd y morfilod
- Dylid cadw'r cwch yn llonydd neu symud yn araf nid llai na 100 metr o unrhyw forfil unigol neu grŵp - gadewch iddynt hwy ddod atoch chi
- Peidiwch â chylchdroi o amgylch unrhyw unigolyn neu grŵp
- Dylid osgoi 'tyrru' o amgylch anifeiliaid
- Peidiwch â mynd oddi ar y trywydd penodedig er mwyn gweld mwy o anifeiliaid.

### Am wybodaeth pellach cysylltwch a;

Liz Allan,  
Adran Gwasanaethau Amgylcheddol a Thai,  
Cyngor Sir Ceredigion,  
Penmorfa,  
Aberaeron,  
Ceredigion  
SA46 OPA

## Appendix 9 - Pembrokeshire Marine Code

### English version

#### Pembrokeshire Marine Code

A huge diversity of marine birds, animals and plants share Pembrokeshire's coastline with us. Due to the rarity and importance of some of these species, legislation exists to protect them and ensure the conservation of them and the marine environments they inhabit. All cetaceans (dolphins, porpoises and whales), basking sharks, turtles and wild birds are protected by law against intentional taking, killing or injuring. Other animals including seals and plant life also receive legal protection. Reckless disturbance of cetaceans, wild birds, seals, basking sharks and turtles is also an offence.

Following the code will ensure that Pembrokeshire's wildlife is protected and you will also reduce the risk of committing an offence.

- Where possible remain at a distance of at least 100m from marine wildlife and breeding/nesting sites and stay for no longer than 15 mins
- Avoid approaching marine wildlife at sea, allow them to approach you. If they choose to, remain on a steady course and speed. When in close proximity to marine mammals maintain a 'safe navigable speed' only.
- Avoid crowding wildlife. Ensure a maximum of three vessels are within 100m at any time. If necessary move away.
- Avoid cliffs, gullies and enclosed bays where possible. Be aware of your surroundings. Many wildlife species use these areas to breed and are easily disturbed when cornered.
- Hauling out or mooring close to young animals may distress nearby parent animals and prevent them feeding or approaching their young. Prolonged disturbance may cause abandonment of young altogether.
- Avoid erratic movements and changes in speed.
- Do not make unnecessary noise.
- Do not touch, feed or swim with marine wildlife.
- Do not remove any wildlife from the area.
- Follow appropriate 'good practise' guidelines for activity or craft type and maintain a look out at all times.
- Contact local wardens (National Park, RSPB Wildlife Trust & Skomer MNR) in the area prior to activity for information on areas to be avoided and those suitable for your chosen activity.

Even if the intention is not to directly observe wildlife, any activity we undertake in the marine environment has the potential to cause disturbance. The potential from powered craft and personal water craft are obvious due to noise and maneuverability. However other vessels are equally likely to cause as much disturbance. Marine wildlife may not be as aware of the presence of quiet sailing craft and canoes until quite close which can startle. Flapping sail, particularly close to shore presents a flash of colour and loud noises as sails fill.

Enjoy the environment but respect the wildlife within it. Using local operators familiar with the area for your diving and wildlife expeditions should also increase the value of your experience and ensure that no offences are committed. The Map below show areas sensitive to disturbance throughout the year. Please ensure that these areas are respected and enjoyed by everyone.

## Welsh version

### Côd Morol Sir Benfro

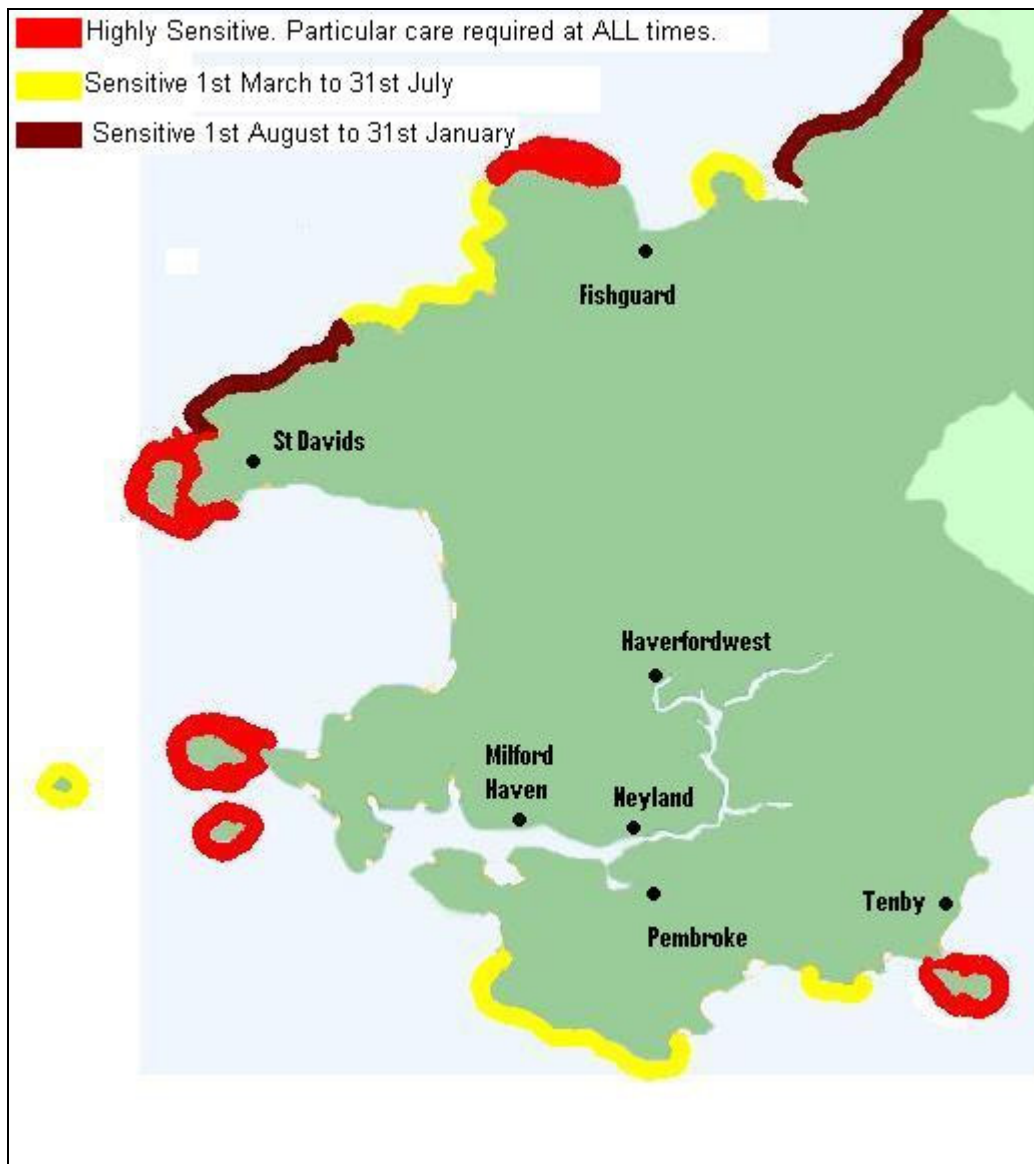
Mae amrywiaeth enfawr o adar, anifeiliaid a phlanhigion morol yn rhannu arfordir Sir Benfro â ni. Oherwydd bod rhai o'r rhywogaethau yma mor brin ac mor bwysig, mae deddfwriaeth yn bodoli i'w diogelu ac i sicrhau eu cadwraeth a chadwraeth yr amgylcheddau maen nhw'n byw ynddyn nhw. Mae'r gyfraith yn diogelu pob anifail morfilaidd (dolffiniaid, llamidyddion a morfilod), heulforgwn, crwbanod ac adar gwyllt rhag cael eu cymryd, eu lladd neu eu niweidio yn fwriadol. Mae'r gyfraith hefyd yn diogelu anifeiliaid eraill, gan gynnwys morloi, a phlanhigion. Mae aflonyddu anifeiliaid morfilaidd, adar gwyllt, morloi, heulforgwn a chrwbanod yn ddi-hid hefyd yn drosedd.

Trwy ddilyn y cod, byddwch yn sicrhau bod bywyd gwyllt Sir Benfro wedi'u diogelu a byddwch hefyd yn lleihau'r perygl o droseddu.

- Lle bo hynny'n bosibl gwnewch yn siwr eich bod o leiaf 100m i ffwrdd o fywyd gwyllt morol a safleoedd bridio/nythu a pheidiwch ag aros yno am gyfnod hwy na 15 munud
- Peidiwch â mynd at fywyd gwyllt morol yn y môr; gadewch iddyn nhw ddod atoch chi. Os byddan nhw'n dewis gwneud hynny, peidiwch â newid eich hynt na chyflymu. Pan fyddwch yn agos at famaliaid morol cadwch ar 'gyflymder mordwyo diogel'.
- Osgowch dyrru yn agos ar fywyd gwyllt. Sicrhewch nad oes mwy na thri chwch o fewn 100m ar unrhyw un adeg. Os bydd angen, symudwch i ffwrdd.
- Ceisiwch osgoi clogwyni, gyliau a baeau caeedig lle bo hynny'n bosibl. Byddwch yn ymwybodol o'r hyn sydd o'ch cwrmpas. Bydd llawer o rywogaethau bywyd gwyllt yn defnyddio'r ardaloedd yma i fridio, ac mae'n hawdd eu haflonyddu trwy eu cornelu.
- Ceisiwch osgoi symud yn ansicr a newid eich cyflymder.
- Peidiwch â gwneud unrhyw swm diangen.
- Peidiwch â chyffwrdd â bywyd gwyllt morol, eu bwydo na nofio gyda nhw.
- Peidiwch â symud unrhyw fywyd gwyllt o'r ardal.
- Dilynwch ganllawiau 'arfer da' priodol ar gyfer y gweithgaredd neu'r cwch a chadwch eich llygaid yn agored bob amser.

Hyd yn oed os nad ydych yn bwriadu gwyllo bywyd gwyllt yn uniongyrchol, mae'n bosibl y bydd unrhyw weithgaredd rydym yn ei wneud yn yr amgylchedd morol yn achosi aflonyddwch. Mae potensial cychod pweredig a chychod dwr personol i aflonyddu yn amlwg o ystyried eu swm a hawster eu trin. Fodd bynnag, mae'r un mor debygol y bydd cychod eraill hefyd yn achosi aflonyddwch. Efallai na fydd bywyd gwyllt morol mor ymwybodol bod cychod hwylio tawel a chanws yn bresennol hyd nes eu bod yn weddol agos, a gall hyn eu brawychu. Gall hwyl sy'n chwifio, yn enwedig yn agos at y lan, greu fflach o liw a swm uchel wrth i'r hwyl lenwi.

Mwynhewch yr amgylchedd, ond parchwch y bywyd gwyllt sydd ynddo. Os byddwch yn defnyddio gweithredwyr lleol sy'n gyfarwydd â'r ardal i fynd ar deithiau plymio ac ar alldeithiau bywyd gwyllt, dylai hyn wneud eich profiad yn fwy gwerth chweil.



A detailed code of conduct with maps can be downloaded from the following link:

<http://www.pembrokeshiremarinecode.org.uk/documents/marinecodemaps.pdf>

Pembrokeshire County Council also produces codes of conduct for kite sports and personal watercraft.

## Appendix 10 - Marine Consents Advice

Please note that this table is aimed at summarising current marine consents and is for guidance only.

<b>Marine Consents that need to be considered when undertaking activities in the Coastal Zone ( Below MHWM)</b>											
<b>Activities requiring consent</b>	<b>Local Authority Town and Country Planning Act 1990</b>	<b>Food and Environment Protection Act (FEPA)</b>	<b>Land Drainage Consent</b>	<b>Coast Protection Act Approval</b>	<b>Harbour Authority Consent</b>	<b>Pollution Prevention and Control Permit</b>	<b>Environment Agency Discharge consent</b>	<b>May require Environmental Impact Assessment (EIA), Appropriate Assessment (AA)</b>	<b>Transport and Works Act 1992</b>	<b>The Electricity Act 1989 (Section 36)</b>	<b>Other consents</b>
Land claim (Reclaim from the sea)	X	X	X	X	X	X	X	X			
Construction/ alteration of harbours, slipways, jetties, marinas, pontoons	X	X	X	X	X			X			
Other coastal development	X	X	X	X	X			X			
Construction, extension or operation of offshore wind power generating station over 50MW								X	X	X	
Cables and pipelines	X	X	X	X	X			X			
Laying moorings		X	X	X	X						
Coastal protection	X	X	X	X	X			X			
Flood /sea defence	X	X	X	X	X			X			
Capital dredging	X	X	X	X	X			X			

Activities requiring consent	Local Authority Town and Country Planning Act 1990	Food and Environment Protection Act (FEPA)	Land Drainage Consent	Coast Protection Act Approval	Harbour Authority Consent	Pollution Prevention and Control Permit	Environment Agency Discharge consent	May require Environmental Impact Assessment (EIA), Appropriate Assessment (AA)	Transport and Works Act 1992	The Electricity Act 1989 (Section 36)	Other consents
Maintenance dredging	X	X	X	X	X			X			
Offshore aggregate dredging		X		X				X			
Disposal of dredge spoil onto land	X	X		X				X			
Foreshore recharge. Beneficial use of dredging	X	X	X	X	X	X		X			
Effluent discharge							X				
Mobile benthic or pelagic fishing (commercial)						X					
Mariculture (shellfish farming)								X			
Shellfish waste disposal		X					X	X			
Navigation marks and lights					X			X			

**Additional notes:**

Where a Plan or Project determines the framework for a development applying to the whole or part of Wales, (but not for individual consents), this may qualify for Strategic Environmental Assessment (SEA) under the Environmental Assessment of Plans and Programmes (Wales) Regulations 2004 and 'SEA' Directive 2001/42/EC.

Transport and Works Act 1992 - Displaces need for EA and CPA in offshore wind farm consent. TWA order can authorise ancillary works. TWA Order is permissive rather than obligatory and does not confer planning permission. Section 19 of TWA dis-applies the need for consent under section 34 CPA. [www.planning.dtlr.gov.uk/twa92/](http://www.planning.dtlr.gov.uk/twa92/)

***The Electricity Act 1989 (section 36) - For construction, extension or operation of offshore wind power generating station in territorial waters of England and Wales over 50 MW. Extended under statutory Order (SI 2001/3642) to cover all offshore wind and water driven developments above 1 MW.***

Where Local Planning Authority approval is not required, but the operation/activity is within the inter-tidal zone (between mean high and low water marks), consent or assent maybe required under the Wildlife & Countryside Act 1981 (as amended), where this area forms part of a site of special scientific interest (SSSI). Contact CCW for further information.

Commercial fishing requires a Fish for Sale permit from the Sea Fisheries Committee. Issued to those with registered and licensed vessels only.