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SID 5 Research Project Final Report

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Project identification

1. Defra Project code
2. Project title
3. Contractor organisation(s)
4. Total Defra project costs (agreed fixed price)
5. Project: start date.....
end date.....

6. It is Defra's intention to publish this form.
Please confirm your agreement to do so YES NO

(a) When preparing SID 5s contractors should bear in mind that Defra intends that they be made public. They should be written in a clear and concise manner and represent a full account of the research project which someone not closely associated with the project can follow.

Defra recognises that in a small minority of cases there may be information, such as intellectual property or commercially confidential data, used in or generated by the research project, which should not be disclosed. In these cases, such information should be detailed in a separate annex (not to be published) so that the SID 5 can be placed in the public domain. Where it is impossible to complete the Final Report without including references to any sensitive or confidential data, the information should be included and section (b) completed. NB: only in exceptional circumstances will Defra expect contractors to give a "No" answer.

In all cases, reasons for withholding information must be fully in line with exemptions under the Environmental Information Regulations or the Freedom of Information Act 2000.

(b) If you have answered NO, please explain why the Final report should not be released into public domain

Executive Summary

7. The executive summary must not exceed 2 sides in total of A4 and should be understandable to the intelligent non-scientist. It should cover the main objectives, methods and findings of the research, together with any other significant events and options for new work.

This project arose from a need to co-ordinate activities relating to the provision of data and information on the UK coastal zone, so that users would have improved access to what they needed in order to fulfil their responsibilities effectively. This need was identified at 2 Defra-funded workshops which pre-dated the proposal submission: *Integrated Mapping of UK Marine & Coastal Zone – the Way Forward* (1999), and *Delivering Integrated Marine Mapping for the UK* (2002).

A key purpose of the project was to establish a Coastal Data Co-ordinator, based at Cefas (Burnham-on-Crouch), whose remit was to establish strong links to a similar activity being carried out within the Environment Agency and by the existing Marine Environmental Data (MED) Co-ordinator based at the British Oceanographic Data Centre (BODC). These three co-ordination activities were guided by the IACMST Marine Environment Data Action Group (MEDAG), with the formation of the Coastal Information Team in December 2002. One of the key deliverables throughout the project has been the dissemination of information on developments in marine data management to the wider UK marine science and management community. This was initially in paper format as *Coast Map News* and later in electronic format as *Marine Data News* (in conjunction with MEDAG). Another key deliverable in the early part of the project was to determine user requirements. Interviews and a questionnaire were used to glean user requirements across a number of Defra Divisions ((MCEU, FM, SFI, Wildlife) and compile a list of common data sets and identify problems in data management. This was sent to the Defra GI Unit to inform the development of the SPIRE initiative, was used by Prof Mike Cowling in his 2005 review of data needs, and more generally was made available to assist in the negotiations for a pan-Government Agreement with the UK Hydrographic Office.

Following publication of the Defra-commissioned 'Cowling Review' of marine data, and heeding the lessons drawn from Charting Progress, the key representatives from the major public and private marine data producers and users formed the Marine Data and Information Partnership (MDIP, <http://www.oceannet.org/mdip/index.html>). This was launched officially on 1st March 2005 at the National Maritime Museum, Greenwich '..... to provide harmonised stewardship and access to marine data and information, and so facilitate improved management of the seas around the UK.'

The development of MDIP, and a number of other external initiatives, brought about a fundamental shift in the rationale for supporting A1039 and led to a change in the delivery mechanisms to meet the overall objectives, with the full agreement of Defra MED, to ensure the project continued to provide support for Defra's aims, in changing circumstances. This resulted in a change to the project title and additional objectives covering the final period of the contract. Part of the function of the Coastal Data Co-ordinator was taken over by the MDIP Secretariat (David Cotton). The Coastal Data Co-ordinator (Jule Harries) resigned at the end of 2004. Her communications role was taken over by Dr David Morris. This ensured the continuing publication of Coast Map News as the main dissemination mechanism, provided the drive to set up and promote the MDIP, and provided high-level liaison with partners such as the EA and JNCC. The relationship with the funding customers changed, with EA and FCD having the opportunity to contribute directly to this process by active membership of MDIP, releasing funds to support technical developments in MDIP (e.g. interoperability of data systems, providing co-chair of the Mapping & Applications Working Group) and investigate the setting up of a Fisheries Data Archive Centre.

An important activity in the final year of the project was to contribute to the case for phase 2 funding for MDIP, to ensure that the initial impetus could be maintained and Cefas could contribute to a cost-effective mechanism to secure stewardship and access to marine data, thus contributing to the development of the UK Marine Monitoring & Assessment Strategy. This was successful and led to the merging of MDIP and MEDAG under the new title MEDIN (Marine Environmental Data & Information Network). With the agreement of the funding parties the contract was extended to the end of March 2008 to allow the EA to use the project as a funding mechanism to commission expert reviews from Dr Morris on project proposals and draft reports.

Project Report to Defra

8. As a guide this report should be no longer than 20 sides of A4. This report is to provide Defra with details of the outputs of the research project for internal purposes; to meet the terms of the contract; and to allow Defra to publish details of the outputs to meet Environmental Information Regulation or Freedom of Information obligations. This short report to Defra does not preclude contractors from also seeking to publish a full, formal scientific report/paper in an appropriate scientific or other journal/publication. Indeed, Defra actively encourages such publications as part of the contract terms. The report to Defra should include:

- the scientific objectives as set out in the contract;
- the extent to which the objectives set out in the contract have been met;
- details of methods used and the results obtained, including statistical analysis (if appropriate);
- a discussion of the results and their reliability;
- the main implications of the findings;
- possible future work; and
- any action resulting from the research (e.g. IP, Knowledge Transfer).

Background and overall direction

In June 1999, Defra (formerly MAFF) sponsored a workshop at Cefas entitled *Integrated mapping of the UK marine and coastal zone – the way forward*. This concluded that there were a number of inadequacies in the availability of, and access to, information which is required for effective management of the UK marine and coastal environment. These findings were echoed by a number of similar studies carried out at local, national and European level. Although there were, and to some extent still are, numerous strategies aimed at meeting the needs of specific user communities, none of these effectively addressed the need for an integrated system that met the diverse requirements of the wider community.

The findings of the June 1999 workshop were reported to the Inter-Agency Committee for Marine Science and Technology (IACMST), which referred the problem to its Marine Environment Data Advisory Group (MEDAG). This recommended a number of actions, including creation of a new post to co-ordinate and raise the profile of issues specific to Integrated Coastal Zone Management (ICZM)

In September 2002, DEFRA funded a follow up to the 1999 workshop *Delivering Integrated Marine Mapping for the UK (DIMM UK)*. This confirmed that although there had been progress in addressing some of the issues raised at the 1999 workshop, management of marine and coastal information in the UK still needed significant improvement. Many of the comments re-iterated those made at the 1999 workshop, with the majority of users still being unable to access information in the form that they needed it. An additional concern was voiced regarding the lack of mechanisms for expensively-collected marine data to be retained and re-used once their original projects had ended. The workshop recommended six priority areas for action, ideally co-ordinated through the IACMST, which confirmed the requirement for this project.

This project aimed to establish a Coastal Data Co-ordinator whose remit was to establish strong links to a similar activity being carried out within the Environment Agency and by the existing Marine Environmental Data (MED) co-ordinator based at the British Oceanographic Data Centre (BODC). These three co-ordination activities were guided by the IACMST Marine Environment Data Action Group (MEDAG). It was agreed to base the Coastal Data Co-ordinator at Cefas (Burnham-on-Crouch) with the two main contributors from Cefas in the early part of the project being Frances Franklin (Project Manager) and Jule Harries (Coastal Data Co-ordinator).

The project proceeded in parallel with a number of other data initiatives including MEDAG and the Defra commissioned "Cowling Review" of Marine Data. The latter was commissioned as a result of perceived inefficiencies in collating information for the 2005 Charting Progress report (www.defra.gov.uk/environment/water/marine/uk/stateofsea/chartprogress.pdf). This led to the creation of the Marine Data & Information Partnership (MDIP: www.oceannet.org/mdip/index.html), with a co-ordinator (Dr David Cotton) based at BODC. This provided a forum for organisations in both the public and private sector to agree on practical measures to improve data stewardship and access to marine data for the UK marine community. This was launched officially on 1st March 2005 at the National Maritime Museum, Greenwich.

The development of MDIP brought about a fundamental shift in the rationale for supporting A1039 and led to a change in the project objectives, with the full agreement of Defra MED. Part of the function of the Coastal Data Coordinator was taken over by the MDIP Secretariat (David Cotton). The Coastal Data Co-ordinator (Jule Harries) resigned at the end of 2004. Her communications role was taken over by Dr David Morris. This ensured the continuing publication of CoastMap News as the main dissemination mechanism, provided the drive to set up and promote the MDIP, and provided high-level liaison with partners such as the EA and JNCC. The relationship with the funding customers changed, with EA and FCD having the opportunity to contribute directly to this process by active membership of MDIP, releasing funds to support technical developments in MDIP (e.g. interoperability of data systems, mapping & applications) and investigate the setting up of a Fisheries Data Archive Centre. Several discussions took place with Defra and others during this period to ensure the project continued to provide support to Defra's aims in changing circumstances. This resulted in agreed changes to the objectives covering the final period of the contract (Objectives 12 & 13). In addition, it should be noted that related developments have taken place within Cefas as part of the Defra-funded project A1041 – *Enabling the Optimal Use of Marine and Coastal Data* (formerly *Marine and Coastal Data Network*). This has been used to supplement Cefas involvement in MDIP, including working with DASSH (Data Archive for Seabed Species and Habitats) to rescue data, paper records and samples from the former Port Erin Marine Laboratory on the Isle of Man. Details will be included in the final report of A1041 due in March 2008.

Summary of achievements under specific objectives

Objective 1 – Set up procedures for the MEDAG coastal zone activity, ensuring adequate co-ordination of, and communication between, the three primary strands of activity (MED, EA and CEFAS).

- 1.1 Weekly (at minimum) brief (but detailed) email correspondence between the three parties, reporting on progress during the preceding week.
- 1.2 Monthly meetings of the 3 key staff members (CEFAS, BODC and EA) rotated between the three geographic sites.
- 1.3 Quarterly meetings (coinciding with one of the meetings in 1.2) of the 3 key staff members, their line managers and (a few) others (such as MEDAG Chairman, Director BODC, a DEFRA representative).
- 1.4 Specific and detailed report on the success or otherwise of co-ordination and communication to the 6-monthly MEDAG meetings.
- 1.5 Communication as necessary, of any difficulties with co-ordination, of the three strands, to the MEDAG Chairman.

This was achieved with the formation of the Coastal Information Team in December 2002. The Team held regular meetings up until July 2003, with efforts being focussed on the expansion of a metadatabase hosted by BODC. The aim was to populate this with datasets from the EA and Cefas, but progress was slower than expected and did not result in additional datasets being submitted. However, the exercise provided valuable experience and an understanding of the difficulties in data harvesting, also pertinent at a national level. Thereafter, communication was more ad hoc, with meetings and e-mail exchange to ensure the three parties maintained adequate contact. The subsequent development of the Marine Data & Information Partnership (MDIP) provided a more efficient mechanism for the 3 parties to communicate and co-ordinate activities (see Objective 5). MDIP and MEDAG (Marine Environmental Data Action Group) are due to amalgamate in the latter part of 2007, further improving communication links.

Objective 2 – Deliver a project plan for achievement of the following objectives, including mechanisms for communication of outcomes to stakeholders

- 2.1 Discuss practicalities for achieving objectives 3 – 10 with BODC (MED) and EA co-ordinators
- 2.2 Agree scope of activity of each of the co-ordinators, including data types, geographical coverage, user groups, etc.
- 2.3 Produce draft project plan for discussion with people listed under 1.3 above
- 2.4 Produce agreed project plan

A project plan was produced and followed but this eventually became increasingly redundant with the formation of MDIP, and other external initiatives providing GI-based information for the marine community, in particular the emergence of SeaZone Solutions Ltd (www.seazone.com, a commercial arm of the UKHO), UKDEAL (www.ukdeal.co.uk) and the Coastal & Marine Resource Atlas of Magic (www.magic.gov.uk).

Objective 3 – Secure additional funding to make the CZ co-ordinator into a full time post.

- 3.1 In consultation with the MED AG chairman, agree on a course of action for seeking additional funding
- 3.2 Implement the actions agreed under 3.1 within the first four weeks of starting work on the contract.
- 3.3 Aim to secure sufficient funding for a full-time co-ordinator by 1 April 2003

This objective was pursued in the early stages of the project with the MEDAG Chair but became unnecessary following the formation of the MDIP. This activity formed part of the remit for the MDIP co-ordinator post, starting in January 2005 and occupied by Dr David Cotton.

Objective 4 – Determine user requirements for marine and coastal information and produce report.

- 4.1 Find out which other projects need this information (e.g. other projects such as I-MARQ, ICH)
- 4.2 Set up mechanisms for communication with projects identified under 4.1

- 4.3 Produce properly scoped questionnaire that will obtain the information required by projects identified under 4.1
- 4.4 Establish who the users are
- 4.5 Use electronic questionnaire to find out what they need and what barriers they encounter
- 4.6 On completion of 4.5 produce report describing methods, results and recommendations
- 4.7 Feedback to users
- 4.8 Maintain appropriate dialogue with contacts to ensure changing needs are taken into account

Interviews were conducted with a number of Defra staff in key areas to identify user requirements for marine and coastal data. These meetings identified a number of common, key datasets required by policy areas, as well as highlighting problems in data management both internally and externally, such as access, formats and licenses. This information was sent to the Defra GI Unit to help inform the development of the SPIRE initiative. Further, a questionnaire was produced and sent to Defra divisions (MCEU, FCM, SFI and Wildlife) as well as across the three CEFAS sites to identify user needs for digital bathymetric data. The results from the survey were used to assist in the negotiations for a Pan Government Agreement for UK Hydrographic Office bathymetric data.

Objective 5 – Evaluate existing initiatives relating to provision of marine and coastal information and produce report

- 5.1 Identify local, regional, national and international groups involved in co-ordinating, managing and disseminating information on the marine and coastal environment
- 5.2 Obtain information about each of these groups (aims and objectives, timescale, geographical coverage, target users, membership, funding, participating organisations, etc.)
- 5.3 Produce a dynamic database for access via the websites of the three MED co-ordination organisations - BODC (OceanNET), EA and CEFAS
- 5.4 Ensure the initiatives are aware of each other and develop procedures to encourage communication and collaboration between them
- 5.5 Identify areas of duplication of effort/overlap
- 5.6 Identify gaps not currently being filled
- 5.7 Produce report containing findings of 5.1 – 5.6

In the early stages of the project, this was considered to be a role of the new Coastal Co-ordinator with attendance at appropriate data-related activities, including MEDAG, being one of the principal means of acquiring knowledge about local, regional, national and European/international coastal data and information use and dissemination. In a parallel development Cefas contributed a report on Government GI needs. With IT support from the BODC, a searchable database of current (predominantly marine and coastal) data projects and initiatives was developed (instead of producing a report), which was made available at: www.oceannet.org. This was based on information obtained in 5.1 and 5.2, and was a positive step forward in highlighting current and future data projects, helping to facilitate data sourcing, encouraging individual and organisational collaboration and reducing duplication of effort. The database would have required regular updating and a mechanism to support this. Instead it was decided this function would be better served by the MDIP metadata portal, which will be independent of individuals and organisations. In addition, Cefas has contributed to an on-line catalogue of data resources available via the MDIP website: UK Marine Data Resources Reference Document (www.geodata.soton.ac.uk/python/MDIP2.py/home). More recently the private sector has become more involved, with SeaZone Solutions Ltd hosting a seminar (July 2007) for the public sector to help define data and information needs for meeting the Government's marine objectives; current problems accessing marine data and funding issues. Following discussions with Flood & Coastal Management Division it became clear that they did not consider sufficient effort had been made to represent their interests. Mechanisms to improve communication between the EA, FCD and the MDIP Co-ordinator were agreed at a project meeting in May 2007. The development of MDIP has provided the means by which FCD, the EA and other organisations can make their needs known directly to the wider community. This freed resources within the project to assist in the development of MDIP and tackle some of the generic issues (e.g. inter-operability, standards), which have benefitted MED, FCD and the EA indirectly.

Objective 6 – Carry out a data audit to determine holders of marine and coastal data and information and produce report

- 6.1 Locate providers of data and information identified as needed under Objective 4
- 6.2 Produce report

Information was collated and provided to Casella Stanger, contributing to a chapter in the EA Marine Data Holdings Audit Report, and also modified for inclusion on the AE1019 CD. This objective was modified to support MDIP and the emerging UK Marine Monitoring & Assessment Strategy (UKMMAS: www.oceannet.org/medag/projects/UKMMAS.html) with initiatives such as UKDMOS (www.oceannet.org/medag/projects/UKDMOS.html) and the work of the Marine Protocols Group (<http://www.defra.gov.uk/environment/water/marine/uk/science/ukmas-mpg.htm>).

Objective 7 – Set up mechanisms for determining standards for marine and coastal data and information and produce report

- 7.1 Review existing guidelines for information management (e.g. EA, NERC, MUSEC , REUU)
- 7.2 Review existing metadata guidelines
- 7.3 Review existing data and information exchange formats
- 7.4 Review procedures for quality assurance of data
- 7.5 Produce report with recommendations
- 7.6 Develop procedures for action on recommendations

This objective was subsumed into the MEDAG metadata review, the Defra SPIRE programme (Shared Spatial Information Services) and the Interoperability Working Group of MDIP, which Cefas has supported (see Objective 12). Future developments of standards for GI-based information dissemination will be strongly influenced by the EU INSPIRE Directive (Infrastructure for SPatial InfoRmation in Europe; <http://www.oceannet.org/medag/projects/INSPIRE.html>).

Objective 8 - Evaluate technical solutions for integration and dissemination of information about the marine and coastal environment and produce report

- 8.1 Review existing initiatives (e.g. CoastBase)
- 8.2 Review existing interactive mapping websites
- 8.3 Determine best practice world-wide
- 8.4 Report on ideal solution for meeting user requirements and recommend preferred solution with costs
- 8.5 Consider suitable pilot areas(s)
- 8.6 Consider options for funding implementation

Although seen as dependent on attracting additional funding (Objective 3), work was done to investigate technical issues in support of the IACMST strategy development process; this has been achieved as a by-product of seeking out new projects (many using new web-technology to build portals) for the initiatives database. There have been very significant advances in data provision since the inception of the project. For example, within the UK there have been a number of technical solutions, funded by the public and private sector, developed to improve access to marine data and information. These include GI-based Seazone (www.seazone.com), UKDEAL (www.ukdeal.co.uk), the Coastal & Marine Resource Atlas of Magic (www.magic.gov.uk) and Cefas's iSEA (iSEA – interactive Spatial Explorer & Administrator; www.cefas.co.uk/data/isea). Cefas has supported the development of the MDIP data portal; provided improved access to near-real-time data (e.g. wave climatology: www.cefas.co.uk/data/wavenet.aspx; nutrients, turbidity, temperature, conductivity, fluorescence: <http://map.cefasdirect.co.uk/smartbuoyweb/StaticMapPage.asp>); and, provided improved access to a wide range of marine information (e.g. fisheries: www.cefas.co.uk/data/fisheries-information.aspx).

Objective 9 - Raise awareness of coastal information issues

- 9.1 Support the appropriate area of the OceanNet website for the project outputs
- 9.2 Assist with maintaining a high profile (e.g. with posters/presentations at relevant events)
- 9.3 Publish in appropriate publications
- 9.4 Contribute to DEFRA and other activities as required

Although considered to be dependent initially on attracting additional funding (Objective 3), this was seen as a critical activity and was pursued using resources freed up from activities which were deferred. A significant effort was made to develop Coast Map News as the principal means of news dissemination on marine data and information issues to the UK marine community. Eight issues (paper and as pdf) were produced between autumn 2001 and winter 2005, increasing in scope, content and readership with each issue (see section 9 below). Following the establishment of MDIP it was decided to re-launch the publication as Marine Data News (see Objective 13), with the support of the MDIP co-ordinator, as a wholly electronic newsletter with a bi-monthly frequency (alternating with MCCIP News – Marine Climate Change Impacts Partnership: www.mccip.org.uk)

Objective 10 - Feed into relevant initiatives

- 10.1 Keep abreast of UK and International initiatives
- 10.2 Ensure that IACMST/MEDAG, MPMMG/NMMP and UKMIC are kept up to date with developments
- 10.3 Establish appropriate networking mechanisms

Initially, resources were allocated to allow for an average of 4 external meetings per month, including attendance of Steering Group meetings for the MCA Resource Atlas Mapping Project and the Joint Defra/EA Risk and Uncertainty Theme Data and Information Project, and the UKHO PGA group. In particular, priority was given to mapping initiatives. More recently the focus has switched to supporting emerging MDIP (see Objective 12) and contributing to the Association of Geographic Information (AGI) initiatives and related activities.

Objective 11 – Prepare a business case

- 11.1 Use the information generated by objectives 4 – 8 to produce a business case for funding to provide what users need
- 11.2 Identify and exploit all potential sources of funding.

This objective was deferred and subsequently was undertaken by the MDIP co-ordinator (Dr David Cotton), with support from Cefas (Dr David Morris & Dr Peter Kershaw), as a proposal for Phase 2 funding for MDIP, for consideration by IACMST in the autumn of 2007 (see Objective 12).

Additional objectives (from 1/4/06):

Objective 12 – Attendance at MDIP Project Team & routine Working Group meetings

- 12.1 Attend Project Team meetings
- 12.2 Attend DAC (Data Archive Centre) Working Group meetings
- 12.3 Attend Interoperability Working Group meetings
- 12.4 Attend Mapping & Applications Working Group meetings

Appropriate meetings have had Cefas representation and Cefas staff have contributed to or led a number of initiatives. Cefas provided the co-chair of the M&AWG (Paul Eastwood) and contributed to one of the main outputs: a report on Use Cases (Osborne & Eastwood, 2007) illustrating problems experienced in gaining access to and making use of marine data from disparate sources. Cefas contributed two of the eight Use Case examples: Seabed Pressure Assessment, and the ICES Pilot Study for an Integrated Ecosystem Assessment of the North Sea (REGNS, <http://www.ices.dk/iceswork/wgdetailacfm.asp?wg=REGNS>) (Tables 1 & 2). Cefas were instrumental in setting up a workshop to discuss interoperability with key partners in the Interoperability WG. We provided advice to DASSH on handling large volume seabed acoustic data and agreed on mechanisms to transfer Cefas benthic data to DASSH for long-term storage. We have been active in leading discussions, with FRS Aberdeen and JNCC, about the need for a Fisheries DAC, and have produced a scoping paper for internal and external review (see Annex). A good justification for creating a Fisheries DAC was provided by the closure of the Port Erin Marine Laboratory. Cefas, with DASSH and Liverpool University, ensured the safe retrieval of a range of data, paper records and samples. The physical samples (herring otoliths and scales) have been archived at Cefas with appropriate metadata records and will form the kernel of a future Fisheries DAC, presently being pursued with DASSH-MBA (www.dassh.ac.uk) with funding from the sister contract A1041.

Objective 13 – communicate the workings & achievements of MDIP to the wider community

13.1 prepare bi-monthly electronic version of Coast Map News

13.2 Report on recommendations to continue communications of data-related news following the final MDIP report

13.3 Assist the EA in reviewing tenders for data-related projects and provide further assistance as required (from end September 2007).

This has been achieved through the publication of the bi-monthly Marine Data News, edited by Cefas (Dr David Morris) and produced in co-operation with MEDAG and the MDIP Co-ordinator (see section 9). Marine Data News will continue to be published until the end of MDIP phase 1 (April 2008), with support from A1041. The mechanism to continue communication of data-related news beyond this formed part of the case for phase 2 funding, prepared by the MDIP Co-ordinator with the assistance of Cefas, and released in October 2007. This was successful with Defra agreeing to further fund developments under a new grouping formed from merging MDIP and MEDIN (Marine Environmental Data & Information Network). Cefas has assisted in the review of tenders for one EA contract and, as of 27th September 2007, was asked to provide further assistance in setting up the project. This led to agreement to extend the contract to the end of March 2008, using the remaining funds to support Dr Morris providing ad hoc expert review for the EA, most notably the draft scoping report 'Development & dissemination of information on coastal, fluvial and estuary extremes'.

Table 1. Extract from Use Case report, compiled by the Mapping & Applications WG, for the Seabed Pressure Assessment

USE CASE 2	Seabed Pressure Assessment
Person responsible	Paul Eastwood
Company/organisation	Cefas
Project description and objectives	<p>Integrated assessments and marine spatial planning are becoming major drivers for the assessment and management of human activities at sea. To be successful, both require an understanding of the distribution of the pressures caused by human activities.</p> <p>The project objective was to use available spatial data for the major human activities operating in the England and Wales sector of UK waters in 2004 to provide an assessment of direct, physical pressure on the seabed.</p>
URL or reference	http://icesjms.oxfordjournals.org/cgi/content/full/fsm001?ijkey=1QPmVkBn2T8RZV&keytype=ref
<p>Responses</p> <ul style="list-style-type: none"> ▪ Metadata ▪ Data ▪ Project outputs 	<p>Generally very difficult to source, except from UK DEAL where metadata was fairly comprehensive. In many cases, making use of the data required detailed knowledge of how they were collected. This information would often be provided verbally or on request from the data owners, i.e. was not written down as part of the metadata holdings. Where metadata was available, common standards were not uniformly applied.</p> <p>The project required access to comprehensive human activity data in UK offshore waters. Some of the data required extensive pre-processing before they could be used. No data available for windfarm turbines, only licence areas. Also, there is no marine equivalent to OS MasterMap whereby features are represented as polygons, i.e. their true spatial dimensions. Features are instead represented as lines and points and are therefore dimensionless. Generally not obvious where to get data from, or how to access data once source has been established. Fishing vessel location data is not accessible to the general public in a form that is usable. Able to collect data through network of contacts rather than through official signposts indicating contact points for certain data types.</p> <p>Project outputs are available for others to use. Metadata is in a non-standard format.</p>

<ul style="list-style-type: none"> ▪ MDIP benefits 	No current benefits except general awareness raising. Future benefits will include better access to metadata and signposts to data sources and whether these are definitive. Will help those unfamiliar to marine data in the UK get started quickly. Listing sources of base reference data will be an excellent start.
<ul style="list-style-type: none"> ▪ MDIP future direction 	Raise awareness of good practice and standards for data management.

Table 2. Response to the questionnaire issued by the Mapping & Applications WG, for the ICES REGNS Use Case

Question	Answer																								
Project Description																									
1. Date questionnaire completed	26 th July 2007																								
2. Name of use case	Integrated Ecosystem Assessment of the North Sea																								
3. Organisation responsible	ICES (International Council for the Exploration of the Sea) - REGNS: Regional Ecosystem Study Group for the North Sea; Cefas provided the Chair (Dr Andrew Kenny) and there were contributions from a large number of organisations throughout the ICES region. Cefas presently hosts the database used for the assessment																								
4. Name of person responsible	Dr Peter Kershaw																								
5. Email of person responsible	Peter.kershaw@cefas.co.uk																								
6. Tel. no. of person responsible	01502 562244																								
7. Project objectives(s)	A Pilot Study to conduct a comprehensive and integrated ecosystem assessment of the 'state' of the North Sea, using the expertise & knowledge available through the ICES Working Group structure and making use of the ICES Data Centre whenever possible																								
Metadata																									
8. List the sources of metadata used for the project	[Notes: How did you identify sources of metadata? If direct from data supplier, how did you identify the data suppliers?] We relied on expertise available through REGNS and by soliciting the opinions of 18 specialist ICES Working Groups to identify the types of data required for the assessment, and then compiled a metadata table showing the time- and space-scales and sources of data in 3 categories: abiotic, biotic & human activities. UK scientists were prominent in this process																								
9. Was the metadata easy to access?	Variable by category and time-scale. We used data collected over many decades at different spatial scales and using different methods. A significant effort was required to compile this and attribute quality assurance.																								
10. Were you able to source all of the metadata required?	No, when data were not held on a national or international database. In some cases data were compiled for use by a particular ICES Working group, on condition the data stayed within the group																								
11. Compared to the actual data (if available) was the metadata comprehensive and accurate?	[Notes: Did the metadata correctly and adequately describe the data in terms of overall content, attribution, scale, provenance, usability, licensing terms etc.] Variable.																								
12. If not, in what way(s) did the metadata fall short of that reasonably expected?	Sometimes not clear whether data were in public domain or what conditions of use applied																								
13. Provide additional comments on your experience of sourcing or using metadata on your project?	We required the active involvement of scientists with a thorough knowledge of the data, in order to compile data accurately, and provide expert guidance on data quality and data interpretation.																								
Data																									
14. List the datasets required for your project	<p>Table 1. Abiotic data used in the overview assessment</p> <table border="1"> <thead> <tr> <th>Data type</th> <th>Source</th> <th>Time-scale (used for analysis)</th> <th>Space-scale</th> </tr> </thead> <tbody> <tr> <td>Bathymetry</td> <td></td> <td>Single record</td> <td>Converted to stats. sq.</td> </tr> <tr> <td>Tide-generated bottom stress (max.)</td> <td>GETM (Cefas)</td> <td>monthly</td> <td>Converted to stats. sq.</td> </tr> <tr> <td>Wave-generated bottom stress</td> <td>GETM (Cefas)</td> <td>monthly</td> <td>Converted to stats. sq.</td> </tr> <tr> <td>Water mass fluxes (depth-integrated)</td> <td>NORWECOM (PGNSP)</td> <td>1955-2005 monthly</td> <td>13 sections</td> </tr> <tr> <td>Sediment type</td> <td>North Sea benthos survey</td> <td>Single record</td> <td>NSBS grid converted to</td> </tr> </tbody> </table>	Data type	Source	Time-scale (used for analysis)	Space-scale	Bathymetry		Single record	Converted to stats. sq.	Tide-generated bottom stress (max.)	GETM (Cefas)	monthly	Converted to stats. sq.	Wave-generated bottom stress	GETM (Cefas)	monthly	Converted to stats. sq.	Water mass fluxes (depth-integrated)	NORWECOM (PGNSP)	1955-2005 monthly	13 sections	Sediment type	North Sea benthos survey	Single record	NSBS grid converted to
Data type	Source	Time-scale (used for analysis)	Space-scale																						
Bathymetry		Single record	Converted to stats. sq.																						
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Water mass fluxes (depth-integrated)	NORWECOM (PGNSP)	1955-2005 monthly	13 sections																						
Sediment type	North Sea benthos survey	Single record	NSBS grid converted to																						

				stats. sq.
	Salinity (surface & bottom)	ICES	monthly	Converted to stats. sq.
	Temperature (surface & bottom)	ICES	monthly	Converted to stats. sq.
	NAO index	Univ. East Anglia	1955-2005 winter index (DJFM)	n/a
	Freshwater flows	FRS Aberdeen (Sarah Hughes)	monthly	By river & region
	Nutrient concentrations (nitrate, nitrite, phosphate,)	ICES	monthly	Converted to stats. sq.
	Oxygen concentration	ICES	monthly	Converted to stats. sq.
	Chlorophyll a	ICES	monthly	Converted to stats. sq.
	Table 2. Biotic data analysed in the assessment			
	Data type	Source	Time-scale (used for analysis)	Space-scale
	Phytoplankton	CPR (SAHFOS)	monthly	Converted to stats. sq.
	Zooplankton	CPR (SAHFOS)	monthly	Converted to stats. sq.
	Fish abundance (CPUE)	ICES (IBTS)	annual	Converted to stats. sq.
	Seabird abundance	WGSE/ESAS	monthly	Converted to stats. sq.
	Marine mammals	WGSE/ESAS	Monthly	Converted to stats. sq.
	Table 3. Human pressures data analysed from the REGNS database			
	Data type	Source	Time-scale (used for analysis)	Space-scale
	Fish landings	Scotland, England & Wales authorities	monthly	Converted to stats. sq.
	Nutrient river loadings	(Mills <i>et al</i> , 2006)	monthly	by region
15. List the datasets you were not able to access	<p>Those datasets listed in section 14 were used in the assessment. They were selected on the basis of comprehensive time and space coverage, relevance to the objectives and availability without cost (the project relied on support from partner institutions and there was no funding for commercial products).</p> <p>We were not able to access a number of datasets, including:</p> <p>2000 North Sea Benthos Survey</p> <p>Comprehensive contaminants in sediments, seawater & biota</p>			
16. List why you could not access the datasets required	<p>2000 NSBS – Working Group declared 'work in progress'</p> <p>Contaminants – generally very dispersed amongst a variety of databases (national plus OSPAR, EEA) with inconsistent time- and space scales</p>			
17. Was the data received in the format you required?	Variable			
18. Was it to the correct scale / resolution?	We re-scaled in most cases to provide data in a consistent time- (e.g. monthly) and space-scale (e.g. by ICES statistical rectangle)			
19. Was any of the data inconsistent (e.g. regionally) and what difficulties did this cause?	<p>The REGNS assessment was of a large marine ecosystem, and as such administrative boundaries were an inconvenience and barrier to obtaining comprehensive data. A particular example was seabed sediment type, with significant differences in data availability and resolution in different administrative regions, and in the case of UK waters a cost involved in obtaining the data. We had to rely on the 1986 NSBS dataset – coarse resolution, a single time period, but consistent.</p> <p>For long time-series of biological data care is needed to recognise changes in species identification.</p>			
20. Provide additional information on your experience of sourcing or using data for your project?	Far more effort was required in identifying and getting hold of data than in carrying out the assessment			
Project Outputs				
21. Was dataset creation part of the project deliverable?	A SQL-based dataset was compiled, initially by Doug Beare at FRS Aberdeen and then at JRC Ispra when Doug moved there. This posed some access difficulties due to firewall restrictions. For the integrated assessment exercise the database was transferred to Cefas and SQL queries could be run 'on the fly' remotely (from Copenhagen)			
22. If so, will the data be	[Notes: Did a maintainable dataset for part of the project output? How will it be maintain?]			

maintained?	<p>Is there budget available for this?</p> <p>It is recognised that the dataset represents a potentially valuable resource to the UK and wider marine science community. However, there are no resources either to provide periodic updates or make the dataset available.</p>
23. Was the data created derived from base reference data?	<p>[Notes: An example is where the boundary of a candidate marine conservation area has been derived from the 20 m depth contour]</p> <p>n/a</p>
24. List any problems encountered with the dataset creation	<p>We were dealing with several million data entries, beyond the capacity of Excel spreadsheets, hence the need to develop a SQL database, with the requirement to have expertise to perform data queries and extractions. The database does not have a 'user-friendly' interface.</p>
25. Was metadata created for the project output datasets?	<p>Yes</p>
26. If so, where is it being published?	<p>An initial metadata table was compiled and published in the REGNS reports http://www.ices.dk/iceswork/workinggroups.asp</p>
27. Are the project output datasets accessible to third parties?	<p>[Notes: List where, how and to whom]</p> <p>Not readily. Application can be made through Cefas, but the data are from many sources and conditions of use may apply, necessitating dialogue with originators.</p>
28. List other difficulties experienced with project deliverables caused by the data inputs available or their terms of use	<p>[Notes: Example is that terms and conditions associated with source data did not allow publication of images of project deliverables on the Internet]</p> <p>Some datasets provided specifically for the REGNS analysis and permission would need to be sought from the providers (in several cases an ICES Working Group)</p>
29. Provide additional information on your experience of creating data for your project?	<p>Developing a metadata table at an early stage, and defining the outputs and end-users, allows decisions on priorities to be set for selecting and obtaining datasets.</p>
General Comments	
30. List the benefits that the current state of MDIP has brought, along with the likely future benefits.	<p>[Notes: The aim of this questionnaire is to review the benefits that MDIP is bringing to the marine data community in the UK. If possible quantify these in terms of time savings or improved quality of output based on the various MDIP deliverables. Percentage time saving (hours worked or elapsed time) is desirable.]</p> <p>Data were obtained largely from outside the present MDIP structure, in view of both the data types (outside present MDIP scope; e.g. Sahfos – CPR; long-term nutrient & contaminant inputs; fish landings) and geographical remit (e.g. seabed sediment types over whole North Sea). Bringing in the EA/SEPA would help to provide better access to long-term inputs data (outside developing MERMAN database) and providing links to MCCIP and MECN would help to make sure time-series data are recognised and made available</p>
31. What benefits would you like MDIP to bring to your project?	<p>MDIP should improve access to data on UK-based discharges and physical, chemical & biological attributes in UK waters. However, it should be recognised that these sources are incomplete with some UK data held by international organisations (e.g. fisheries assessment data by ICES). It would be very helpful if MDIP could provide metadata on (and preferably access to) datasets held outside the UK, including the European Environment Agency and well-established regional centres such as VLIZ (Vlaams Instituut voor de Zee – holders of the North Sea benthos survey datasets). UK waters are influenced by wider-scale processes and UK inputs may contribute to cross-boundary issues (leading to legal action against the UK government), hence the need for a broader approach.</p>
32. Do you think these will be achieved by MDIP given its current aims and objectives?	<p>It is not clear whether MDIP will consider data held outside the UK. A perennial issue is the requirement to pay again for data originally paid for by the taxpayer. This restricts the re-use of data but the situation is unlikely to improve given the unwillingness of the Treasury to alter the economic models imposed on agencies such as UKHO and BGS.</p>
33. What else would like to see MDIP achieve?	<p>Broaden user base and encourage a wide variety of public and private organisations to contribute data. Consider setting up a DAC for socio-economic data, as these are essential for assessing sustainable use of marine ecosystem services. Integrate MDIP with similar national & international initiatives.</p>
34. What, if any, do you think are the obstacles to achieving this?	<p>Adequate funding. For example, at present Cefas has no funding support after March 2008 to contribute to the development of MDIP. DACs need to have a funding model which will allow sustainable development</p>
35. How can these obstacles be best addressed?	<p>Persuade the Treasury and spending departments that adequate funding represents a good investment for UK plc.</p>
36. Provide additional information that you feel will be useful to MDIP in understanding and improving data access issues.	<p>It would be helpful to show where MDIP and its DACs fit into the wider structure of data portals and data management initiatives, within the UK and in a wider context.</p>

Possible future work

This contract has contributed significantly to the successful development of MDIP Phase 1 and is increasingly being used to assist the MDIP co-ordinator (David Cotton) with its implementation. We suggest that a similar funding mechanism will be essential to ensure that Cefas is able to contribute to this important development, central to Defra's objectives with respect to increasing the availability of marine data and information, and providing a mechanism to encourage its dissemination. This will provide the delivery mechanism needed to fully realise the UKMMAS

<http://www.defra.gov.uk/environment/water/marine/uk/science/ukmas-background.htm> and facilitate access to data products promoted under UKDMOS

http://www.defra.gov.uk/science/Project_Data/DocumentLibrary/AE1040/AE1040_2135_OTH.doc.

Further justification of Cefas involvement was provided in the case for Phase 2 funding, prepared by David Cotton, and approved by IACMST.

Useful links

Charting Progress, 2005, www.defra.gov.uk/environment/water/marine/uk/stateofsea/chartprogress.pdf

Cowling, M., 2005. Marine data and information – where to now?

http://www.defra.gov.uk/science/Project_Data/DocumentLibrary/AE1040/AE1040_2135_OTH.doc

Cefas fisheries information, www.cefas.co.uk/data/fisheries-information.aspx.

Cefas interactive Spatial Explorer & Administrator; www.cefas.co.uk/data/isea

Cefas Smartbuoy data, <http://map.cefasdirect.co.uk/smartbuoyweb/StaticMapPage.asp>

Eastwood, P.D *et al.*, 2007. Human activities in UK offshore waters:an assessment of direct, physical pressure on the seabed, *ICES J. Mar. Sci.*, 64(3), 453-463,

<http://icesjms.oxfordjournals.org/cgi/content/full/fsm001?ijkey=1OPmVkBrn2T8RZV&keytype=ref>

EU INSPIRE Directive, INfrastructure for SPatial InfoRmation in Europe;

<http://www.oceannet.org/medag/projects/INSPIRE.html>

ICES Pilot Study for an Integrated Ecosystem Assessment of the North Sea, REGNS,

<http://www.ices.dk/iceswork/wgdetailacfm.asp?wg=REGNS>

Marine Data & Information Partnership, MDIP, <http://www.oceannet.org/mdip/index.html>

Multi-Agency Geographic Information for the Countryside, MAGIC - Coastal & Marine Resource Atlas (www.magic.gov.uk)

SeaZone Solutions Ltd, www.seazone.com

UK Digital Energy Atlas & Library, UKDEAL www.ukdeal.co.uk

UK Directory of Marine Observing Systems, UKDMOS

www.oceannet.org/medag/projects/UKDMOS.html

UK Marine Data Resources Reference Document www.geodata.soton.ac.uk/python/MDIP2.py/home

UK Marine Monitoring & Assessment Strategy, UKMMAS

<http://www.defra.gov.uk/environment/water/marine/uk/science/ukmas-background.htm>

UKMMAS, the Marine Protocols Group

<http://www.defra.gov.uk/environment/water/marine/uk/science/ukmas-mpg.htm>

Wavenet climatology, www.cefas.co.uk/data/wavenet.aspx

Annex

DRAFT

Options for creating a Fisheries Data Archive Centre (DAC) at Cefas as part of the Marine Data Information Partnership (MDIP) – version 3

Defra ME Division have requested that Cefas consider options for the setting up and maintenance of a Fisheries Data Archive Centre, based at Cefas. This initiative has the support of John Lock of Defra MF. This would complement similar potential initiatives to be hosted by FRS (Fisheries Research Services, Aberdeen) and AFBI (Agri-Food and Biosciences Institute, Belfast), and would form part of the UK Marine Data & Information Partnership (<http://www.oceannet.org/mdip>). These options will need to be considered on a practical, legal & cost basis, of course. Comments would be most welcome from interested parties both within and outside Cefas.

Proposed Scope¹:

- creation of Fisheries DAC (complying with MDIP DAC standards) to cover England & Wales (plus potentially the Isle of Man & Channel Islands?);
- provision of discovery-level metadata (UK Gemini & EU INSPIRE compliant), via the MDIP web portal, on fish & fisheries data, paper records & physical samples;
- stewardship of fish & fisheries data, paper records & physical samples on behalf of Defra, for information generated by Cefas (formerly the Directorate of Fisheries Research);
- stewardship of fish & fisheries data, paper records & physical samples held with the agreement of third parties (e.g. former Port Erin Marine Laboratory);
- provision of data² subject to the Freedom of Information Act, Environmental Information Regulations, Data Protection Act, agreements and licences with third parties for non-Cefas data held at Cefas, commercial-in-confidence considerations, recovery of retrieval costs;

¹ dependent on phase 2 MDIP funding for implementation and funding for maintenance and servicing requests through MoUs and research contracts.

² restricted to data not readily available through the ICES Data Centre.

Potential options

Stage 1

- align options with the needs of MARG (<http://www.defra.gov.uk/environment/water/marine/uk/science/marg.htm> based on input from evidence groups) as well as longer-term considerations: *Healthy & Biologically Diverse Seas Evidence Group* – offshore scientific surveys (commercial & non-target species), inshore sampling, biodiversity, monitoring under Water Framework, Habitats & Birds Directives, impacts of fishing; *Productive Seas Evidence Group* – commercial landings, stock assessments, discard monitoring, impacts of fishing;
- support a scoping exercise carried out on behalf of PSEG, funded by Defra (contract A1041), to identify and classify the sources of fish & fisheries data available in other institutes (both on-going & historic) and suggest methods for accessing and archiving, including the potential role of a Fisheries DAC(s);
- make cruise reports, for 'routine' fisheries survey cruises readily available on-line, copied to BODC;
- create metadata for routine monitoring programmes to facilitate access to the information required for the 2010 *Charting Progress Report*, in consultation with HBDSEG & PSEG, (following UK Gemini Standards for discovery metadata, and Gemini 2 for 'evaluation' metadata) utilising the Cefas iMET metadata database; for Cefas & Port Erin Marine Lab samples (e.g. PEML)

CoastMap News

Issue 1 – autumn 2001

[http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-1-\(autumn-2001\).aspx](http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-1-(autumn-2001).aspx)

Issue 2 – spring 2002

[http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-2-\(spring-2002\).aspx](http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-2-(spring-2002).aspx)

Issue 3 – autumn 2002

[http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-3-\(autumn-2002\).aspx](http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-3-(autumn-2002).aspx)

Issue 4 – autumn 2003

[http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-4-\(autumn-2003\).aspx](http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-4-(autumn-2003).aspx)

Issue 5 – winter 2003

[http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-5-\(winter-2003\).aspx](http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-5-(winter-2003).aspx)

Issue 6 – spring 2004

[http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-6-\(spring-2004\).aspx](http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-6-(spring-2004).aspx)

Issue 7 – summer 2004

[http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-7-\(summer-2004\).aspx](http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-7-(summer-2004).aspx)

Issue 8 – winter 2005

[http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-8-\(winter-2005\).aspx](http://www.cefas.co.uk/news-and-events/coast-map-news/coast-map-news-issue-8-(winter-2005).aspx)

Issue 9 – March 2006

<http://newsweaver.co.uk/coastmapnews/index000114828.cfm?x=b11,0,w>

Issue 10 – April 2006

<http://newsweaver.co.uk/coastmapnews/index000121243.cfm?x=b11,0,w>

Issue 11 - May 2006

<http://newsweaver.co.uk/coastmapnews/index000114828.cfm?x=b11,0,w>

Marine Data News

Issue 1 – December 2006

<http://newsweaver.co.uk/coastmapnews/index000152398.cfm>

Issue 2 – March 2007

<http://newsweaver.co.uk/coastmapnews/index000173187.cfm>

Issue 3 – May 2007

<http://newsweaver.co.uk/coastmapnews/index000184526.cfm>

Issue 4 – July 2007

<http://newsweaver.co.uk/coastmapnews/index000200167.cfm>

Issue 5 – September 2007

<http://newsweaver.co.uk/coastmapnews/index000210635.cfm>

Issue 6 – November 2007

<http://newsweaver.co.uk/coastmapnews/index000221675.cfm?x=b11,0,w>

Issue 7 – January 2008

<http://newsweaver.co.uk/coastmapnews/index000233677.cfm?x=b11,0,w>

Workshops/Symposia

Delivering Integrated Marine Mapping for the UK, September 2002, Church House, London.

<http://www.cefas.co.uk/news-and-events/coast-map-news.aspx>

Franklin, F.L. and J.E. Harries. (2003) Making effective use of coastal and marine data. Proc Coastal Futures 2003. 22-23 January, London.

Franklin, F.L. and J.E. Harries. (2003) Making effective use of coastal and marine data & Integrated Mapping of the UK Marine and Coastal Zone – Strategy for the UK. Delegate briefing notes for: Spatial Planning in the Coastal and Marine Environment: Next Steps to Action. 1 October, London

Harries, J.E. and F.L. Franklin. (2003) Managing marine and coastal information in the UK: Where are we now? Proc. Fifth International Symposium on GIS and Computer Cartography for Coastal Zone Management. 16-18 October 2003, Genova

MDIP Mapping and Applications Working Group, 'Use cases', 23rd November 2006

Other publications

Harries, J.E. (2004). National Initiatives for Managing Coastal Data. CoastNet Bulletin. Special Edition on Managing Coastal Information, 8(3): 5-6

Other reports & outputs

Kershaw, P.J. (2007). Options for creating a Fisheries Data Archive Centre (DAC) at Cefas as part of the Marine Data & Information Partnership (MDIP). August 2007.

Osborne, M. & Eastwood, P. (2007). Report on Use Cases for assessing MDIP benefits. Prepared by the co-chairs of the MDIP Mapping & Applications Working Group with input from Working Group members. 14pp. www.oceannet.org/mdip/documents/MDIP_MAWG_use_cases_report.pdf

- create metadata for data (species, sex etc), samples (herring otoliths & scale samples) & physical records (e.g. logbooks) 'rescued' from the former Port Erin Marine Laboratory, using iMET;
- create secure well-labelled storage for records & physical samples (e.g. log books, otoliths, scales ...);

Stage 2

- provide metadata & link to the Cefas Biological Sampling Database – otoliths, maturity, sex (Richard Ayers, Steve Flatman);

Stage 3

- provide metadata & link to DAPSTOM (An Integrated Database & Portal for Fish Stomach Records), hosted by Cefas, funded by the EU EUROCEANS Network of Excellence (John Pinnegar);
- provide metadata for the Cefas Tagged Fish Database - historical fish tagging & release data (Gary Burt);
- provide metadata for the Cefas Fish Data Storage Tag Database (David Righton);
- provide metadata for the Cefas Shellfish Database (Julian Addison, Peter Walker);
- create metadata for Cefas fish disease data (including biopsy samples, photographs ...) generated at Cefas Weymouth (Steve Feist);
- provide metadata for the Discards Database – Data Protection, c-in-c issues? (Mike Armstrong);
- provide metadata for the Fisheries Science Partnership Database - Data Protection, c-in-c issues? (Mike Armstrong);
- provide metadata for the Cefas Salmon Database?
- include non-routine or *ad hoc* Cefas fisheries survey data
- include data (and samples & records) from additional third parties (e.g. EA, JNCC, MBA) by mutual consent;

Peter Kershaw, 30/8/07

On behalf of the Cefas MDIP group – Dave Morris, Peter Kershaw, Andy South, Richard Ayers, Steve Flatman

References to published material

9. This section should be used to record links (hypertext links where possible) or references to other published material generated by, or relating to this project.