



MARINE STRATEGY FRAMEWORK DIRECTIVE – PROGRESS TO DATE AND FUTURE IMPLICATIONS

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JOINT NATURE CONSERVATION COMMITTEE

MARINE STRATEGY FRAMEWORK DIRECTIVE – PROGRESS TO DATE AND FUTURE IMPLICATIONS

Paper by Jane Hawkrige, Mark Tasker and Jon Davies

1. Introduction

- 1.1 The requirements of the Marine Strategy Framework Directive (MSFD) (2008/56/EC2), and its importance to marine conservation, are described in Committee paper JNCC 10 P02.
- 1.2 The present paper provides an update on the March 2010 paper, describing how JNCC is supporting Government in its delivery of the Directive.

2. Coordination of information and advice at UK level

- 2.1 The Directive requires Member States to implement the Directive in a coordinated and consistent way across their waters and does not allow the use of political boundaries as the basis for dividing up a Member State's waters for the purposes of achieving Good Environmental Status (GES). To this effect the Directive was transposed into UK law through one legal instrument (Marine Strategy Regulations 2010³) in July 2010. It includes some element of UK-wide provisions to ensure the level of coordination and consistency in implementation envisaged by the Directive is achieved. As such, the Secretary of State is identified as the competent authority, acting on behalf of the other Governments.
- 2.2 Defra and the devolved administrations are now focused on meeting the first requirements of the Directive due in July 2012. Key requirements of the Directive and associated time-frames are provided in Annex 1, with an update on progress against the expected UK response originally provided in JNCC 10 P02.
- 2.3 Defra has taken a lead and developed governance arrangements to ensure that the work is coordinated across the UK, both at a policy level and at expert/scientific level (see Annex 2). These arrangements, and the timetable, have changed several times in the last 12 months to take account of a change in Government, the availability of key policy teams and clearer requirements at the EU level. The timetable became significantly more challenging following the General Election when the Whitehall clearance procedures lengthened and it became apparent that all the targets would have to be subjected to a Cost Benefit Analysis.

² <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:164:0019:0040:EN:PDF>

³ http://www.legislation.gov.uk/ukxi/2010/1627/pdfs/ukxi_20101627_en.pdf

- 2.4 Although the JNCC and the country nature conservation bodies are involved at several levels within the governance structure, most of our advice has been delivered through the UK Marine Monitoring and Assessment Strategy (UKMMAS; Comm 08 N04⁴) committee structure. The UKMMAS community agreed to provide the required scientific advice to support the implementation process in November 2010, now very late in the overall delivery timetable. This was in part due to the late publication of an EU Commission Decision on Criteria and Methodological Standards for Good Environmental Status (GES)⁵ in September 2010. This document defines the scope of the work for the development of targets and standards and associated monitoring programmes and provided more clarity on what was required of Member States.
- 2.5 The Marine Assessment and Reporting Group (MARG)⁶, which coordinates technical support from UKMMAS, agreed to divide the technical input for developing the required targets and indicators for the 11 descriptors of GES (see Annex 3) between three of the Evidence Groups (see Figure 1).

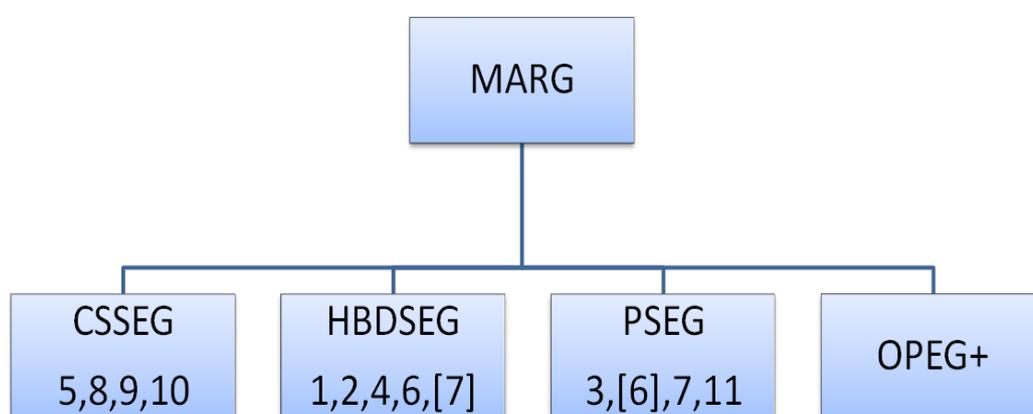


Figure 1: UKMMAS structure and delegated responsibilities for the Good Environmental Status descriptors. MARG reports to the Marine Science Coordination Committee. See Annex 3 for the list of descriptors. Brackets ([]) indicate overlap between groups. OPEG has a cross-cutting role to ensure that the ocean processes evidence base is developed to support assessments of GES against prevailing environmental conditions. HBDSEG - Healthy and Biologically Diverse Seas Evidence Group; PSEG - Productive Seas Evidence Group (PSEG); CSSEG – Clean and Safe Seas Evidence Group; OPEG – Ocean Processes Evidence Group.

- 2.6. Recognising the complex nature of the task, Defra has asked two organisations to lead the majority of the work:
- i. Cefas are providing technical advice on options for targets and indicators for the GES Descriptors 2, 3, 5, 7, 8, 9, 10 and 11 and project managing the Cost Benefit Analysis being undertaken by Eftec. In general, these

⁴ http://jncc.defra.gov.uk/pdf/comm08NO4_infopaper.pdf

⁵ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:232:0014:0024:EN:PDF>

⁶ MARG is alternately chaired by Defra and Marine Scotland. The group is made up of senior staff from organisations and agencies who manage the resources required to deliver monitoring and assessment, together with people from relevant policy leads (e.g. from Department for Energy and Climate Change, Department for Transport) and management organisations (e.g. Marine Management Organisation) (see Annex 3).

descriptors are associated with having an impact on biodiversity, so there are strong links between these descriptors and the biodiversity descriptors. The JNCC is providing a strong link to this work through participation on the Project Board, commenting on the draft advice for the descriptors and providing technical advice for the underwater noise descriptor.

- ii. JNCC is facilitating, via the Healthy and Biologically Diverse Seas Evidence Group (HBDSEG), the development of options for GES targets and indicators for Descriptors 1, 4 and 6 (generically referred to as the biodiversity descriptors). The approach developed and described below recognises the complex nature of the biodiversity descriptors. JNCC is also facilitating between the work taking place at the European regional seas scale within OSPAR and that being undertaken by Cefas and the other Evidence Groups within the UK. This has included providing input to the development of technical advice where necessary and leading several of the expert sub-groups set up by HBDSEG.

2.7 HBDSEG has delegated the development of the biodiversity targets and indicators to six sub-groups (see Figure 2) and a drafting team, chaired by Marine Science Scotland. The JNCC and the country conservation bodies have either led, or been actively involved in, all of these sub-groups.

2.8 The sub-groups have been organised in this way due to the significant overlap between the three biodiversity Descriptors. Target and indicator development by each of the subgroups has then been linked back to the relevant descriptors (Figure 2). The work of these sub-groups has taken a strong lead from the Commission Decision and OSPAR. In particular, they have followed the principles laid out in a draft Biodiversity Advice Manual developed by OSPAR which has been designed to assist Contracting Parties with the setting of targets for the biodiversity descriptors.

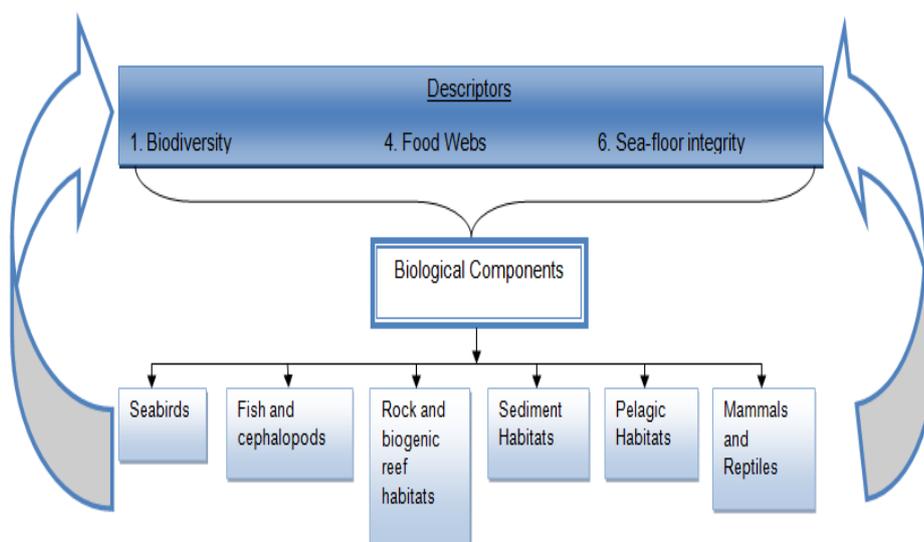


Figure 2 How the development of targets and indicators for descriptors 1, 4 and 6 is being taken forward by HBDSEG. The bottom row shows the six sub-groups that HBDSEG has set up to undertake the work and the topics that they are focusing on. The work of these groups feeds into the three biodiversity descriptors.

- i. Interim advice on targets and indicators was provided by HBDSEG on 25 May 2011. This advice included initial consideration of a programme of measures, in order to inform the Cost Benefit Analysis of the possible measures needed to achieve GES and gave an indication of the direction the development of targets and indicators for Descriptors 1, 4 and 6 is taking. A review of all the Descriptors is taking place at a joint workshop with Cefas in mid-June 2011 to ensure that the linkages between the pressure and state descriptors are clear and consistent but also that gaps are properly identified.
- ii. Final technical advice on options for these targets and indicators will need to be made available to policy makers by the end of July 2011 and will be used to inform a public consultation beginning in late Autumn 2011.
- iii. A review of the consultation responses, and potential amendments to targets and indicators, will take place in March 2012, with the final document sent to the Commission by July 2012 as directed by the European Directive.

3. Implementing the Directive at Regional Seas Level

3.1 The March 2010 Committee paper (JNCC 10 P02) emphasised the need for early involvement in work at both EU and OSPAR levels to develop the necessary approaches and mechanisms. OSPAR, as a Regional Seas Convention, has a specific formal role to play in coordinating various aspects of the MSFD implementation. Since then, Defra has continued to recognise the benefits of JNCC contributions to such EU and OSPAR processes by:

- i. providing additional funding to support four dedicated posts to work on MSFD and related OSPAR issues and thus recognising the scale and complexity of the task to set targets and develop indicators for biodiversity elements of the Directive at the regional and sub-regional scale;
- ii. encouraging JNCC to continue to take a lead in the development of integrated biodiversity assessment and monitoring requirements within OSPAR (Biodiversity Committee). This continues to be achieved through ICG-COBAM⁷ whose work plan in the last year has delivered a Biodiversity Advice Manual to guide Contracting Parties towards using a common approach to setting targets and indicators for the determination of Good Environmental Status; JNCC played a lead role in delivering this Manual and provides the Technical Secretariat to the group. A new work plan has just been agreed that will focus on facilitating coordination between Contracting Parties as their national processes start to deliver targets and indicators;
- iii. seeking scientific advice to support the Defra Head of Delegation at other OSPAR meetings, set up to support the coordination of MSFD issues in OSPAR (e.g. Coordination Group);
- iv. seeking scientific advice at an EU level to support European Commission Working Groups (e.g. Working Group on Good Environmental Status,

⁷ Intersessional Correspondence Group on Coordination of Biodiversity Assessment and Monitoring

Working Group on Data Information and Knowledge Exchange) and Marine Director meetings;

- v. seeking JNCC attendance at bi-lateral meetings (Ireland and France to date) which aim to facilitate regional cooperation and coordination, as required by the Directive;
- vi. requesting that JNCC provide an active link between its UK work (MSFD, Marine Protected Areas, and Marine Biodiversity Monitoring Programme) and the EU/OSPAR level work, to promote solutions which are compatible and which overall aim for an efficient and effective monitoring and assessment process.

3.2 Although Defra has provided considerable funds to support the JNCC in the delivery of advice at the EU and OSPAR level, Government restrictions on recruitment and contracting procedures have meant that recent staff effort has prioritised on the implementation of the Directive in the UK. The JNCC has continued to support and influence the OSPAR work (as described above) whenever possible but more effort is required at this level in particular and should improve assuming successful recruitment in July.

4. Links to other Directives and legislation

- 4.1 The Directive will be complementary to, and provide the overarching framework for, the marine elements of a number of other key Directives and legislation at the European and UK level. JNCC is starting to provide advice on these links, notably:
- i. the need for harmonisation and alignment of reporting requirements between MSFD and the EC Habitats and Birds Directives. Some of this alignment has already occurred but it is expected that MSFD will further influence the marine reporting requirements across these Directives;
 - ii. the provision of advice on possible management measures to regulators and industry in the UK and to policy leads for European level issues such as Defra for the Common Fisheries Policy (CFP) reform. While the targets and indicators for determining Good Environmental Status are yet to be agreed and consulted upon, it is likely that they will require pressures on biodiversity to be mitigated more fully and widely than at present. Early exploration of these issues has helped allay some fears and may help ensure that the CFP takes better account of the environmental obligations of Member States;
 - iii. the requirement for the establishment of Marine Protected Areas (MPAs) as part of the Directives' programme of measures, particularly in the context of fulfilling international commitments towards creating MPA networks (OSPAR, WSSD, CBD). The creation of a network of MPAs in the UK is an objective of both national legislation (the Marine and Coastal Access Act 2009; Marine (Scotland) Act 2010) and the Natura Directives, and will make a contribution to the UK's achievement of GES, although the precise nature of this contribution is still under discussion and will depend on the targets put forward in July 2012 to the EU Commission. Indications from Government at present suggest that the state of features in MPAs should at least meet or probably exceed relevant GES targets such that the MPA network will make a significant contribution. However, additional management measures will be

most likely be required outside MPAs since the MPA network will not itself deliver all aspects of GES;

- iv. the need for a reporting format that enables aggregation of assessments to a region and sub-region scale. How this will be achieved is still under development by the EU Commission but indications are that data will need to be supplied in accordance with the INSPIRE Directive. The JNCC Data Services team leads on advice on data standards for biodiversity so we are in a good position to influence this work;
- v. how the UK is fulfilling international commitments undertaken at the World Summit on Sustainable Development (WSSD) and under the Convention on Biological Diversity (CBD) and the OSPAR Convention. The MSFD provides a legal basis for much of the work that the UK is undertaking to fulfil our contribution to the marine elements of these obligations.

5. Remaining challenges and risks

Immediate risks

- 5.1 The UK is more advanced than most other Member States in its development of both the Initial Assessment and its determination of Good Environmental Status. This is in large part due to the use of *Charting Progress 2*, which is already complete, as the main body of evidence for the Initial Assessment and the need to go out to an early public consultation to meet Whitehall requirements. This presents a risk that UK targets for GES are significantly different from targets being proposed by other Member States in the OSPAR region. JNCC staff have been working with Defra to try to minimise this risk by providing other Member States with sight of early drafts, leading on the development of technical advice where possible and aligning UK work with this advice, and working with experts in other countries when possible. It is likely that this advisory and influencing role will need to continue for the next few years as we gain a better understanding of where the likely differences are between Member States at the regional level. Opportunities may exist beyond the UK's own deadlines to influence the outcome of other countries approaches.
- 5.2 In addition to the UK facing risks as a result of the early public consultation process, during the last six months it has become apparent that there are some differences in how Articles 9 and 10 of the Directive are being interpreted by the UK and Germany but also in part by France. These two articles refer to the how Good Environmental Status is characterised. It is not clear exactly how these interpretations might affect final implementation of the Directive so this has contributed to lack of clarity around the process of setting targets and indicators. Current policy opinion it is that the differences between the two approaches are likely to be mainly presentational and that both approaches could be considered appropriate. The Working Group-GES Drafting Group is currently considering the different approaches proposed by Member States and will produce a document outlining commonalities and acceptable differences to tackling Articles 9 & 10. A final draft of the document is expected to be available in by September 2011.

Levels of evidence required to achieve GES

- 5.3 JNCC and the country conservation bodies have been actively involved in these early stages of the implementation of the Directive in the UK. JNCC staff have taken a lead role in facilitating the development of the biodiversity targets and

indicators and provided a link between UK and OSPAR/EU processes. Staff of all country bodies have participated in a number of expert/steering groups that have been either established or been given the remit to develop specific elements of the Directive. This has been a difficult and complex task with very tight timescales, scientific challenges and many uncertainties with process and expectations. Immediate risks around this process include the final proposals for GES targets not having strong enough links to the management measures needed to achieve them due to lack of understanding and evidence. Although timescales are incredibly challenging mitigation of this immediate risk can only be achieved by careful scientific quality assurance which must be undertaken by members of UKMMAS and others if possible.

- 5.4 These scientific challenges will continue on into the future as gaps in the targets and indicators due to lack of knowledge and understanding are identified as needing to be filled. Filling these gaps will be difficult in a climate of declining resources. It will take the UKMMAS community, including the JNCC and country bodies, to continue to work smarter and more closely together to make efficient use of existing capacity and interpretation skills. This is certainly true for the biodiversity descriptors where we already know where there are significant gaps in monitoring programmes and thus evidence for policy decisions on management measures, but it is also the case for many of the pressure descriptors where we lack just as much information.

Burden of implementation

- 5.5 Clarity over who the competent authorities were going to be for the Directive only came with the publication of the Marine Strategy Regulations in July last year. This made it very difficult for government bodies to plan resources to contribute to the implementation process and to agree priorities across work programmes. The impact on the JNCC and country conservation bodies has been considerable with timetables for the delivery of many key elements coinciding with other high priority marine deliverables such as the Marine Acts and designation of offshore Special Areas of Conservation. This has meant that engagement from key individuals in these organisations has been minimal and biodiversity policy leads within Defra, in particular, has so far been largely absent. It is hoped that the recent appointment of a new staff member to Defra's new Marine Biodiversity Division with specific responsibilities for MSFD will start to rectify this situation and improve the links between the different policy requirements, although they will need to take a UK view to be effective for MSFD.
- 5.6 Implementing the EU Water Framework Directive consumed a significant proportion of the resources of a number of UK agencies in simply establishing the process, particularly of monitoring, thus reducing the actual work on water management. The Governments' desire not to repeat the Water Framework Directive experience and to make best use of the existing UKMMAS structure has helped to minimise the burden on Agencies to date but UK agencies should endeavour to use existing work, particularly work on implementing the Marine Acts, Convention on Biological Diversity and the OSPAR Convention and EC Directives, to implement the framework directive.
- 5.7 The MSFD places a strong focus on management measures as reflected by eight of the 11 descriptors representing a pressure on the marine environment (e.g. noise, commercial fisheries). Targets and indicators being developed for these descriptors will need to be consistent with the delivery of the state targets under descriptors 1 and 4 if GES is going to be achieved. The Directive therefore provides JNCC and

the country conservation bodies with further opportunities to influence future management measures that will deliver conservation gain.

Annex 1. Key requirements and time frame of the MSFD, and associated UK responses (updated as of June 2011)

Table 1. Key requirements and time frame of the MSFD, and associated UK responses (updated as of June 2011)

Date	Activity	Expected UK response	Update, June 2011
July 2010	The Directive must be transposed into Member State regulations to provide a legal framework for national implementation	In the UK, the Directive will be transposed through the Marine Strategy Regulations 2010 under Section 2(2) of the European Communities Act (1972)	The Directive was transposed into UK law in July 2010 and the EU Commission published a Decision on Criteria and Methodological Standards for GES in September 2010.
July 2012	An Initial Assessment of the current environmental status of each Member State's marine waters and the environmental impact of human activities, based on the environmental characteristics and pressures from human activities given in Annex III of the Directive and an economic and social analysis of the use of the sea and of the cost of degradation of the marine environment	The <i>Charting Progress 2: State of the UK Seas Report 2010</i> is expected to form the basis of the Initial Assessment. The OSPAR Quality Status Report 2010 will provide a basis for a regional-level assessment.	In addition to Charting Progress 2 forming the basis of the Initial Assessment, assessments undertaken in Scotland and Northern Ireland will add to the evidence base. Defra is producing a short covering report indicating where the relevant evidence can be found for the different GES descriptors and Annex III characteristics and pressures. The cover paper will also include a socio-economic analysis of the cost of degradation. Final Draft of Initial Assessment Cover Report is due to be circulated in mid-June 2011. Whitehall clearance process and public consultation – expected autumn 2011
	A determination of GES, based on the descriptors in Annex I and the characteristics and pressures in Annex III, and associated environmental targets and indicators	Establish what GES means for UK waters, within the Greater North Sea and Celtic Seas subregions, including setting targets and identifying an appropriate set of indicators	JNCC/HBDSEG and Cefas providing scientific advice. Final report on options for targets and indicators and cost benefit analysis completed – due 1st August 2011 Whitehall clearance process and public consultation – expected autumn 2011
2013	Member States shall make available information on 'areas' (MPAs) and any activities that require measures at an international/community level (Art. 13.6)	The existing SAC network and pending designation of MCZs and Scottish MPAs are likely to form this list. The SNCBs may be required to formulate their statutory advice on MPAs with respect to the measures required to deliver the conservation objectives.	Some work has been started on what measures may be required to achieve GES at the wider environment scale (e.g. CFP), but it is anticipated that additional work will be required to articulate what activities will require measures for MPAs.

Date	Activity	Expected UK response	Update, June 2011
July 2014	Establishment and implementation of a coordinated monitoring programme for ongoing assessment and regular updating of targets, to measure progress towards achieving GES	The UK Marine Monitoring and Assessment Strategy coordinates marine monitoring across the UK and will provide information required to measure progress towards GES. JNCC's Marine Biodiversity Surveillance Programme, being developed in collaboration with the country conservation bodies, will contribute to this UKMMAS process.	JNCC providing QA on biodiversity monitoring that might be required to meet requirements over and above existing requirements for other obligations (e.g. Habitats Directive).
July 2015	Development of a programme of measures designed to achieve or maintain GES, taking into account relevant existing measures under other Directives and international agreements	The UK Marine and Coastal Access Act 2009 is an example of an existing measure that will contribute to GES through the establishment of MPAs and a coherent marine planning system	While the development of a programme of measures has not started formally, considerable discussion is taking place on the possible management consequences of various options for GES and the indicators.
July 2016	Entry into operation of the programme of measures to achieve or maintain GES	Implementation of the programme of measures is expected to be coordinated, for waters off England, by the Marine Management Organisation, and through equivalent bodies in Scotland, Wales and Northern Ireland	No further update
July 2018	Review and updating of the marine strategies, including the initial assessment, the targets, the monitoring programmes and the programmes of measures	This is the first of the six-yearly reporting cycle on progress in delivery of the Directive	No further update
2020	Achievement of GES		No further update

UKMMAS is providing advice to support:

- i. The *Initial Assessment* through provision of additional information should it be required since the publication of Charting Progress 2. JNCC and the country conservation bodies played a significant role in the delivery of Charting Progress 2 and have supported this updating and commenting process as required.
- ii. *Determination of GES and development of targets and indicators*: There are two elements to this work:
 - a. Qualitative determination of what GES will look like in UK waters: this is being developed by Defra and the DAs and it is envisaged that it will refer qualitatively both to what the state of the marine environment in the specific region/sub region looks like when GES has been achieved, and to the acceptable levels of key pressures in that region/sub region when GES has been achieved. The JNCC has provided scientific advice on the links between this element of the determination of GES for the biodiversity descriptors and the work
 - b. Further target and indicator development work which is being undertaken by JNCC and Cefas in order to develop a range of options for potential UK targets and indicators which can be further considered by way of a cost benefit analysis. Input from the Devolved Administrations and the relevant Evidence Groups has been actively sought throughout this process.
- iii. *Development of monitoring programmes for GES*: This will be a key role for the UKMMAS community, who will need to consider whether existing monitoring programmes remain 'fit for purpose' in light of MSFD requirements and, if necessary, make recommendations for changes. UKMMAS's role in this aspect of MSFD implementation is likely to increase during 2012 and into 2013-14 and there will be a need to consider new and emerging needs. JNCC and the country conservation bodies have an important role in delivering the biodiversity monitoring through the work being undertaken in the UK Marine Biodiversity Monitoring Programme.

Annex 2. Governance arrangements for the Marine Strategy Framework Directive

Ministers. Ministerial input has been sought early in the implementation process with Ministerial sign-off being required at all major stages.

UK Policy Steering Group. This group gives a strong UK policy steer in the development of each of the high-level outcomes. The group will take the final decision on the structure and content of those outcomes. Representation includes policy representatives from all the UK administrations, key Whitehall departments (DECC, DfT and CLG) and key delivery bodies from across the administrations, including JNCC and the country conservation bodies. In reality, this group has met infrequently.

UKMMAS Marine Assessment and Reporting Group. The purpose of this group will be to coordinate technical support from UKMMAS on the implementation of the Directive. It will identify the tasks and responsibilities that the Evidence Groups need to take forward to support the development of the UK Initial Assessment, the determination of good environmental status (including targets and indicators), and any changes needed to UKMMAS monitoring programmes to support MSFD requirements. Representation should include key policy leads, representatives from the Evidence Groups, and key delivery bodies. The first meeting is likely to take place in Sept/October 2010. The UKMMAS is providing technical advice and input to Defra and the devolved administrations to support this process, but will not be responsible for delivering the final outcomes.

Defra internal project board. This internal project board will include representatives from all teams across Defra which support MSFD implementation (including teams working on the Water Framework Directive, on waste and litter and on invasive species). It will help the core team ensure they can manage the input from teams across the Directorate

Annex 3. Good Environmental Status Descriptors

1. Biological diversity is maintained. The quality and occurrence of habitats and the distribution and abundance of species are in line with prevailing physiographic, geographic and climatic conditions.
2. Non-indigenous species introduced by human activities are at levels that do not adversely alter the ecosystems.
3. Populations of commercially exploited fish and shellfish are within safe biological limits, exhibiting a population age and size distribution that is indicative of a healthy stock.
4. All elements of the marine food webs, to the extent that they are known, occur at normal abundance and diversity and levels capable of ensuring the long-term abundance of the species and the retention of their full reproductive capacity.
5. Human-induced eutrophication is minimised, especially adverse effects thereof, such as losses in biodiversity, ecosystem degradation, harmful algal blooms and oxygen deficiency in bottom waters.
6. Sea-floor integrity is at a level that ensures that the structure and functions of the ecosystems are safeguarded and benthic ecosystems, in particular, are not adversely affected.
7. Permanent alteration of hydrographical conditions does not adversely affect marine ecosystems.
8. Concentrations of contaminants are at levels not giving rise to pollution effects.
9. Contaminants in fish and other seafood for human consumption do not exceed levels established by Community legislation or other relevant standards.
10. Properties and quantities of marine litter do not cause harm to the coastal and marine environment.
11. Introduction of energy, including underwater noise, is at levels that do not adversely affect the marine environment.

Table 2. Summary of the GES descriptors, who is leading in the development of the targets and indicators and whether they are pressure or state descriptors (as depicted by the tick, ✓) and what part of the environment they are having an impact on.

No	Generic description	Technical Lead	State – mobile species	State – water column	State - seabed	Pressure
1	Biological diversity	JNCC/HBDS EG	✓	✓	✓	
2	Non-indigenous species	Cefas	Impact	Impact	Impact	
3	Commercial fish & shellfish	Cefas	✓		✓ (some species)	✓
4	Food-webs	JNCC/HBDS EG	Species-community balances			
5	Eutrophication	Cefas		Impact	Impact	✓
6	Sea-floor integrity	JNCC/HBDS EG			Impact	✓
7	Hydrography	Cefas			Impact	✓
8	Contaminants	Cefas	Impact		Impact	✓
9	Contaminants in seafood	Cefas	Impact		Impact	✓
10	Litter	Cefas	Impact		Impact	✓
11	Energy, incl. underwater noise	Cefas	Impact			✓