Delivering ecosystem-based marine spatial planning in practice

Assessing the integration of an ecosystem-based approach into UK and Ireland Marine Spatial Plans

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Citation

WWF (2017). Delivering ecosystem-based marine spatial planning in practice: An assessment of the integration of the ecosystem approach into UK and Ireland Marine Spatial Plans. Pp. 1-132

Graphics

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Summary

Marine planning in the UK and Ireland is committed to applying an ecosystem-based approach, in line with the UK Marine Policy Statement and with more recent European legislation, in the form of the EU Maritime Spatial Planning Directive. However, when examining the supporting evidence globally, there is surprisingly little agreement on what is meant in practice by 'an ecosystem-based approach'. The term itself is used interchangeably with 'The Ecosystem Approach' and 'ecosystem-based management', and there are also sector-specific applications of the term, such as 'an ecosystem approach to fisheries [management]'. Analyses of self-identified applications of an ecosystem-based approach have repeatedly found substantial differences in the way that scientists and managers have characterised the ecosystem-based approach, resulting in inconsistent and incomplete application of principles.

To address the issue, WWF has developed a series of simple questions to independently assess whether marine plan content and process can collectively be considered ecosystem-based, as well as to enable the comparison of plans across jurisdictional boundaries. The Baltic SCOPE Project has recently produced a similar checklist for Maritime Spatial Planning and Strategic Environmental Assessment processes.

By testing the efficacy of the WWF and Baltic SCOPE checklists in assessing the integration of an ecosystem-based approach in marine/maritime spatial planning (MSP), this study is the first to comprehensively assess existing UK and Irish marine plans and processes against each other, according to a consistent set of criteria. The study offers an early indication about the effectiveness and ambition of ecosystem-based marine planning across the UK and Ireland, highlighting areas of positive progress as well as areas of potential improvement. The study also assesses the usefulness of the checklist approach in this context and makes recommendations on how it could be improved.

A total of seven marine plans from England, Scotland, Wales and Ireland were assessed in the study, which involved:

- A literature review of principles of ecosystem-based MSP;
- An assessment of all seven plans against the WWF and Baltic SCOPE checklist criteria;
- A summary of how each plan applied an ecosystem-based approach;
- A comparison across all plan responses to each MSP checklist criterion
- The identification of areas for improvement, examples of good practice and recommendations; and
- An appraisal of the checklist approach.

Against both the WWF and Baltic SCOPE checklist criteria, six of the seven marine plans met all the criteria – either in part, or in full – with the exception of the Irish Plan, which is at too early a stage in marine planning to have implementable marine plan policies, or an SEA.

Overall, the Scottish and Welsh plans were considered to most comprehensively demonstrate an ecosystem-based approach, meeting all the criteria except one (whether allocation of development was based upon environmental, social and economic factors). The Shetland Plan assessment met all but two of the criteria (setting out a vision; supporting the achievement of Good Environmental Status). There were several checklist criteria that were consistently underrepresented in several of the marine plans. With each underrepresented criteria, however, at least one of the plans provided an example of good practice. Areas of improvement and associated good practices were:

1) **Ensuring an equitable balanced between social, environmental and economic factors in marine plans.** The Scottish, Welsh, Shetland and Sound of Mull plans all adopted a two-tier policy framework that prioritized general policies over sector-specific policies.
2) **Developing Spatially-explicit policies.** The Shetland Plan contained 'regional locational guidance' based upon environmental, social and economic constraints. The nested planning process demonstrated in Scotland combined a high-level policy approach at national level with more detailed and spatially-explicit regional plans.
3) **Manifesting the Precautionary Principle.** The Shetland Plan adopted strong policy prioritization through the two-tiered approach and spatially-explicit guidance, and strongly precautionary wording in the plan policies.
4) **Incorporating comprehensive ecosystem service assessments.** The Scottish Plan incorporated and addressed findings from the National Ecosystem Assessment.
5) **Supporting greater consideration across marine and terrestrial planning processes.** The Shetland Plan benefitted from overlapping planning boundaries between marine and terrestrial authorities at the coastal zone.
6) **Providing the evidence base to support co-location of activities.** The Sound of Mull Plan contained sensitivity and constraint matrices facilitating co-location decision. The Scottish Plan included sectoral interaction information.

Overall recommendations on how to improve the application of an ecosystem-based approach included, where appropriate:

- Adoption of a nested approach to marine planning
- Adoption of spatially-explicit policies to reduce uncertainty
- Inclusion of comprehensive ecosystem assessments
- Exploring conservative vs flexible interpretations of the Precautionary Principle
- Frameworks for better integration of marine and terrestrial planning processes
- Exploring sectoral attitudes to the concept of an ecosystem-based approach

Recommendations for developing a checklist approach included providing more detailed guidance for each criterion, considering a tiered approach to prioritize across criteria, and expanding the approach to include graduated markers for progress.

Chapter 1   Introduction, Aim, Objectives and Methodology

1.1   Context

In both the UK and Ireland, marine planning is committed to using or applying an ecosystem-based approach to the allocation and regulation of marine space over time, in line with the EU Maritime Spatial Planning Directive[1]:

> 'In order to promote the sustainable growth of maritime economies, the sustainable development of marine areas and the sustainable use of marine resources, **maritime spatial planning should apply an ecosystem-based** approach as referred to in Article 1(3) of Directive 2008/56/EC with the aim of ensuring that the collective pressure of all activities is kept within levels compatible with the achievement of good environmental status and that the capacity of marine ecosystems to respond to human-induced changes is not compromised, while contributing to the sustainable use of marine goods and services by present and future generations. In addition, an ecosystem-based approach should be applied in a way that is adapted to the specific ecosystems and other specificities of the different marine regions and that takes into consideration the ongoing work in the Regional Sea Conventions, building on existing knowledge and experience.   The approach will also allow for an adaptive management which ensures refinement and further development as experience and knowledge increase, taking into account the availability of data and information at sea basin level to implement that approach. *[Recital 14]*.'

In the UK, this is consistent with the UK Governments' shared vision for clean, healthy, safe, productive and biologically diverse oceans and seas. The UK Marine Policy Statement is clear that marine plans will "manage competing demands on the marine area, taking an ecosystem-based approach", which is explicitly linked to the requirement under the UK Marine Strategy Regulations 2010. This is also set out in the High Level Marine Objectives, where the four UK governments are obliged to ensure that "the use of the marine environment is spatially planned where appropriate and based on an ecosystems approach which takes account of climate change and recognises the protection and management needs of marine cultural heritage according to its significance." The UK and Ireland are further required to apply an ecosystem-based approach under Article 5 and clause 14 of the Maritime Spatial Planning Directive, in line with the definition used by the Marine Strategy Framework Directive (MSFD).

WWF sees marine (spatial) planning as an ecosystem-based process, within and across borders, which delivers for nature conservation and leads to a sustainable blue economy

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[1] Article 5 and Clause 14, Directive 2014/89/EU of the European Parliament and of the Council

with thriving local communities, including in the face of climate change. Unfortunately, there appears to be no clear consensus on what an ecosystem-based approach actually means in practice in a marine planning context, and discussions often get stuck on theoretical definitions, rather than practical implementation.

To move beyond this, WWF is developing a series of simple questions for staff around Europe as a way of independently assessing whether marine plan content and process can collectively be considered ecosystem-based, as well as comparing plans across jurisdictional boundaries. Concurrently, the Baltic SCOPE Project has recently produced a checklist toolkit for 'the ecosystem approach in maritime spatial planning', which includes criteria regarding various aspects of MSP and Strategic Environmental Assessment (SEA) processes. While designed for a planning authority audience, they contain useful questions for an independent assessment (which could produce different conclusions).

Neither assessments have yet been tested in a UK context and with new plans recently adopted or consulted upon, it is an opportune moment to take stock of MSP in the UK and Ireland and consider the degree to which the plans and planning processes are ecosystem-based.

1.2 Aim and Objectives

The aim of the study is to test the efficacy of the WWF EBM checklist and the Baltic SCOPE Checklist Toolkit approach in assessing the integration of the ecosystem approach in Marine Spatial Planning. As such, it is the first study to comprehensively assess existing UK and Irish marine plans and processes using a consistent set of criteria. This analysis therefore offers an early indication of the effectiveness and ambition of ecosystem-based marine planning in the UK and Ireland, highlighting areas of positive progress as well as areas of potential improvement.

The objectives of the study are:

1. To reveal the degree to which the current UK and Ireland marine plans are (or are not) ecosystem-based, highlight positive aspects and make recommendations where necessary for improvement.

2. To assess the usefulness of a specific checklist approach to assess if marine plans are ecosystem-based and make recommendations on how it could be improved.

1.3   Methodology

The following plans were included in this study:

- 'East Plan' – 2014 East England inshore and offshore marine plans;
- 'South Plan' – South England inshore and offshore marine plans (public consultation version, November 2016);
- 'Welsh Plan' – Welsh National Marine Plan (Draft for 2017 consultation provided by Welsh Government, June 2017);
- 'Irish Plan' – Integrated Marine Plan for Ireland ("Harnessing our Ocean Wealth", 2012);
- 'Scottish Plan' – Scottish National Marine Plan (2015);
- 'Shetlands Plan' – Shetland Islands Marine Spatial Plan (4th edition, 2015);
- 'Sound of Mull Plan' – Sound of Mull Marine Spatial Plan (2010)

This study involved five stages:

A. A review of literature describing the principles of ecosystem-based MSP;
B. An assessment of UK and Ireland Marine Spatial Plans against the WWF Ecosystem Approach checklist and the Baltic SCOPE EBM Toolkit checklist;
C. A summary of the ecosystem approach within each MSP plan;
D. A comparative analysis of the performance of all plans against each checklist question;
E. An appraisal of the checklist approach.

A.   Literature review

Relevant scientific literature was collated, reviewed and summarised to provide an overview of the principles of good ecosystem-based MSP. Simple search terms were created using key phrases: "ecosystem approach", "ecosystem-based management", "ecosystem-based marine spatial planning". These phrases were used in combination with a qualifying terms "definition" and "principles" to refine searches towards peer reviewed definitions or principles of those key concepts. As a brief literature review was required, existing literature reviews of the same concepts were highlighted.

B.   Checklist Assessment

Two checklists were used for the purposes of this study, the Baltic SCOPE Checklist Toolkit, and the WWF (draft) ecosystem approach checklist:

1)   the Baltic SCOPE Checklist Toolkit

Produced by the Baltic SCOPE Project, a collaboration of nine Baltic country marine planning authorities and two regional organisations (VASAB and HELCOM), the 'Checklist Toolkit' consists of 10 questions (see Table 1) about the MSP Plan itself, and a further 13 questions on the SEA (see Table 2). The checklist is accompanied by a supporting guidance document (Schmitbauer Crona 2017).

Table 1. Baltic SCOPE checklist questions for the Marine (Maritime) Spatial Plan

Baltic SCOPE Checklist Toolkit (BSCT) – MSP Plan	
1	Does MSP support the achievement and/or contribute to maintaining Good Environmental Status (GES)?
2	Is the best knowledge and practice applied in planning?
3	Is the precautionary principle considered during planning?
4	Are alternatives used in planning?
5	Is the assessment of ecosystem services included in planning?
6	Is mitigation applied in planning?
7	Is a holistic systems perspective used in planning?
8	Is participation and communication ensured in planning including the Strategic Environmental Assessment (SEA)?
9	Is the subsidiarity aspect and coherence between levels considered in planning?
10	Is adaptation considered in planning?

Table 2. Baltic SCOPE checklist questions for the Strategic Environmental Assessment (SEA)

Baltic SCOPE Checklist Toolkit (BSCT)– SEA	
1	Will an SEA be carried out?
2	Which regulation lays the basis for the screening?
3	Which environmental aspects are relevant to assess?
4	Which descriptors from the Marine Strategy Framework Directive (MSFD) are relevant?
5	Which ecosystem services are relevant?
6	How is the SEA integrated in the MSP-process?
7	Which linkages between the planning process and the SEA are present?
8	Which are the ecologically important areas, which may be affected by MSP?
9	What is known on the coherence of the MPA network?
10	Which are the actual and potential threats on the marine ecosystems?
11	How are "reasonable" alternatives included in planning?
12	Are different planning solutions presented?
13	Is it possible to identify strategic choices in planning?
14	How is the "zero alternative" defined and used in the assessment?
15	Which are the significant environmental effects of the plan?
16	Which are the cumulative impacts?
17	Does the plan support the achievement and/ or contribute to maintaining GES and other environmental targets?
18	Which are the impacts on relevant ecosystem services?
19	Who participated in the assessment and what is their opinion on the results?
20	Have ESPOO-consultations been carried out?
21	Has feedback been given on responses from neighbouring countries?
22	How are environmental impacts minimized or prevented?
23	Are the SEA-directives requirements considered?
24	How will the environmental impacts of the plan be monitored and audited?

2)   The WWF (draft) ecosystem approach questions

Produced by WWF for their national offices around Europe, the checklist comprises a series of ten questions (see Table 3) to enable WWF staff to independently assess whether plan content and process can collectively be considered to be ecosystem-based, as well as to facilitate the comparison of plans across jurisdictional boundaries. As this checklist is still in draft form, no supporting documentation is currently available.

Table 3. WWF (draft) Ecosystem Approach Checklist questions

WWF (draft) Ecosystem Approach Questions	
Does the MSP plan and process…	
1	Set out a long-term vision and a path to get there?
2	Support the designation and management of Marine Protected Areas?
3	Allocate development based on environmental criteria, as well as economic and social factors?
4	Show support for integrated coastal management?
5	Safeguard and enhance key ecosystem services?
6	Involve stakeholders and community knowledge/expertise from an early stage?
7	Have a strong strategic environmental assessment?
8	Have an adaptive approach to deal with new circumstances?
9	Embed the precautionary principle?
10	Show evidence of coordination with other plans?

Prior to plan assessment, the authors discussed the questions to agree upon a standardised interpretation, and where necessary, referred to the Baltic SCOPE Checklist Toolbox guidance document to clarify the meaning of questions. In order to be able to appraise the checklist approach and the checklists themselves, questions were interpreted as literally as possible, taking account of the terminology used.

To streamline the process of assessment, questions from the two checklists addressing very similar principles (e.g. stakeholder involvement; adaptive management; precautionary approach) were grouped together. For the assessment itself, both MSP checklists required a brief 'Yes/No/Partly' answer for each question, accompanied by a concise justification text (1-3 paragraphs) explaining the rationale for the answer selected. Where the brief answer is 'Partly', the justification described the extent to which the particular element is incorporated into the plan.

Following an initial iteration of checklist assessments on two MSP plans, a review of results concluded that responses to the checklist criteria could be different depending upon whether the assessment was based upon explicit or implicit evidence. For example, in response to the criteria question 'Does the MSP plan embed the precautionary principle?', a positive answer could be given if the MSP plan simply referred to the precautionary principle in its methodology, but a 'Partly' or 'No' answer could be given if a deeper analysis of the wording of individual policies revealed that overall, a precautionary approach would not be taken

during implementation. To tackle this issue within the scope of the study, a small selection of criteria questions considered fundamental to any assessment of the ecosystem approach were given associated follow-on questions to ensure that the required deeper analyses were undertaken.

C. Summary EBM analysis of plans and recommendations

Following the checklist assessment of each plan and its associated SEA, a summary section for each plan discusses the degree to which the ecosystem-based approach principles are comprehensively embedded within the plan. Recommendations were then made as to where a particular plan could be improved. Where appropriate, approaches from other plans that have good examples of a particular EBM principle being applied are highlighted.

D. Cross question analysis

Once all plans and SEAs had been assessed and the checklists completed, all MSP plan results for each question were compared. To reduce repetition, the grouping of similar questions that was used in Stage B was also used to structure the analysis and support the recommendations as to which areas of EBM are underrepresented in the plans or present significant challenges. Particular focus was placed upon those questions where the response was 'Partly' as this is likely to reveal the different approaches taken, and may be able to identify areas where exchanging ideas between planning regions could be very valuable.

E. Checklist evaluation and recommendations

The usefulness of the checklist surveys was then evaluated, with recommendations for improvement identified. The evaluation of the checklist approach considered both the ease with which plans can be assessed for their ecosystem-based management credentials, but also the opportunity for the checklists to provide guidance to practitioners implementing MSP plans (and stakeholders engaging in the planning process) *prior to completion*.

1.4   Structure of the report

Chapter 1 has introduced the concepts used in the Study and outlines the aims, objectives and methodology. **Chapter 2 sets the context** for the assessments, beginning with a literature review of the principles of ecosystem-based MSP (Section 2.1), followed by a brief description of the marine planning processes in the UK and Republic of Ireland (Section 2.2). **Chapter 3 presents the summary results of the assessments.** Section 3.1 presents three examples of checklist question assessments and provides hyperlinks to each checklist question in the completed assessments (Appendices 1-3). Section 3.2 summarises the extent to which each plan shows an ecosystem-based approach; and Section 3.3 presents the cross-question analysis. Please note that due to the length of the checklist assessments

for all seven MSP plans, these results can be found in Appendix 1-3. **Chapter 4 is the discussion,** examining the extent to which plans take an ecosystem-based approach (Section 4.1) and appraising the checklist approach (Section 4.2). **Annexes 1-3** present examples of ecosystem-based principles highlighted in the literature review (Section 2.1). **Appendices 1-3** present the checklist assessments.

Annexes – EBM Principles

Annex 1: CBD Principles of the Ecosystem Approach (CBD CoP 5, Decision V/6)

Annex 2: Requirements of ecosystem-based management criteria (Arkema *et al.* 2006)

Annex 3: Recommended operating principles for ecosystem-based MSP (Gilliland and Laffoley 2008)

Appendices – Checklist Assessments

Appendix 1: Marine plan assessments (WWF Ecosystem Approach Checklist)

Appendix 2: Marine plan assessments (Baltic SCOPE Ecosystem Approach Checklist)

Appendix 3: Marine plan SEA assessments (Baltic SCOPE SEA Checklist)

Chapter 2   Ecosystem-based marine spatial planning in the UK and Ireland

2.1   Principles of Ecosystem-based Marine Spatial Planning

In both the UK and Ireland, marine planning is committed to using or applying 'an ecosystem-based approach', as described in the EC Maritime Spatial Planning Directive (Article 5), and is a term often used interchangeably with 'the ecosystem approach'. Going back to the origins of the approach, the fundamental paradigm for equitably balancing conservation and resource use through sustainable management of the marine environment was established within Agenda 21, the action plan for sustainable development adopted at the 1992 United Nations Conference on Environment and Development in Rio de Janeiro (the Rio Conference), which stated:

> *'current approaches to the management of marine and coastal resources have not always proved capable of achieving sustainable development, and coastal resources […] This requires new approaches to marine and coastal area management and development, at the national, subregional, regional and global levels, approaches that are integrated in content and are precautionary and anticipatory in ambit'* (United Nations Conference on Environment and Development, 1992).

The Convention for Biological Diversity (CBD) adopted what it termed 'the ecosystem approach' as the agreed framework for all action under the CBD (CBD Decision II/8), and later developed and adopted twelve defining principles (the 'Malawi Principles') (CBD Decision V/6). These principles are specifically aimed at ensuring the long-term existence of biodiversity and can be summarised as: consider all societal values of ecosystems; decentralise management to the lowest appropriate level; consider adjacent ecosystems; avoid negative economic forces; conserve ecological structure and function to maintain ecosystem services; remain within ecosystem limits by managing cautiously; choose the appropriate spatial and temporal scales; think long-term; manage for changing systems; balance conservation and sustainable use of biodiversity; consider all forms of knowledge; and involve all relevant societal sectors and scientific disciplines (see Annex 1 for full CBD Malawi principles).

In parallel, a 'fundamental reframing of how humans may work with nature' (Grumbine 1994) was emerging from practitioner experience, which became known variously as 'the ecosystem approach', 'ecosystem management', or 'ecosystem-based management' (EBM). In their 2006 examination of the extent to which EBM was being implemented in marine sites, Arkema and colleagues reviewed the scientific literature and found 18 characterisations of EBM from which they distilled a set of 17 criteria that scientists commonly used to define the concept (Arkema *et al.* 2006; see Annex 2 for list of criteria). Their analysis of 49

management plans at 8 sites highlighted that there were considerable differences in the way that scientists and managers characterised EBM, and as a result, EBM was applied inconsistently and principles were not implemented comprehensively.

The cause of such inconsistency may in part be due to the fact that many applications of an ecosystem-based approach aimed to improve upon single sector management objectives. For example, better protected area design and management for biodiversity conservation or the broader consideration of impacts upon non-target species in fisheries management. As such, there are distinct bodies of literature that have created variations upon a conceptual theme, for example ecosystem management for conservation (see Grumbine 1994) and the 'ecosystem approach to fisheries' (see Garcia *et al.* 2003). Such variations in the characterisation of the concept have created their own definitions and/or guiding principles. In addition, some of the literature specifically designed to guide practitioners in the application of the approach has tended to simplify the concept into a handful of broader core principles that encompass many of the more specific principles (see UNEP 2011; McLeod & Leslie 2009; Defra 2007).

In a more recent review of EBM, Long *et al.* (2015) reiterated that there is still no commonly accepted conceptual framework for EBM, which results principles being applied inconsistently. In an attempt to create an agreed approach, they collated 26 principles identified within the broad range of historical and current definitions of EBM and performed a frequency analysis to identify the most common 'key EBM principles', as well as their relative importance. Although Long *et al.* (2015) recognise that EBM is an evolving concept, their analysis included historical and current EBM definitions that were general and specific (from both terrestrial and marine environments), including both single-sector and multiple sector applications, and therefore their resulting set of principles do not contain some of the fundamental tenets of more recent EBM discussions, such as adopting a precautionary approach and considering cumulative impacts.

Nonetheless, as the shortcomings in single-sector marine resource use management have become increasingly apparent (predominantly the significant decline in biodiversity but also the increasing conflicts between overlapping marine uses), more holistic, integrated and place-based management approaches (integrated coastal zone management, ocean zoning and marine spatial planning) have rapidly gained support as tools that could successfully support a more multi-sectoral delivery of an ecosystem-based approach (CBD Decision X/29; Douvere 2008; Halpern *et al.* 2008).

Ecosystem-based Marine or Maritime Spatial Planning (MSP) is defined by Foley *et al.* (2010) as an 'integrated planning framework that informs the spatial distribution of activities in and on the ocean in order to support current and future uses of ocean ecosystems and maintain the delivery of valuable ecosystem services for future generations in a way that meets ecological, economic, and social objectives'. They conclude that the emphasis on

ecosystem service delivery in MSP means that scientifically robust ecological principles are fundamental, and suggest four additional principles are included in any ecosystem-based MSP to complement other management-orientated principles. These additional principles are maintaining or restoring (1) native species diversity, (2) habitat diversity and heterogeneity, (3) key species, and (4) connectivity.

A comprehensive set of operational principles specifically for ecosystem-based MSP have been suggested by Gilliland and Laffoley (2008), drawn from sustainable development and Ecosystem Approach considerations, as well as lessons from land-use planning (see Annex 3 for the list of suggested principles). Their principles include some suggestions not apparent within the EBM literature, such as enabling more efficient decision making, and suggesting MSP is based upon the '*best available* information and evidence', an idea that appears repeatedly in the principles of MPA network design, i.e. do not delay any necessary management actions until more comprehensive data becomes available. Although one of Gilliland and Laffoley's twelve suggested principles is "to deliver ecosystem services", several other principles repeat common Ecosystem Approach principles (e.g. stakeholder involvement, consideration of present and future uses), allowing for different interpretations of the approach, as well as emphasizing those aspects of the approach considered to be most important.

This lack of consensus on overarching EBM definitions and principles makes establishing more concrete ecosystem-based MSP principles very challenging, and may explain why several authors sidestep principle definition and simply outline the challenges, issues and steps that ecosystem-based MSP needs to consider (Katsanevakis *et al.* 2011; Curtin & Prellezo 2010; Ehler & Douvere 2009). While this may be a pragmatic solution that focuses on enabling implementation, it presents issues for any retrospective attempt to evaluate the extent to which any MSP initiative is ecosystem-based.

Unlike many other national or regional jurisdictions, the European Union has created a specific Marine Spatial Planning Directive (Directive 2014/89/EU) containing overarching MSP requirements and legally requiring an ecosystem-based approach. Other Directives, such as the Marine Strategy Framework Directive (Directive 2008/56/EC), support the MSP Directive and integrate the Ecosystem Approach. Such Directives are then transposed into the national law of EU Member States.

In the UK, the Marine Policy Statement provides the framework for marine planning in England, Wales, Scotland and Northern Ireland, and states that marine planning will adopt an ecosystem-based approach. Consequently, the Marine Management Organisation (MMO), the competent authority for marine planning in England, commissioned a framework for integrating the Ecosystem Approach into England's Marine Plans. The resulting framework adapted the CBD's Malawi Principles to take account of the UK marine planning requirements, resulting in a set of 10 key principles (MMO 2014). Similarly, the Baltic SCOPE

project translated the Malawi Principles into a checklist approach that represents a way to assess that the minimum requirements for implementing the Ecosystem Approach have been met in MSP plans developed by Baltic countries (Schmitbauer Crona 2017).

2.2   Context of marine planning in the United Kingdom and Ireland

In 2014, the European Parliament and the Council of the European Union adopted a specific Directive on Maritime Spatial Planning. This directive established a framework for MSP and outlines the main MSP goals (Article 5) and minimum requirements (Article 6). The Maritime Spatial Plans for all EU Member States must be in place by March 2021. In addition, two other European Directives – the Marine Strategy Framework Directive (MSFD) (Directive 2008/56/EC) and the Water Framework Directive (WFD) (Directive 2000/60/EC) - describe Member State obligations to achieve 'Good Ecological Status' and 'Good Environmental Status' in their freshwater, coastal and marine waters. MSP Plans in the UK and Ireland and expected to play an important role in bringing to together spatial and temporal measures to meet the obligations agreed under these Directives in marine and estuarine waters.

In the **UK**, the Marine and Coastal Access Act (MCAA) 2009 provides the legislation for a new system of marine planning, dividing up UK waters into inshore (0-12 nm) and offshore (12 - 200 nm) planning areas for England, Scotland, Wales and Northern Ireland. The UK Marine Policy Statement 2011 describes the framework for preparing marine plans and provides the high level policy context for marine planning by setting out required ecological, social and economic considerations. The Marine Policy Statement makes it clear that marine plans will "manage competing demands on the marine area, taking an ecosystem-based approach[2]". The Marine Policy Statement also sets out the sectoral policies providing guidance on development and activity to which the UK Government, Scottish Government, Welsh Assembly Government and Northern Ireland Executive are seeking to achieve in the UK marine area to secure the UK vision of clean, healthy, safe, productive and biologically diverse oceans and seas.

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[2] When using the term 'ecosystem-based approach', the Marine Policy Statement notes that: 'A practical interpretation of the ecosystem approach is set out in regulation 5 of the Marine Strategy Regulations 2010 which transpose the Marine Strategy Framework Directive. An ecosystem-based approach to the management of human activities means an approach which ensures that the collective pressure of human activities is kept within the levels compatible with the achievement of good environmental status; that does not compromise the capacity of marine ecosystems to respond to human-induced changes; and that enables the sustainable use of marine goods and services'.
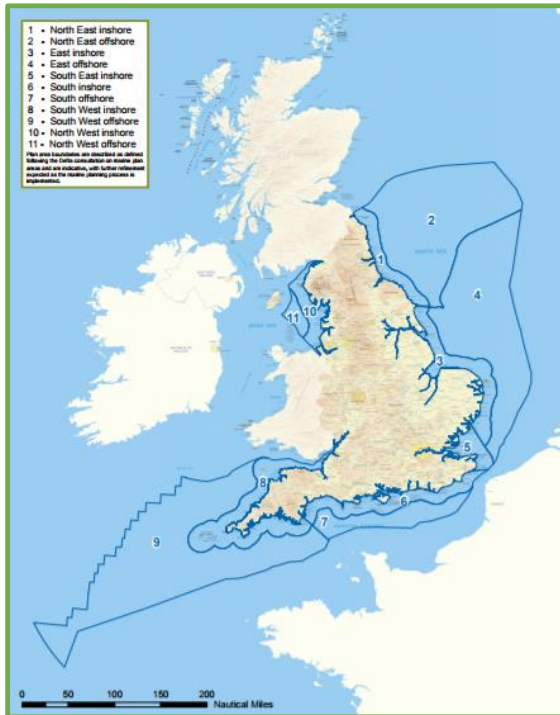
Figure 1. Marine planning regions in England

In **England**, the Marine Management Organisation (MMO) is the authority responsible for marine planning. In total, eleven marine plans (including inshore and offshore) are expected to be produced by 2021 (see Figure 1). The MCAA requires the MMO to carry out Sustainable Appraisals, based on the requirements of the Strategic Environmental Assessment Directive and Regulations while preparing each draft Plan. Published in April 2014, the East Inshore and East Offshore Plans were the first plans to be developed, while the South England Inshore and Offshore Plans have been released for public consultation and are due to be adopted in 2017.
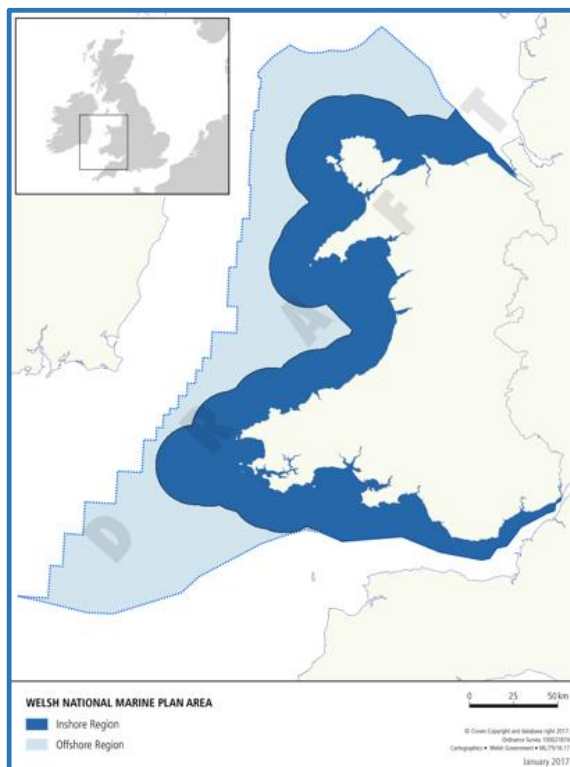
Figure 2. Area covered by the Welsh National Marine Plan

In **Wales**, marine planning operates within the UK framework established by the MCAA and the Marine Policy Statement but has a distinct Welsh focus reflecting devolved responsibilities under the Government of Wales Act (2016) and specific commitments, including the Welsh Government's commitments to Sustainable Development and the Sustainable Management of Natural Resources (SMNR) under the Well-being of Future Generations (Wales) Act 2015 and Environment (Wales) Act 2016. Under the MCAA, Welsh Ministers are the identified authority for undertaking marine planning. An initial draft of the Welsh Plan (see Figure 2) was developed in November 2015 and is currently in the process of revision.

In **Scotland**, marine planning within inshore waters is governed by the [Marine (Scotland) Act 2010](#), an Act of the Scottish Parliament, and its offshore waters by the MCAA. Both inshore and offshore marine plans in Scotland are collectively referred to as Scotland's "National Marine Plan", (see Figure 3) the first dedicated strategic mechanism for planning and managing Scotland's marine environment.

The Marine (Scotland) Act also identifies Strategic Marine Regions (SMRs) for planning, of which Shetland and the Sound of Mull are two.
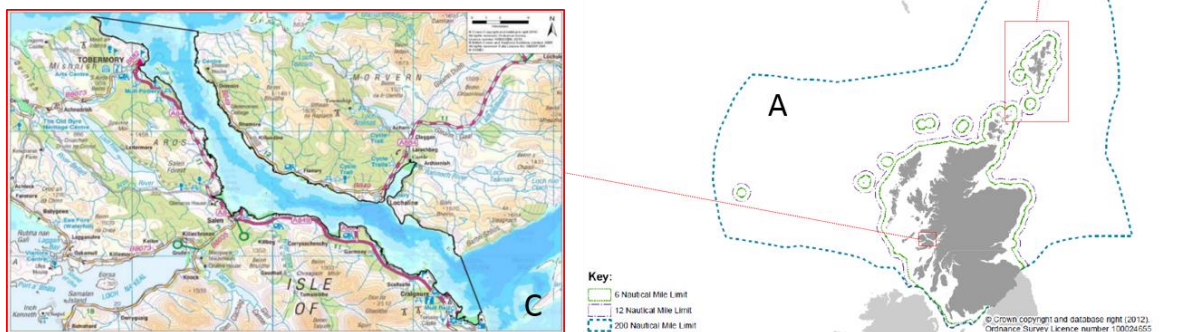
Figure 3. The marine plan area (outlined in blue) for the Scottish National Marine Plan (A); the Shetland Island Marine Spatial Plan (B); and the Sound of Mull Marine Spatial Plan (C)

Figure 4. Map of Irish waters, including limits of the Exclusive Economic Zone (blue line), currently designated Irish continental shelf (red line), and outer limit of Ireland's continental shelf (black line)

In **Ireland,** [Statutory Instrument no 352 of 2016](#) transposes the EU MSP Directive into Irish law. The Irish Government has identified the Department of the Environment, Community and Local Government as the competent authority to implement MSP across Irish waters. Developed by a cross-government co-ordination group, [Harnessing Our Ocean Wealth: an Integrated Marine Plan for Ireland](#) (see Figure 4) is a roadmap for the realization of marine potential in Irish waters. It sets out the Irish Government's vision, high-level goals and integrated actions across policy, governance and business and describes the development of an integrated system of marine planning. Although not a spatial plan *per se*, it was considered valuable to include it in this analysis to highlight cross-border approaches at the strategic level.

Chapter 3   Assessment of the ecosystem-based approach in marine plans

3.1   Outline and examples of marine plan assessments

All seven marine plans were assessed against the Baltic SCOPE EBM Toolkit and WWF checklist. All seven assessments for the WWF Checklist and the Baltic SCOPE Checklist Toolkit for the MSP can be found in Appendix 1. Table 4 lists all checklist questions and provides hyperlinks to each one.

Table 4. List of MSP questions with hyperlinks to the relevant MSP question in Appendix 1

WWF (draft) Ecosystem Approach (hyperlinks)
Does the MSP plan and process…
1	Set out a long-term vision and a path to get there? (provided as an example below)
2	Support the designation and management of Marine Protected Areas?
3	Allocate development based on environmental criteria, as well as economic and social factors? (provided as an example below)
4	Show support for integrated coastal management?
5	Safeguard and enhance key ecosystem services?
6	Involve stakeholders and community knowledge/expertise from an early stage?
7	Have a strong strategic environmental assessment?
8	Have an adaptive approach to deal with new circumstances?
9	Embed the precautionary principle? (provided as an example below)
10	Show evidence of coordination with other plans?
Baltic SCOPE Checklist Toolkit– MSP (hyperlinks)
1	Does MSP support the achievement and/or contribute to maintaining GES?
2	Is the best knowledge and practice applied in planning?
3	Is the precautionary principle considered during planning?
4	Are alternatives used in planning?
5	Is the assessment of ecosystem services included in planning?
6	Is mitigation applied in planning?
7	Is a holistic systems perspective used in planning?
8	Is participation and communication ensured in planning including the SEA?
9	Is the subsidiarity aspect and coherence between levels considered in planning?
10	Is adaptation considered in planning?

Given the different legislation governing marine planning in the UK and Ireland, not all plans had Strategic Environmental Assessments (SEAs). The East and South of England plans were accompanied by Sustainability Appraisals. Since Ireland does not yet have a marine spatial plan to be assessed, the related SEA checklist questions were omitted. The six assessments for the Baltic SCOPE SEA Checklist can be found in Appendix 2. Table 5 lists all SEA checklist questions, and provides hyperlinks to the relevant question in Appendix 2.

Table 5. List of SEA questions with hyperlinks to the relevant SEA question in Appendix 2.

	Baltic SCOPE Checklist Toolkit (BSCT) – Strategic Environmental Assessment (hyperlinks)
1	Will SEA be carried out?
2	Which regulation lays the basis for the screening?
3	Which environmental aspects are relevant to assess?
4	Which descriptors from the Marine Strategy Framework Directive (MSFD) are relevant?
5	How is SEA integrated in the MSP-process?
6	Which linkages between the planning process and the SEA are present?
7	Which are the ecologically important areas, which may be affected by MSP?
8	What is known on the coherence of the MPA network?
9	Which are the actual and potential threats on the marine ecosystems?
10	How are "reasonable" alternatives included in planning?
11	Are different planning solutions presented?
12	Is it possible to identify strategic choices in planning?
13	How is the "zero alternative" defined and used in the assessment?
14	Which are the significant environmental effects of the plan?
15	Which are the cumulative impacts?
16	Does the plan support the achievement and/or contribute to maintaining GES and other environmental targets?
17	Which are the impacts on relevant ecosystem services?
18	Who participated in the assessment and what is their opinion on the results?
19	Have ESPOO-consultations been carried out?
20	Has feedback been given on responses from neighbouring countries?
21	How are environmental impacts minimized or prevented?
22	Are the SEA-directives requirements considered?
23	How will the environmental impacts of the plan be monitored and audited?

Three assessment questions have been presented below (see Table 6), in full, to provide examples of the responses to each of the seven MSP plans and to represent a cross section of questions. The selected questions are:

- WWF Q1: Does the MSP plan and process set out a long-term vision and a path to get there?
- WWF Q3: Does the MSP plan and process allocate development based on environmental criteria, as well as economic and social factors?
- WWF Q9: Does the MSP plan and process embed the precautionary principle?

Table 6. Example question assessment of all seven MSP plans

1	Does the MSP plan and process set out a long-term vision and a path to get there?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	**PARTLY**

The East Plan looks forward 20 years to 2033 and a specific vision is articulated, which is to be delivered by a suite of objectives (and associated policies) relating to sustainable economic development, job creation, renewable energy development, improving health and social well-being, conserving heritage assets and protected seascapes, healthy marine ecosystems, marine biodiversity protection and recovery, MPA support, climate change adaptation and mitigation, policy integration, and knowledge gathering. The Plan has regular review milestones (every three years) with a mechanism in place to measure progress against objectives and review future steps. The Plan's objectives will be applied in practice through public authority consenting decisions. However since the Plan policies are not themselves prioritised (as they are in all the other Plans), there is a lack of clarity on how the consenting process will prioritise between interests where there might be conflicts between policies.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	**PARTLY**

The South Plan presents a vision towards 2036, which is to be achieved by meeting the Plan's 12 objectives and associated policies. The practical steps to delivering the Plan's objectives occur during the development and evaluation of development 'proposals', which will be assessed in terms of their contributions to the achievement of the South Plan vision. These steps are briefly described in the Plan but do not provide a comprehensive explanation of the follow-on process. As with the East Plan, there is no clear description of the prioritisation decisions that may need to be made where there may be proposals that support some policies but not others. The Plan has regular review milestones (every three years) and a mechanism in place to measure progress towards objectives and review future steps.

WALES NATIONAL MARINE PLAN	**YES**	NO	PARTLY

The Welsh Plan sets out a 20 year vision and objectives for Welsh seas. The vision is consistent with the shared UK vision elaborated in the UK's Marine Policy Statement and the Welsh Government's commitments to Sustainable Development and the Sustainable Management of Natural Resources, all of which aim to integrate the Ecosystem Approach into marine planning. The Plan's vision itself includes the Ecosystem Approach as a way to deliver clean, healthy, safe, productive and biologically diverse seas, and the Plan contains a specific description of how the Ecosystem Approach has been applied in the development of the Plan. The vision is supported by 13 strategic plan objectives that adhere explicitly to the High Level Marine Objectives within the UK Marine Policy Statement. These objectives also contain an explicit reference to delivering the plan 'in line with Ecosystem Approach principles', but also contain various elements of an ecosystem-based approach (e.g. precautionary approach, integrated decision making, accessible evidence base, present and future planning, consideration of cumulative effects). These objectives provide the framework for general policies, which are cross-cutting plan policies that apply to all sectors and activities, and sector-specific policies, which support the development and safeguarding of a particular activity. This two tiered policy approach provides a prioritisation framework. Unlike the other national level plans, the

Welsh Plan provides 'spatial prescription on the application of policies where appropriate', creating a very evident pathway to achieve the vision. This is the first marine plan for Wales and represents the start of a process of shaping a future for Wales' seas through marine planning.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

 The Irish Plan sets out the Government's Vision, high-level goals and the key actions it will take to realise significantly more of Ireland's marine potential. Ireland has not yet developed a Maritime Spatial Plan, which forms one of the 39 key actions within the IMP. The Irish Plan vision is underpinned by three key goals: 1) a thriving marine economy; 2) a healthy marine ecosystem; and 3) increased engagement with the sea. In addition, two clear targets have been set for 2020: 1) Ocean wealth represents 2.4% of GDP by 2030; 2) EUR 6.4 billion turnover from ocean economy. The path to achieve the goals and targets is characterised by eight interlinked 'enablers', which describe the conditions necessary to meet the goals. The framework to implement the Irish Plan involves assigning overarching responsibility to the Marine Coordination Group and the Minister for Agriculture, Food and the Marine, who will supervise cross-government delivery, communication and implementation amongst the individual departments. 39 actions provide the steps to reach the enablers and the goals, and these actions have short, medium and long term timeframes associated with them.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Scottish Plan sets out a national level framework for the management of Scotland's marine environment. Scotland's vision for the marine and coastal environment is one that is clean, healthy, safe, and productive and managed to meet the long-term needs of nature and local people. The plan adopts the UK High Level Marine Objectives as strategic objectives reflecting the plan's commitment to the five guiding principles of sustainable development, with General Policies being organised under these principles and thereby outlining the priority objectives within the plan . In addition, each sector chapter contains a number of objectives specific to that marine sector. A review process is described, that involves an integrated process that combines the requirements of both the UK and Scottish Marine Acts. It must also be noted that the Scottish Plan provides an overarching strategic policy framework for subsequent Regional Marine Plans, which are more detailed, spatially-explicit and prescriptive. Considered together, the Scottish Plan and Regional Marine Plan package form a very clear pathway towards delivery of the overall vision. However, the vision would definitely benefit from having a clear time-bound window for delivery.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

Shetland's vision for the marine and coastal environment is one that is clean, healthy, safe, and productive and managed to meet the long-term needs of nature and local people, following the Scottish Plan. The Plan outlines objectives that are relevant to social, environmental and economic aspects of the marine and coastal environment of Shetland. A clear focus within the Plan is to ensure sustainable development and climate mitigation and adaptation. Achievement of the objectives is expected to be through the planning mechanism, involving licensing and consenting of developments and activities, which must adhere to the policies within the Shetland Plan. The Shetland Plan clearly articulates its policies, and the chapter describing the planning mechanism is detailed and helpful in terms of explaining the procedure for proposals. There is no ultimate date chosen for the achievement of the vision, notably because the Shetland Plan is expected to be

continually updated to reflect changes, but this would be beneficial in ensuring progress is timely. However, there is a review process, as specified under the Marine (Scotland) Act, every five years where progress towards the vision will be measured. As noted above, the Scottish Plan provides an overarching strategic policy framework for subsequent Regional Marine Plans, which are more detailed, spatially-explicit and prescriptive. Considered together, the Scottish Plan and Regional Marine Plan package form a very clear pathway towards delivery of the overall vision.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Sound of Mull Plan has a clear vision for a healthy and productive marine and coastal environment within the Sound of Mull, which will support and maintain a rich variety of habitats and species, a diverse and sustainable economy, and benefit the surrounding communities. However, because the Sound of Mull Plan is in itself a pilot project, compared with other formal and legally binding plans, the Plan objectives are rather light on the thematic priorities (e.g. safeguarding natural and cultural heritage) and heavy on procedural approaches (e.g. providing regulatory guidance; encouraging stakeholder diversity; encouraging the delivery of best practice examples). Its pilot project status also means the Sound of Mull Plan does not have any formal review process beyond a single review of Plan performance within the lifetime of the project. However, the Plan contains a recommendation for review once the Scottish Plan has been prepared, and also includes several time-bound actions and recommendations for assisting with the delivery of Plan policies, as well as improving the current sectoral management and sectoral interactions.

3	**Does the MSP plan and process allocate development based on environmental criteria, as well as economic and social factors?**
	Clarification questions added by authors to guide the analysis:
	• If/where spatial policies for development occur (e.g. tidal energy), do these policies demonstrate that environmental, economic and social factors are considered in balanced way?
	• Do non spatial policies encourage development that is in line with ecosystem-based management - i.e. considers environmental as well as economic and social factors?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The East Plan does not 'allocate development' *per se*, because 'gaps in evidence base mean that these first marine plans do not include specific spatial or resource allocations for some policies'. In practice, the policies in the East Plan that do have spatial or resource allocations are very limited in number. Consequently, the East Plan is intended to inform and guide regulation, and the practical application of the Plan's objectives are achieved through the decision making process of public authorities when they evaluate 'development proposals' and grant (or otherwise) consent. Proposals will need to be aligned with the Plan, which contains a clear balance of environmental, social and economic objectives and associated policies. However, the Plan contains very limited details of this public authority decision-making process, and while it is made clear that all policies should be considered together, there is no description of any prioritisation process that may be required where there might be conflicts between policies. In the case that two mutually incompatible activities are suggested for the same area, without a full understanding of the process of

prioritisation between activities, it is not possible to ascertain whether environmental, economic and social factors would be fairly balanced in the subsequent decision making process.

There are some spatially explicit sectoral policies in the Plan (e.g. tidal energy, offshore wind energy, aggregate dredging) some of which refer to highly localised parts of the Plan area and constructed to give maximum priority to the activity identified. However, given that data gaps were the reason for avoiding spatially explicit policies, the data used for some of these policies do not seem to be as robust as might be expected. For example, in the tidal energy policy (TIDE1), the data used to identify the resource areas are based upon theoretical estimates of tidal energy resources, and are therefore stated to contain a level of uncertainty and do not take into account other sectoral activities (East Inshore and East Offshore Marine Plans Annex 1: Supporting information on the production of maps).

The general absence of spatially explicit policies, and therefore spatial allocation, makes the East Plan more akin to a strategic guide to development, than a marine spatial plan. Whilst the Plan contains a good balance between environmental, economic and social policies that will definitely assist in improving the sustainability of future developments in the East Plan area, the absence of any clear prioritisation across these policies makes it impossible to assess the extent to which public authority decisions will incorporate a similar balance of contributing factors at proposal evaluation stage.

	YES	NO	PARTLY
SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS			PARTLY

The South Plan describes policies that are 'presented within an economic, social and environmental framework'. The Plan sets out policies that will guide proposals for development. Proposals will need to be aligned with the policies, which consider environmental, social and economic elements, e.g. Objective 1 supports co-location to avoid conflicts and achieve sustainable economic development; under Objective 4, policies support the growth of marine related skills; Objective 5 supports the avoidance and mitigation of displacement activities that would significantly impact upon social benefits; Objective 10 supports MPAs; Objective 11 supports Good Environmental Status (GES); and Objective 12 supports the maintenance of ecosystem goods and services. The wording of individual policies does support the need for sustainable development. However, in the case that there could be some conflicts between proposals in a given area, or conflicts between policies for desired activity development, there is no obvious description of how policies would be prioritised by public authorities in the decision making process. Therefore it is not possible to say if the balance of environmental, economic and social objectives will be similarly reflected in long-term implementation.

	YES	NO	PARTLY
WALES NATIONAL MARINE PLAN			PARTLY

The overarching objective of this Plan is to support the sustainable development of the Welsh marine area. In order to allocate space and focus future use, this Plan identifies Resource Areas (RAs)– broad areas describing a particular resource used or potentially used by sectors– and Strategic Resource Areas (SRAs) within RAs, which identify areas with the greatest potential to support future growth for specific sectors. RAs and SRAs have been 'identified by a process of evidence collection and interpretation' as well as 'mapping and analysis which has taken account of other current and potential future uses', although it is not clear to what extent this evidence base or consideration includes social or environmental interests or uses. The SRAs appear to be identified on the basis of primarily economic considerations (where resource use feasibility and constraints are better understood, and/or where there is an economic market, potential for new opportunities

and strategic sectoral importance). The SRAs are afforded a degree of policy safeguarding to encourage strategic decisions on the future use of a resource. The plan-level SRAs cannot fully reflect site specific, detailed considerations of opportunity and constraint, for example, aspects of designated conservation sites. The Plan notes that "such considerations must be part of project level assessments where appropriate, where the specific project details (location, timing, scale) can be adequately taken into account". The Plan itself does not describe the project level assessments used to allocate development and therefore it is not possible to ascertain whether environmental, economic and social factors would be fairly balanced in the decision-making process.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

The Irish Plan is not yet at a stage where development is spatially rationalised/allocated. However, the Irish Plan focuses on identifying the thematic areas that have the potential for supporting further growth and development, which clearly highlights that economic and social factors are major considerations. In this context, it would be important for these priority thematic areas for growth to be selected because they are agreed to have no or minimal negative impact on the environment. While the process for selecting priority growth areas has not been made clear and selection criteria do not appear to be available, environmental considerations are apparent (e.g. in the briefing doc on sectoral profiles prepared for the public consultation). For example, sea fisheries are highlighted as having significant potential for growth. Opportunities for growth highlight the need to 'rebuild and manage fish stocks'. Since Irish fisheries are managed under the Common Fisheries Policy (CPF), reforms to the CFP (e.g. greater application of the ecosystem approach) are noted as likely to have a significant impact on Irish fisheries. The Irish policy for the development of fisheries (Food Harvest 2020) explicitly includes environmental principles (e.g. prioritising environmental protection, embedding sustainability down the supply chain, conserving biodiversity). As the Irish Plan progresses towards spatial planning and then localised allocation of development, it will be important to assess the extent to which actions taken are ecosystem-based.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The spatial allocation of areas for development are not explicitly presented in the MSP and the Plan is designed to guide decision makers to achieve sustainable development and use as a general principle of the Plan. The Plan policies take a nested approach, where several general policies lay out the priority issues and sectoral policies are developed to outline specific conditions required to ensure sustainability of the activity in question. These general policies clearly support economic growth, but such growth must be sustainable, and is encouraged to deliver Scottish community benefits and social benefits. In addition, the general policies include requirements to support protected areas, avoid significant impacts to Priority Marine Features and protect and enhance the health of the marine area.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

The Plan aligns with objectives set out in the Local Development Plan's policy for Coastal Development, which clearly highlights that the avoidance of ecological and environmental adverse effects will be made a priority in the allocation of development. All development or activity proposals will be assessed against the Shetland Plan which sets out a spatial strategy and policy framework to guide marine developments in the coastal waters around Shetland. The Plan outlines three objectives, specifically focused on social,

environmental and economic aspects. It promotes sustainable marine development, clearly defining 'sustainability' as 'dynamic economic activity supporting a prosperous community whilst maintaining and enhancing marine wildlife, habitats and ecosystems' but emphasizes that 'sustainable use should not lead to loss of biodiversity or ecological balance, or reduce the availability of natural resources for future generations'. Policies are grouped into three thematic clusters: 'Clean and Safe'; 'Healthy and Diverse' and 'Productive' and the Shetland Plan very clearly states that development proposals must comply with the legal requirements for all policies in the first two clusters before considering their relevant development sector within the 'Productive' policy cluster. As such, there appears to be an equitable balance struck between social, environmental and economic factors that will influence the allocation of development.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Plan aims to complement and support the local authority development plans for the adjacent terrestrial areas and the Plan policies are designed to inform and guide developments and activities. However, development is not allocated specifically. The Plan policies take a nested approach, with two 'all-embracing' general proposals that aim to meet the needs of local communities and to safeguard 'Local Features of Importance'. These general policies must be given due consideration by all proposed developments and activities, and this nested policy approach therefore encourages a good balance between social, environmental and economic factors in decision making.

9	**Does the MSP plan and process embed the precautionary principle?**
	Sub-questions: Is the precautionary principle used as a guiding principle in the plan?
	Is the precautionary principle in evidence through the development of policies, options/alternatives and mitigation measures within the plan?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

During plan implementation (i.e. at development proposal evaluation stage), the relevant public authorities will need to apply precaution within an overall risk-based approach, which assesses the risk of an activity and requires preventative measures where risks are uncertain. Circumstances where the precautionary principle applies, are listed in the Plan (e.g. where scientific evidence is insufficient and there are reasonable grounds for concern that potentially dangerous effects on the environment may be inconsistent with the requirements of protection). However, it is not clear what the thresholds are when assessing if evidence is sufficient or not and when the precautionary approach would be triggered. The Plan states: 'Ultimately, the precautionary principle requires a balancing exercise in which the risks of an activity, in light of imperfect evidence, must be balanced against the need for sustainable development. In having recourse to the precautionary principle, the aim is to identify (and where possible quantify) the plausible risks, reduce uncertainty (to the extent possible) and then employ management measures that are proportionate to the activity in question and the level of plausible risk.' It could be argued that this statement is evidence of a pragmatic rather than a conservative interpretation of the precautionary approach, where the acceptance threshold for risk is relatively high, as compared with the description of lower thresholds required for the precautionary approach in the Shetland Plan. However, the ultimate implementation of the precautionary approach will only be visible

at the proposal evaluation and determination stage. Guidance on the precautionary principle, and transparency around chosen thresholds for risk would be very beneficial in a more comprehensive assessment.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

Within the South Plan Technical Annex, the precautionary approach is stated as being built into all objectives, as follows: "The precautionary principle is applied consistently in accordance with the United Kingdom government and devolved administrations' sustainable development policy." The policy states that '*The UK holds some of the best information about natural resources available anywhere in the world. There are, however, still instances where decisions on managing natural resources will have to be taken on the basis of partial information. In these instances, and where, firstly, there is a risk of significant adverse environmental effects occurring and secondly, any possible mitigation measures seem unlikely to safeguard against these effects, the precautionary principle will be adopted. Where evidence exists of likely harm to ecosystems or biodiversity, we will adopt practices that avoid irreversible damage*.' In a similar view to the East Plan, this statement may suggest a more pragmatic rather than conservative interpretation of the precautionary principle, as it could be argued that practices should be adopted that avoid damage entirely (particularly where cumulative impacts may contribute to further damage), rather than just irreversible damage. Many of the policies in the South Plan call for proposals to a) avoid; b) minimise; or c) mitigate the significant impacts on other users or the environment, and several go on to state that proposals that cannot mitigate such impacts will need to make the case for proceeding. While these measures do reflect the adoption of the precautionary principle, at this level of resolution it is difficult to say how such precautionary measures will be decided in practice. Obviously, decisions will depend upon the impact threshold considered to be 'significant' and the amount of evidence supporting the linkage between impacts, pressures and sensitivities of habitats and features.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The draft Welsh Plan objectives are framed under the High Level Marine Objective (HLMO) themes in the UK Marine Policy Statement, in which "Promoting Good Governance" espouses the precautionary principle. Objective 11 of the Plan will adopt the precautionary approach to '*support proportionate, consistent and integrated decision making through implementing forward-looking policies as part of a plan-led, precautionary, risk-based and adaptive approach to managing Welsh seas*'.

The Plan does not explicitly define the precautionary principle but the Strategic Appraisal uses the EUR-Lex (2016) definition of the precautionary principle, which states, "if a particular action may cause harm to the public, or to the environment, and if there is no scientific consensus on the issue, the action should not be pursued."

Policy SCI_01 seeks to ensure that policy and management decisions are made using sound science and a risk-based approach, and where appropriate, they should apply the precautionary principle and consider opportunities to apply adaptive management. The general guidance under SCI_01 refers to instances in which insufficient or only limited evidence may be available to inform a decision. In such cases, "management decisions should still be taken but should be done in such a way to deal with any residual uncertainty and minimise the risk of significant adverse impacts on the economy, society, the environment and existing and future potential uses of the marine environment". As such SCI_01 applies the principle with a risk-based

approach thereby enabling appropriate decisions to be made while applying the appropriate level of precaution. Guidance on the "appropriate level" would be beneficial.

The principle is to a large extent being applied in the overall application of the Plan when considering all policies and objectives together. There are some key examples, in particular, where sectoral policies apply the precautionary principle using sound science. For instance, the Plan uses a precautionary 50km marine for tidal stream (and wave) proposals based on scientific modelling. The Plan states that it will also use a precautionary approach to the aggregates sector, unconventional gas (e.g. shale gas) and oil and gas. The Plan states "there is a need to carefully consider all the issues, including economic, environmental and social impacts associated with such development".

In general, the principle is applied in the overall application of the policies and is more apparent due to the spatially-prescriptive policies for some sectors which reduces uncertainty and supports the identification of likely effects.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

There is no mention of the precautionary principle or approach in the Irish Plan. Despite the explicit desire to ensure sustainability, many of the key actions involve the development of infrastructure or sectoral policies that could potentially threaten environmental sustainability and the provision of ecosystem services. Nevertheless, a precautionary approach is not advised or advocated. In the Enablers Task Force Report for MSP, the Ecosystem Approach is noted as being embedded in a number of Marine Spatial Plans of case studies examined. However, the conclusion appears to be that the Ecosystem Approach is still not uniformly understood. The precautionary principle fundamental to the Ecosystem Approach is not noted.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Scottish Plan adopts the precautionary principle ('in accordance with the UK Government and Devolved Administrations' sustainable development policy') as one of its strategic objectives, and the principle is also manifested within the General Policies of the Plan, which encourages a 'precautionary and risk-based approach should be taken in terms of understanding emerging evidence with regards to potential risks, such as sea-level rise or coastal change and flooding'. The Plan requires marine planners to be satisfied that the activities and developments pose minimal impact on the environment and that these impacts are mitigated. In addition, the Scottish Plan lays out 21 general policies, arranged under the principles of sustainable development that must be adhered to in addition to any specific sectoral policies. The nature of these general policies certainly provide the Plan with a strong sustainability character, and facilitate the embodiment of the precautionary principle.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

Within the Shetland Plan, there is specific mention of the Precautionary Principle as a key aspect of sustainable development. Policies within the Shetland Plan are strongly worded (i.e. tend to use 'will' and 'shall' rather than 'may') in favour of avoiding damage or impact to the environment. For example, MSP HER 1 outlines the circumstances in which development will be permitted: a) it would not adversely affect the objectives of the site; b) there is no alternative solution; c) there are imperative reasons of over-riding public interest. The wording used in this policy (and in others like it, e.g. HER 2 and 4) demonstrates the use of a lower proof of harm (i.e. proposals must demonstrate they have *no adverse effects*, which is stricter than

requiring the avoidance of *significant negative impacts*) that characterises the Precautionary Principle. In addition, policies are prioritised explicitly so as to embody a conservative application of the principle (development proposals must comply with all policies in the 'clean and safe' and 'healthy and diverse' policy clusters, before supporting sectoral development policies in the 'productive' cluster). In regards to protected areas, the Shetland Plan emphasizes the need for a Habitats Regulation Appraisal where a proposal does not conform entirely to the conservation objectives of a protected site.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Precautionary Principle is not mentioned in the Sound of Mull Plan, and although the development of the Sound of Mull Plan is said to have 'embraced the Ecosystem Approach', the associated definition (from "Sustainable Seas for All") does not include any mention of precautionary decision making. However, the Sound of Mull Plan policies are arranged in a nested fashion, similar to the Scottish Plan, where two General Policies are the 'backbone' of the Plan, and should be given due consideration by all interests. SOM G1 seeks to highlight the natural and cultural assets of the community and to achieve sustainable development aspirations, as well as providing conditions for sustainable business growth. SOM G2 requires that any development and activity proposal will 'not have any significant adverse effects' on 'local features of importance', which include natural and historic environment elements such as designated sites, protected species and habitats, ecosystem function that may adversely affect Good Environmental Status, landscape/seascape character, water quality, and historic assets. These general policies provide a strong safeguard for such features, as they are prioritised over all other sector-specific policies within the Plan. However, SOM G2 also includes existing activities, such as aquaculture, commercial inshore fishing grounds and shipping routes and navigational interests that may have significant impacts on natural features and habitats, and there does not appear to be any consideration of how existing impacts between these features could be addressed, or how increasing volumes of such activities might impact upon the features to be safeguarded. While the prioritisation between policies supports the embodiment of the Precautionary Principle, there are other aspects of the Sound of Mull Plan that do not appear to be precautionary in nature.

3.2 Summary analysis of marine plans

This section discusses the extent to which an ecosystem-based approach has been taken in the UK and Ireland marine plans, summarising the assessment responses (see Appendix 1-3). Tables 7 and 8 provide a simple summary of each marine plan's responses to the WWF and Baltic SCOPE checklists, respectively.

General comparison of marine plans

Assessing all seven marine plans against a series of checklist questions enables a comparison of which plans are considered to most comprehensively adopt an ecosystem-based approach. It should be noted that some differences between the marine plans will be due to their different stages of progress. For example, the Shetland Plan is a spatially-explicit Regional Marine Plan in its fourth iteration. It is also important to note that there are multiple ways to develop a marine plan, and therefore different reasons for giving a 'Yes, No or Partly' response to many of the checklist criteria.

Looking across the seven marine plans, all criteria were met – either in part, or in full – by six of the seven plans, with the exception being the Irish Plan. As noted above, the Irish plan is at an early stage in marine planning and does not therefore require a Strategic Environmental Assessment (SEA), nor does it have specific marine policies that should demonstrate an application of key ecosystem-based approach elements, such as the Precautionary Principle, mitigation measures, or coherence between appropriate planning levels. Several of the plans were assessed as only partly meeting several of the checklist criteria. There were often similarities between plans as to which criteria were only partly met, highlighting thematic areas of possible improvement, or elements that are consistently underrepresented in marine plans. Section 3.3 is a cross-question analysis that explores this aspect in more detail.

Overall, the Scottish and Welsh Plans were considered to most comprehensively demonstrate an ecosystem-based approach, meeting all but one of the criteria, which in both cases was Criterion 3 (allocation of development). The Shetland Plan assessment met all but two of the criteria (setting out a vision; supporting the achievement of Good Environmental Status). It is important to recognise that the achievements of the Scottish and Shetland Plans are linked. The Scottish Plan is an overarching national plan that streamlines and integrates marine policies but is not inherently spatially-explicit. However, it provides the framework for Regional Marine Plans (of which the Shetland Plan is one) that are generally spatially-explicit and more prescriptive. Such a nested approach forms a marine planning package that comprehensively embodies the ecosystem-based approach.

Table 7. Summary table of WWF Checklist question responses from all seven marine plans

Q. no.	WWF Checklist questions Does the MSP plan and process…	East England	South England	Wales	Ireland	Scotland	Shetland	Sound of Mull
1	…set out a long-term vision and a path to get there?	Partly	Partly	✓	✓	✓	Partly	Partly
2	…support the designation and management of Marine Protected Areas?	✓	✓	✓	Partly	✓	✓	✓
3	…allocate development based on environmental criteria, as well as economic and social factors?	Partly	Partly	Partly	Partly	Partly	✓	✓
4	…show support for integrated coastal management?	Partly	Partly	✓	Partly	✓	✓	✓
5	…safeguard and enhance key ecosystem services? *(as BS MSP Q5)*	✓	✓	✓	✓	✓	✓	Partly
6	…involve stakeholders and community knowledge/expertise from an early stage? *(as BS MSP Q8)*	✓	✓	✓	✓	✓	✓	✓
7	…have a strong strategic environmental assessment?	Partly	Partly	✓	✗	✓	✓	✓
8	…have an adaptive approach to deal with new circumstances? *(as BS MSP Q10)*	✓	✓	✓	✓	✓	✓	Partly
9	…embed the precautionary principle? *(as BS MSP Q3)*	Partly	Partly	✓	✗	✓	✓	Partly
10	…show evidence of coordination with other plans?	✓	✓	✓	✓	✓	✓	✓

N.B. Very similar questions in the two checklists (noted in brackets) were assessed together as one question, and the identical results have been duplicated in both tables.

Table 8. Summary table of Baltic SCOPE Checklist question responses from all seven marine plans

Q. no.	Baltic SCOPE Checklist questions	East England	South England	Wales	Ireland	Scotland	Shetland	Sound of Mull
1	Does MSP support the achievement and/or contribute to maintaining GES?	Partly	✓	✓	✓	✓	Partly	Partly
2	Is the best knowledge and practice applied in planning?	✓	✓	✓	✓	✓	✓	✓
3	Is the precautionary principle considered during planning? *(as WWF Q9)*	Partly	Partly	✓	✗	✓	✓	Partly
4	Are alternatives used in planning?	✓	✓	✓	✓	✓	✓	✓
5	Is the assessment of ecosystem services included in planning? *(as WWF Q5)*	✓	✓	✓	✓	✓	✓	Partly
6	Is mitigation applied in planning?	Partly	Partly	✓	✗	✓	✓	✓
7	Is a holistic systems perspective used in planning?	✓	✓	✓	✓	✓	✓	Partly
8	Is participation and communication ensured in planning including the SEA? *(as WWF Q6)*	✓	✓	✓	✓	✓	✓	✓
9	Is the subsidiarity aspect and coherence between levels considered in planning?	✓	✓	✓	✗	✓	✓	✓
10	Is adaptation considered in planning? *(as WWF Q8)*	✓	✓	✓	✓	✓	✓	Partly

N.B. Very similar questions in the two checklists (noted in brackets) were assessed together as one question, and the identical results have been duplicated in both tables

East of England inshore and offshore plan (the East Plan)

The East Plan has a 20-year horizon, with a clear vision for sustainable development, marine and coastal protection, and enhanced well-being for local communities, provided in particular through offshore wind projects which provide a significant proportion of the UK's energy generation. The Plan has a suite of objectives, which together strike a clear balance between ecological, economic and social issues. These objectives contain a number of links to the Marine Strategy Framework Directive (MSFD) Descriptors of Good Environmental Status (GES), but could have been done more comprehensively, as the Scottish Plan has done through the adoption of the GES Descriptors (in addition to the High Level Policy Statement objectives) as its own marine plan objectives.

The East Plan objectives have a prominent economic aspect, including job and skill-set creation and general economic development. The need to make such developments sustainable is recognised in these objectives, as it needs to be in all EU policies, which in practice means that 'social and environmental aspects of proposals should be considered alongside economic aspects' at the point of proposal consideration. The plan explicitly promotes the potential for renewable energy to be one of the primary areas of economic growth, thus meeting other UK environmental targets.

The ecological objectives are designed to support not only the MPAs in the Plan area (i.e. Marine Conservation Zones [MCZs] and the Natura 2000 sites) but also biodiversity more broadly and marine ecosystem function. Given that UK MPAs typically target specific conservation features (rather than general biodiversity or ecosystem functioning), these additional ecological objectives may mean that protection is extended beyond protected areas through the licencing/permitting system, which will strengthen the Ecosystem Approach in the East Plan. The Plan also includes specific future considerations in the objective related to climate change.

The Plan makes a clear effort to take all existing policies and plans into account, and as such does suggest a holistic approach that would provide support to coastal zone management as well as transboundary planning. Moreover, the Plan process has been highly participatory, involving stakeholders from an early stage and throughout the key stages, including the Sustainability Appraisal (SA).

The Plan is explicit about considering marine ecosystems for the benefits that they provide, and multiple ecosystem services are targeted in the policies. However, there is no comprehensive assessment of the goods and services provided by the East Plan ecosystems, despite the existing framework for doing so that has been provided by the UK's National Ecosystem Assessment (NEA). The Scottish Plan demonstrates how an NEA can provide valuable guidance as to which ecosystem services might be underrepresented.

While the Plan states that the 'best available data' have been used in the Plan's development, gaps and weaknesses in the data have resulted in a decision by plan makers ('informed by stakeholder views') to avoid prescriptive, and in most cases, spatially-explicit policies within the Plan. Since this means that specific allocation of resource use is very limited, this has the effect of making the East Plan more of a strategic guide than a marine spatial plan. Many policies are applied to the entire Plan area and are therefore only indicative of what activities may or may not be permitted or restricted. This introduces a high level of uncertainty around identifying the potential impacts of the Plan, or indeed of alternative 'options', and especially of cumulative effects. This obviously presents a significant challenge for the SA, which somewhat undermines its positive conclusions.

The wording of policies significantly affects their strength and the extent to which they might be prescriptive ('must' or 'will') or flexible ('should' or 'may'). As the Plan emphasizes that all policies must be taken into account when a development proposal is evaluated, some kind of value-based prioritisation decision will need to be made in the case where conflicts across policies arise, but this decision process is not noted in the plans. Development proposals are required to align with marine plan policies. However, since the East Plan policies contain mitigation measures that would allow for adverse impacts to be sustained should they be considered unavoidable, the responsibility and decision-making lies within the public authorities evaluating the development proposals, rather than on the plan-makers.

The uncertainty levels within the Plan place constraints on the ability to assess the extent to which the Plan takes an ecosystem-based approach. According to the wording of the objectives and policies in the East Plan, the characteristics of the Ecosystem Approach are visible, but these could be considerably strengthened by more transparency around the development proposal evaluation processes that will put these policies into implementation. In future iterations of the Plan, it would be highly beneficial to incorporate a clear prioritisation across policies, such as is built into the Scottish Plan and the Shetland Plan. However, the most significant challenge is the absence of spatially-explicit policies at the appropriate scale. Although the East and South Plans both represent regional scale plans, their higher-level strategic approach reflects that taken by other national scale marine plans (e.g. the Scottish and Irish Plans) and a set of finer scale plans enabling more spatially prescriptive policies to be developed is needed. Future marine planning in England could usefully consider how to develop both strategic and spatial plans at the appropriate national, regional and local scales.

South of England inshore and offshore Plan (the South Plan)

The South Plan has a clear vision for a 20-year period (until 2033) where the region's iconic natural beauty and high activity levels are enriched through sustainable economic growth, enhanced environmental protection and improved health and wellbeing of local communities and visitors. The Plan lays out economic, social and environmental objectives and policies

that are designed to support a clear trajectory towards that vision, as well as regular milestones in place for review and revision, making it adaptive to issues as they arise.

The Plan's set of objectives demonstrate that ecological and environmental factors are important considerations in the South of England area. There is clear support for MPAs and policies specify protection for both existing MPAs and areas that might be designated in the future. The Plan contains a specific objective that requires activities to contribute to the achievement of Water Framework Directive (WFD) Good Ecological Status and MSFD Good Environmental Status, but this is only specific to selected GES Descriptors. Given that GES is designed to deliver the Ecosystem Approach, it would have been preferable for South Plan policies to support all of the GES Descriptors, much as the Scottish Plan has done.

The South Plan addresses the Marine Policy Statement's desire to avoid activity displacement through the inclusion of a specific objective and associated policies encouraging co-location of activities wherever possible, which could be effective in reducing the overall footprint of activities on habitats, as well as in promoting efficient rationalisation of available marine space.

Consideration for maintaining the natural marine environment outside of MPAs (where activities may have a considerable impact on ecosystems and therefore overall ecosystem health) is addressed within Objective 12, which explicitly aims to support the delivery of ecosystem goods and services through the safeguarding and improvement of natural habitats and protection for species. Policies under this objective are strongly worded, which is likely to support its achievement, but while natural habitats, species and ecosystem processes are clearly noted, a policy addressing biodiversity itself could have strengthened the policy package under this objective. In addition, there is no obvious comprehensive ecosystem assessment to give the full picture of the ecosystem services or geographical areas of particular importance for ecosystem services within the Plan area, and this may mean that the policies within that objective are not as well designed to support the full range of goods and services as they might be. In some cases, (see S-BIO-1), the relevant wording used (i.e. proposals that 'may have a significant adverse impact on' natural habitats and ecosystem services) requires an associated assessment of the threshold for action (i.e. what constitutes 'significant') and in the absence of such clarification, the precautionary nature of the policies is difficult to confirm.

While the South Plan does contain some spatially explicit policies regarding important herring zones (e.g. S-FISH-4_HER), policies do not have, in most cases, any specific spatial application within the Plan area and, in the majority of policies, are not prescriptive in terms of their application. This means that there is considerable uncertainty around how development activities may be allowed or restricted across the area, and creates a notable challenge for the assessment of impacts and cumulative effects. In addition, it implies that the final decisions for spatial allocation and restriction of activities – taken by the relevant

authorities at the proposal evaluation stage – must include value judgements around which policies take priority. In order to more robustly embody the Ecosystem Approach, plans would ideally be much more spatially explicit and thereby reduce uncertainty. In addition, greater transparency around the subsequent decision making process is required to be able to assess whether the Ecosystem Approach is implemented on the ground.

Welsh National Marine Plan (The Welsh Plan)

Consistent with the shared UK vision, the Welsh Plan has a 20-year horizon and will be delivered through the plan objectives and sector-specific objectives which set out desired outcomes that support the realization of the vision. The Plan's set of objectives demonstrate that long-term social, economic, cultural well-being and environmental factors are important considerations. The Plan therefore looks long-term; encourages early action to prevent problems occurring or getting worse; takes an integrated approach; promotes collaborative working; and has been developed through public engagement. There is clear support for protecting and conserving valuable landscapes, seascapes and heritage assets.   The Plan recognises that there is limited evidence in the marine environment compared to the terrestrial environment and the Plan provides spatial guidance on the application of some sectoral policies that have a spatial dimension. These policies are supported by indicative maps that identify Strategic Resource Areas (SRAs) however, these will be refined further based as and when is necessary.

Alongside the sector-specific policies, supporting and safeguarding policies are in place to protect a given sector's existing potential future activities (e.g. fisheries or aquaculture). Furthermore, the planning process provides evidence that brings together a wide range of policy interests and stakeholders. The policy for some sectors is supported by one or more maps to spatially define policies showing the distribution of resources (including aggregates, aquaculture, ports and shipping etc.). The planning decisions overlap with terrestrial plans to facilitate integration between land and seas thus showing support for integrated coastal management.

The Plan recognizes sectors that provide essential goods and services that support the economy (fisheries, aggregates for construction, aquaculture, cables etc.) and considers it important that society understands and values the benefits that the seas provide. However, the Plan does not elaborate on how to achieve this besides through collaboration. The Plan could benefit from undertaking an assessment of ecosystem function and ecosystem services to support ecosystem management decisions within the Plan.

Integrated Marine Plan for Ireland: 'Harnessing our Ocean Wealth' (The Irish Plan)

The Irish Plan sets out the Government's Vision, High-level Goals and the Key Actions it will take to enable Ireland's marine potential to be realised. Ireland has not yet developed a Maritime Spatial Planning framework, process or plan, which are actions outlined as part of

the Irish Plan. An Enabling Task Force (ETF) has been established to begin work on an MSP framework (and ultimately an MSP plan) and a Report on MSP produced by the ETF outlines recommendations for MSP in Ireland. At the present time, however, it is only possible to assess the extent to which this high level statement is ecosystem-based.

Although achievement of environmental and ecological health does not form an explicit part of the Irish Plan's Vision, which emphasizes a strong 'blue growth' aspiration, healthy ecosystems are one of the three goals (along with the socio-economically and socially focused goals of a thriving maritime economy and enhanced engagement with the sea) that are outlined in the Irish Plan to acheive the vision.By establishing a set of enabling conditions, and 39 actions that build on existing policies and marine-related plans (e.g. MSFD, WFD, Natura 2000, UNFCCC), there is a clear roadmap to acheiving the goals and vision. A strong emphasis is placed upon the need to integrate decision making and actions across existing government agencies, and specific mechanisms (e.g. Marine Coordination Group) have been established to promote a more holistic approach to marine resource exploitation. In aiming to double Ireland's ocean wealth, the Irish Plan clearly recognises the importance of safeguarding a wide range of ecosystem goods and services, although there does not appear to have been a comprehensive assessment of these services. Beyond the recognition that provisioning and regulating services (e.g. carbon sequestration, climate regulation, diversity of habitats and species) should be protected, the link between safeguarding ecosystem services (e.g. cultural services) and harnessing ocean wealth (e.g. promoting coastal and marine tourism) is not as explicit as it could be.

The Irish Plan seeks to acheive its goals through the delivery of multiple related marine policies and strategies, such as implementing Natura 2000, the Water Framework Directive, and the Marine Strategy Framework Directive. Therefore, the acheivement of GES is embedded within the Irish Plan through the implementation of the MSFD being one of the key actions to support the delivery of a clean, green environment for Ireland. The Irish Plan repeatedly reiterates the need to consider environmental sustainability, and as far as is possible to judge, it is assumed that the establishment of a Marine Coordination Group representing all government agencies with marine responsibilities, would ensure this was the case. Until the MSP plan is developed (and options/developments are chosen and assessed through the SEA process), it is imposile to judge whether potentially impacting actions within the Irish Plan (e.g. encouraging opportunities for coastal infrastructure, delivering individual sectoral development policies such as increased seafood production) might threaten environmental sustainability. This uncertainty could have been reduced at this high level stage by some recognition of the Precautionary Principle as a core element of ecosystem-based management, as at present this principle is absent.

Stakeholder engagement and participation has been evident from the start of the Irish Plan strategy process, with early public consultation seeking feedback on the vision, enabling

conditions and actions and the revision of the Irish Plan as a result. While planning has not yet begun, there are many references to the desire to include stakeholders in decision making within any MSP process. The Irish Plan roadmap also clearly identifies how the process will be adaptive, through a series of progress reviews, regular reporting to the Marine Coordination Group and the acceptance that there will be a need to continuously evolve the integrated planning approach.

Scottish National Marine Plan (The Scottish Plan)

The Scottish Plan sets out a long-term vision that is: 'clean, healthy, safe, productive and diverse seas; managed to meet the long term needs of nature and people'. The Scottish Plan itself is a living document, and therefore has no ultimate deadline for achievement of the vision, but has a process in place for regular review and revision in order to adapt to future issues. The Scottish Plan has a very strong emphasis on sustainability, evident through the nature and organisation of its strategic objectives, as well as the nested (and prioritised) structure of its policies. The Plan adopts MSFD GES Descriptors and the High Level Marine Objectives (HLMO) as strategic objectives in order to incorporate both the Ecosystem Approach and the principles of sustainable development, demonstrating a holistic and integrated approach to marine planning.

The Scottish Plan stipulates a general planning principle that articulates a presumption in favour of sustainable development and use, and then outlines a core set of 21 General Policies, applicable across all existing and future use of the marine environment, that are considered essential to the delivery of sustainable development. Both the strategic objectives and the General Policies are laid out under the five key pillars of sustainable development. The General Policies include: providing economic and social benefits for local communities (GEN 2 & 3); adapting and mitigating climate change (GEN 5); supporting protected areas/species and enhancing marine health (GEN 9); mitigating marine litter, water and air quality deterioration (GEN 11,12 & 14); promoting alignment between marine and terrestrial planning and with other plans (GEN 15 & 16); ensuring fairness and transparency (GEN 17); promoting early and effective engagement with stakeholders (GEN 18); using sound scientific and socio-economic evidence (GEN 19); practicing adaptive management (GEN 20); and addressing cumulative impacts (GEN 21). Each sector then has its own objectives and policies, with supporting information that clarifies sector-specific issues not already covered within the General Policies, organised under four key topics: 1) how economically productive activities can be supported; 2) how the sector interacts with other users; 3) how the sector should demonstrate living within environmental limits; and 4) how the sector could mitigate climate change. The Scottish Plan is clear that all sectoral policies are subject to the General Policies. Such a nested policy approach provides a very clear prioritisation for decision makers, which would support the integration of the Precautionary Principle during implementation.

The Scottish Plan does not allocate development to explicit spatial areas. However, the Scottish Plan contains detailed baseline information and provides spatial maps of features, such as existing spatial management areas or preferred activity locations (e.g. guidance on marine fish farm locations), to help inform where development activities can occur and to support the resolution of potential competition and conflict between sectors. In addition, Scotland's Marine Atlas has been developed in support of the Scottish Plan, which is designed to assess environmental conditions, including significant pressures and human impacts. Policies include links to supporting government policy/roadmap documents and substantial supporting information that is well laid out to assist, decisions to enable sustainable development to occur during plan implementation. In addition, each sector-specific policy includes an associated set of actions for regional plans, ensuring that specific activities or issues are cascaded down to the appropriate geographical and administrative scale.

The Scottish Plan supports the designation and management of MPAs as a priority through a General Policy, and has a 'wider seas approach' to nature conservation outside of protected areas, which includes the protection of Priority Marine Features, enhancement of biodiversity and associated ecosystem services, and explicit support for achievement of GES descriptors and targets. The need to safeguard ecosystem services is stated early on in the Scottish Plan, and the Plan highlights key findings from the Scottish NEA, which are then reflected in specific policy obligations.

The Scottish Plan adopts the Precautionary Principle ('in accordance with the UK Government and Devolved Administrations' sustainable development policy') as one of its strategic objectives. The sustainability focus of the Scottish Plan policies, the clear prioritisation of sustainability issues over sectoral policies demonstrated by the nested policy approach, and the systematic use of mitigation measures within policies mean that the Plan does embed the Precautionary Principle in implementation.

The Scottish Sustainability Appraisal (SA) is robust, and in its assessment of reasonable alternatives, it considers both the use of alternative approaches (strategic vs spatial plan) and alternative priorities (economically focused vs environmentally focused), which reflects a pragmatic and intuitively sensible set of options and subsequent strategic choices. For example, the SA highlights that a spatially explicit NMP that sets out the preferred locations for different marine economic activities certainly has compelling environmental benefits by prioritising environmental considerations in a spatial way. Such benefits extent towards providing greater certainty in terms of economic development opportunities. However, the overall effect is mixed, as locations of activities would be constrained, creating barriers to development, and 'a spatially directive national plan would conflict with the need for regional marine planning'. Recognising that 'the focus of the NMP is on policy, rather than proposals', the SA focuses on appraising the cumulative effects of high-level strategic policies, and

notes that cumulative effects of spatial strategies should be assessed during the SA for the relevant Regional Marine Plans. This framework of a strategic national plan with nested spatially-explicit regional plans allows a comprehensive sustainability appraisal to be conducted at multiple levels, and thus addresses the uncertainty that presents a significant challenge in the East and South England SAs.

Overall, the Scottish Plan is a good example of a strategic marine planning document that comprehensively embodies an ecosystem-based approach. The overall Scottish approach is also an excellent example of a comprehensive framework for marine planning which includes a high level national plan and more detailed and prescriptive spatial plans at regional scales (Regional Marine Plans).

Shetland Island Marine Spatial Plan (The Shetland Plan)

The Shetland Plan is an official Regional Marine Plan that nests within the marine planning framework established by the Shetland Plan, and as such, its vision is the same as the Scottish Plan. The Shetland Plan has no timeline for achievement of the vision, but is considered as a living document, now it its 4th iteration, that should be continually updated to reflect the necessary changes and reviewed every 4 years to ensure an adaptive approach to management.

The Plan has three objectives, clearly designed to consider social, environmental and economic elements in order to promote and embody the principles of sustainable development. Policies are grouped into three clusters that reflect their overall aims: Clean and Safe; Healthy and Diverse; and Productive. In a similar approach to the Scottish Plan, the Shetland Plan adopts a nested approach to policy application, whereby development proposals must comply with the requirements of all policies in the Clean and Safe, and Healthy and Diverse clusters, before complying with sector specific policies in the Productive cluster. This has the effect of clearly prioritising policies, which ensures that environmental and social factors are explicitly taken into account in balance with economic considerations.

Through targeted policies, the Shetland Plan supports the designation and management of the range of MPAs, both current and proposed, which make up Scotland's ecologically coherent network, including Nature Conservation MPAs. In line with the Scottish Government's Nature Conservation strategy, and the Scottish Plan, the Shetland Plan also has 'wider seas policies and measures' that requires protection of features outside of MPAs, such as species, habitats, Priority Marine Features, geodiversity and heritage assets. The Shetland Plan places less emphasis on the safeguarding of ecosystem services than the Scottish Plan, and the concept is not explored in quite the same comprehensive way, but key ecosystem services (e.g. fisheries, coastal defence, aesthetic and cultural values) do feature in targeted policies, and very specifically under the geodiversity policy (MSP HER 8). This is also the case for MSFD Descriptors, which are very well integrated into the Scottish Plan, but

only feature in selected Shetland Plan policies (e.g. marine litter, underwater noise) and could easily have been more comprehensively considered.

While there is no explicit mention of integrated coastal management, the Shetland Plan is nevertheless a good example of how marine planning can fully support such an approach, primarily through the intentional overlap of marine and terrestrial planning boundaries (at Mean High and Mean Low Water), making it essential that the relevant authorities collaborate to deliver coherent policies for the coastal zone.

Stakeholders have been engaged in the Shetland Plan from the outset in 2006, through local representation and expert advice, and have contributed significantly to the development of the Plan and the SEA as a result. The Shetland Plan has also collected and collated a significant amount of data, considered to provide a 'sound evidence base' for the Plan.

The Shetland Plan has a strong expression of the Precautionary Principle, in its overarching principles, supporting justifications, prioritised policies and in the chosen wording of policies themselves, which tend to be specific, and use 'will' and 'shall' rather than 'may'. It is worth noting that the Shetland Plan, unlike the England Plans, does not include an explicit risk-based approach in its definition of the Precautionary Principle, but rather notes that the principle 'permits a lower level of proof of harm to be used in policy-making whenever the consequences of waiting for higher levels of proof may be very costly and/or irreversible', which is a point not made in any of the other plans. As a result, the Shetland Plan is an excellent example of a marine plan that adopts a conservative application of the precautionary principle.

Sound of Mull Marine Spatial Plan (The Sound of Mull Plan)

The Sound of Mull Plan is a pilot project, developed under the Scottish Sustainable Marine Environment Initiative (SSMEI), aimed at testing a new integrated planning framework. As such it forms an even finer scale resolution than the Shetland Plan covering a much smaller area. Its vision is a healthy and productive environment that supports biodiversity, a sustainable economy and local community benefits. However, as a pilot project, the Sound of Mull Plan does not have a clear review process or key milestones but does have unusually process-orientated objectives (e.g. provide guidance and recommendations for current and future planning; enable a better understanding of the socio-economics of the region; develop best practice for Integrated Coastal Zone Management (ICZM), and has less emphasis on the environmental, social and economic objectives, although these are evident (e.g. safeguard important areas for natural and cultural heritage; encourage a diverse mix of sectors to develop sustainably).

In the style of the Scottish Plan, the Sound of Mull Plan provides two general policies that provide an overarching framework for the Plan, one of which enables the protection of Local Features of Importance, including habitat types, habitats and species either protected under

European designated sites or identified in national or local Biodiversity Action Plans, and the other, which supports community development through sustainable business growth and involvement of stakeholders in the planning process. General policies must be given due consideration by all development proposals, before taking account of the sector-specific policies, and this nested approach creates a prioritisation across policies, similar to the Scottish Plan and Shetland Plan.

The project established a Working Group and has undertaken an extensive process of engagement with a broad range of stakeholders. Spatial opportunities of potential and current activities are provided for in the Plan, with variable degrees of accuracy. However, the Plan does consider the positive and negative interactions between potential developments and other sectors and interests.

In terms of ecosystem goods and services, the Sound of Mull Plan is not explicit on how to safeguard more than the most basic of services, such as fishing and recreational value. There is a surprising lack of policies covering important services such as spawning and nursery grounds, coastal protection and water quality, although the latter is included in the form of 'soft' or 'hard' constraints to sectoral developments, which should be considered and mitigated where possible. The Plan is similarly unclear on how it embeds the precautionary approach, which is not noted anywhere in the Plan's framework. While the nested approach to policies does provide some demonstration of policy prioritisation and therefore the precautionary approach, the general policies also contain provision for existing activities such as aquaculture, commercial inshore fisheries and shipping routes, without considering how conflicts between these activities and priority environmental features could be dealt with. While the Plan provides substantial detail about the area and the polices, it currently lacks detail on the services and benefits from ecosystems, as well as an understanding of where the limits are in terms of their use.

3.3 Cross question analysis of the Ecosystem Approach Checklist

Responses to the checklist questions from all seven UK and Ireland MSP Plans (see Appendix 1 and 2) were analysed question by question to compare how particular elements of the Ecosystem Approach were applied across the Plans. The results are presented below for each key questions of the checklist.

WWF Ecosystem Approach Checklist – cross-question analysis
1. Does the MSP plan and process: Set out a long-term vision and path to get there?
All seven marine plans have a long term vision and a set of either key actions (as in the Irish Plan) or objectives. In most cases, these key actions/objectives are designed to comprehensively address the social, environmental and economic issues facing the plans. The exception is the Sound of Mull

Plan, which has only 5 objectives, three of which are concerned with responding to its role as a pilot project designed to deliver lessons learned and test new policy frameworks. The East, South and Welsh Plan all had specified dates by which the vision was expected to be achieved (providing a 20 year window in all cases). While a deadline was not appropriate for the Irish Plan (being a form of high level policy and strategy statement, and therefore in the very early stages of marine spatial planning) or the Sound of Mull Plan (being a pilot project), it would have been beneficial to provide a target for the vision in the Scottish and Shetland Plans in order to improve the efficiency of the pathway to get there.

Describing a pathway to achieve the vision was considered to require a clear explanation of the decision-making process that would implement the policies, moving them from plan to practice. The Shetland Plan demonstrated a very clear description of how its policies would be dealt with during the development proposal evaluation process, and which authorities would need to be involved. The Scottish Plan was similar, but in the England Plans, this level of detail was much less available, which was felt to be an oversight, given the high level of decision making responsibility that this subsequent stage would involve, mainly due to the very few spatially-explicit policies and the lack of prioritisation between them (this is discussed further in questions 3 & 9).

2. Does the MSP plan and process: Support the designation and management of Marine Protected Areas?

All seven Plans contain policies to support international and national conservation designations. In the Scottish and Sound of Mull plans, these MPA policies are contained within a suite of 'general policies', and in the Shetland Plan, within a thematic cluster of 'healthy and diverse' policies. In all three cases, these general or thematically clustered policies must be adhered to before any sectoral policies are followed. This means that for the these specific Plans, supporting MPAs is clearly presented as a priority objective over sectoral development policies, but for the former Plans where all policies should be considered together, this prioritisation is not at all evident, which could result in conflicts between interests or activities. Moreover, any conflicts that do arise are therefore not dealt with by the Plan itself, but will be resolved by public authority decision makers at the point of proposal evaluation.

All regions contain policy guidance for developments that occur in or near sites of both national and international interests. Some of the policies clearly outline management options for such designations, others are less clear. For example, the Shetland Plan has developed a Management Handbook, whereas the there is no mention of management plans in the other MSPs.

3. Does the MSP plan and process: Allocate development based on environmental criteria, as well as economic and social factors?

If/where spatial policies for development occur (e.g. tidal energy), do these policies demonstrate that environmental, economic and social factors are considered in balanced way?

Do non spatial policies encourage development that is in line with ecosystem-based management - i.e. considers environmental as well as economic and social factors?

'Allocate' can be interpreted in various ways - for some Plans, allocating development is done through the delineation of spatial areas for a particular activity. Examples of this are the Resource Areas and

Strategic Resource Areas in the Welsh Plan, which are specific areas for current and future use identified through evidence gathering, interpretation and constraint mapping, and the regional locational guidance in the Shetland Plan, which identifies areas that are more or less likely to be suitable for the siting of specific development activities (e.g. tidal energy siting), based upon spatially mapping their social, economic and environmental constraints. In other plans, spatial allocation features less, and policy strengthening and integration is the focus, for example in the Scottish, East and South Plans that outline policies (often non-spatial) that may well be applicable to the entire plan area. In these cases, 'allocating development' has considered the extent to which objectives and policies, rather than spatial areas, are ecosystem-based.

The Welsh Plan Resource and Strategic Resource Areas have taken into account factors such as 'where the location or feasibility of using a resource is better understood; where there is some understanding of constraints; where there is a known market for the resource; where the underlying technology presents new opportunities; and/or where the sector has strategic importance'. While it is not clear what constitutes a 'constraint', these areas are primarily defined according to economic criteria. By contrast, the Shetland Plan has identified other environmental (e.g. locations of sensitive species) and social constraints (landscape/seascape aspects), in addition to the economic constraints, when mapping potential areas for suitable development.

For the Plans that are much less spatially-explicit, a positive response to the question requires evidence that the Plans policies would result in the equitable delivery of social, environmental and economic outcomes, and this is clearly present in the Scottish, East, South and Sound of Mull Plans. In addition, in the case of any development proposal meeting some policies but not others, some evidence of the prioritisation mechanism that would rationalise the conflict is needed. This prioritisation is evident within the Scottish and Sound of Mull plans, which both have a suite of General Policies with obligations that must be met by any development proposal prior to fulfilling the requirements of any sectoral proposal. In the East and South Plans, no such prioritisation is visible, and all policies must be considered together. The lack of prioritised policies, in combination with a very low level of spatial prioritisation, means it is a challenge to assess the extent to which development will be allocated based upon environmental, as well as social and economic factors.

4. Does the MSP plan and process: Show support for integrated coastal management?

Integrated Coastal Zone Management (ICM or ICZM) is explicitly mentioned by the South Plan, Scottish Plan, Welsh Plan and the Sound of Mull Plan, mainly with the recognition that marine plans should take account of other plans. This demonstrates commitment from the various authorities across the regions that the marine plans need to deliver integrated terrestrial and marine spatial planning. The Welsh Plan appears to have the most explicit incorporation of ICZM principles, although at the time of writing the draft Welsh Plan did not include the Annexes that contained the relevant information. While the East, Irish and Shetland Plans do not mention the term, they do incorporate some of the principles of ICZM, though some more prominently than others. For example, the Shetland Plan has overlapping jurisdictional boundaries for marine and terrestrial planning authorities in the coastal zone, providing a good example of comprehensive integration. Being Strategic Marine Regions (SMRs) under the Marine (Scotland) Act makes it surprising that the Shetland Plan does not mention ICZM explicitly, and it may be necessary for additional assessments

to ensure the degree of consistency between marine and terrestrial policy documents and guidance in this regional level of marine planning in Scotland.

5. Does the MSP plan and process: Safeguard and enhance key ecosystem services?

With the exception of the Sound of Mull Plan, all the marine plans have explicit or implicit provisions to safeguard and enhance basic ecosystem services. Several of the Plans limit these provisions to the most obvious services, such as fisheries, habitats and species, recreational and cultural values, and mineral resources and do not involve a comprehensive assessment. In contrast, the Scottish Plan demonstrates how the National Ecosystem Assessment (NEA) findings have been noted in the plan, and have shaped specific policies.

6. Does the MSP plan and process: Involve stakeholders and community knowledge/expertise from an early stage?

All the Plans have involved stakeholders and in several cases the engagement with stakeholders has been significant and sustained. The South and East Plans were subject to early consultation that led to refinement of vision and objectives, and both the Plan and the SA have involved stakeholder workshops and review. At an even earlier stage, the Irish Plan shows an impressive level of stakeholder involvement, having launched a specific public consultation called 'Our Ocean Wealth: Seeking Your Views' to ensure the high level policy framework was consistent with the general public's ideas. However, the Irish Plan and the Welsh Plan are both at early stages, so while it is highly likely that their strong stakeholder engagement will continue, it is impossible to judge at this stage.

7. Does the MSP plan and process: Have a strong strategic environmental assessment?

With the exception of the Irish Plan, which is not sufficiently advanced, all the marine plans have an SEA or Sustainability Appraisal which fulfils all of the SEA Directive requirements. However, the strength of these SEA/SAs varies across the plans. The SA for the East and South Plans found the lack of spatially prescriptive, or explicit, policies to be a significant challenge when trying to assess the effect of the Plan, or its alternatives, and the resulting analysis does not appear robust as a result. The Scottish Plan is also more of a high-level policy document and does not have spatially explicit policies, but interestingly the SA takes this aspect into account, and duly assesses the effects that can be predicted at this level, noting that a more spatially explicit appraisal can be done at the Regional Marine Plan level (e.g. Shetland Plan). Moreover, one of the reasonable alternatives in the Scottish SA assesses the implications of the Scottish Plan being more spatial at such a high level, which concludes that setting a broad policy direction is most appropriate at that level. The pragmatic approach taken with the Scottish national and regional planning and SA process seems sensibly tailored to the aims and scope of the relevant plans, and therefore overcomes the challenges faced by the England plans.

8. Does the MSP plan and process: Have an adaptive approach to deal with new circumstances?

In the majority of cases, adaptation is considered in the context of climate change. Adaptation is also reflected in periodic reviews under each Plan, which in most cases is a specified part of marine planning under the relevant legislation. As an exception to this, the Sound of Mull is not explicitly

clear on their adaptive approach, primarily due to it being a pilot project, and therefore having no continuity past the project.

9. Does the MSP plan and process: Embed the Precautionary Principle?

Sub-questions: Is the Precautionary Principle used as a guiding principle in the plan?

Is the Precautionary Principle in evidence through the development of policies, options/alternatives and mitigation measures within the plan?

Most of the marine Plans state that they apply the Precautionary Principle, mainly in accordance with the UK Sustainable Development Policy, which requires the Principle to be adopted where there is 'a risk of significant adverse environmental effects occurring' and 'where possible mitigation measures seem unlikely to safeguard against these effects'. There is considerable variability in the way in which the Principle is described and therefore interpreted. The East, South, Scottish and Welsh Plans have adopted a 'precautionary and risk-based' approach to mitigating potential adverse effects. Within this group of Plans, the Scottish Plan adopts this approach within a plan objective and combines it with a requirement for planners to ensure that developments pose minimal impacts and that these are adequately mitigated, which appears to be a relatively conservative interpretation of the Precautionary Principle. By contrast, the East Plan promotes a 'balancing exercise' where the risk is weighed against the need for sustainable development, which is arguably a more flexible interpretation of the Principle than in the Scottish Plan.

Not all plans actually outline their interpretation of the Precautionary Principle, however, and a detailed examination of the Plan's policies was required. In the case of the Welsh, Scottish and Shetland Plans, policies were developed within a two tier framework, with general (or thematic, in the Shetland Plan case) and then sector-specific policies. Rather than a single set of policies that must all be considered together, as is the case with the East and South Plans, this arrangement provides a clear prioritisation across policies, providing more certainty when predicting possible effects (in the SA) and ensuring that there is a greater likelihood that potential adverse effects will be ultimately mitigated. Within the policies themselves, there was also variation in the strength of the wording around mitigation measures. For example, the East and South Plans typically suggest that 'significant impacts' are avoided, minimised or mitigated. The Shetland Plan promotes a 'lower proof of harm' in its use of the Precautionary Principle, and therefore its policy wording reflects a more robust interpretation than the East and South Plans, requiring many proposals to have 'no adverse effects'.

10. Does the MSP plan and process: Show evidence of coordination with other plans?

There is evidence to suggest that the development plans will allow issues that cut across a number of planning authorities to be considered and planned for. Coordination will involve regular liaison and engagement, planning for activities etc. and will work closely with neighbouring marine planning authorities and put in place joint working arrangements to support collaboration.

Baltic SCOPE Ecosystem Approach Checklist – Cross-question analysis

1. Does MSP support the achievement and/or contribute to maintaining GES?
Good Environmental Status is an integral part of all the Marine Spatial Plans. The Marine Strategy Framework Directive objectives have been integrated into marine planning through the Marine Policy Statement. Unlike the South of England Plan and Sound of Mull Plan, the Irish Plan, the Welsh Plan, the Scottish Plan and the Shetland Plan, there is no specific target or activity that explicitly supports the achievement of GES.

2. Is the best knowledge and practice applied in planning?
All Plans are clear about making the best use of existing good practices and best available evidence in planning. However, in the East and South Plans, there are several policies that are not spatially explicitly due to 'a lack of evidence'. In both cases, there seems to be no evidence to support the co-location of activities which may be critical at various stages of the planning phase. The Welsh Plan makes a clear case throughout several polices to ensure knowledge and information is accessible to inform adaptive management. Across the Welsh, Scottish and Irish Plans, the application of best knowledge is key and there are various data and information portals to demonstrate the degree of information collected. Interestingly, the use of the term 'best practice' is not clearly defined in any of the Plans.

3. Is the precautionary principle considered during planning?
This question has been addressed in WWF checklist Q9.

4. Are alternatives used in planning?
All Plans identify alternatives in their Strategic Environmental Assessments/Sustainability Appraisals. They all identify the likely socio-economic and environmental impacts of the associated plans and polices outlined in the Plan. The extent to which the number of options, approaches and degree to which they are considered to be "reasonable" vary across the Plans. For example, the East and South Plans identified between three and four alternatives taking into account the individual Sustainability Appraisal topics and used spatial analysis to help illustrate the different implications of the Plan options. The Scottish Plan considers three alternative approaches.   The preferred approach is a high-level strategic plan (i.e. a more policy-based) approach as opposed to a high-level spatial plan approach, as it was considered that this would be captured in the regional marine planning processes (i.e. for Shetland and Sound of Mull Plans). Similarly, the Sustainability Appraisal for the Welsh Plan considered four options. The High level strategic draft was also considered as the preferred option which would provide a lower level of spatial specificity to the draft Welsh Plan as proposed and would not identify Strategic Resource Areas.   In all cases, the assessment of the alternatives were considered as "reasonable" and the processes to identify the options were considered in consultation with stakeholders.

5. Is the assessment of ecosystem services included in planning?
This question has been addressed in WWF checklist Q5.

6. Is mitigation applied in planning?

Suggested sub-question: Are these mitigation measures consistent with the application of the precautionary principle?

Mitigation measures are applied in planning across the board. However, the extent to which these mitigation measures are consistent with the application of the precautionary principle vary. For the East and South Plans, mitigation measures have been identified and are considered at the strategic level. There is evidence to suggest that the Welsh and the Shetland Plan apply mitigation measures that are consistent with the application of the precautionary principle in terms of minimising and/or preventing the impacts of the Plan by allowing for changes to components of the Plan (e.g. policies).

7. Is a holistic systems perspective used in planning?

The extent to which a holistic systems perspective is used in planning varies across the plans. For example, The East Plan explicitly acknowledges the intention to use a holistic approach to guide decision making and does this by developing both inshore and offshore plans in an integrated process. Whereas the South Plan and the Irish Plan demonstrate a holistic systems approach following issues raised at the sectoral level and linkages to a cross-sectoral based approach. The Welsh Plan takes a holistic approach by considering all uses of the seas and the way in which they interact with each other. The Plan makes reference to a Planning Circular (The Relationship between the statutory land use planning system and marine planning and Licensing) which gives careful attention to facilitating integration between terrestrial and marine planning.

8. Is participation and communication ensured in planning including the Strategic Environmental Assessment (SEA)?

Captured in WWF Checklist Q7.

9. Is the subsidiarity aspect and coherence between levels considered in planning?

All the marine Plans have been designed to assist decision-making at all levels. For example, the South Plan does represent a decentralization to a regional planning level. The Scottish Plan and the Regional Marine Plans will be implemented at a local level within Scottish Marine Regions and will be developed by Marine Planning Partnerships to take account local circumstances and smaller ecosystem units.

10. Is adaptation considered in planning?

Captured in WWF Checklist Q8.

Chapter 4   Discussion and conclusions

This section discusses the results of the checklist assessments and appraises the checklist approach itself. **Section 4.1** compares how the different marine plans have adopted an ecosystem-based approach, noting particular examples of good practice, highlighting common challenges and noting any specific issues that represent a barrier to the delivery of an ecosystem-based approach. Recommendations for improving effective ecosystem-based management are made. **Section 4.2** discusses the value of the checklist approach by considering its suitability, ease of use and effectiveness as an assessment tool for ecosystem-based approaches. Recommendations are made for improving the checklist approach for assessing ecosystem-based approaches.

4.1 Comparing the delivery of an ecosystem-based approach

Marine planning in the UK and Ireland must be consistent with the overarching European, national and devolved administration policy frameworks, specifically the EC Maritime Spatial Planning Directive, the UK Marine Policy Statement for England, Scotland and Wales, and the relevant national Acts of the Scottish, Welsh and UK Parliaments. Although this would presume a high degree of similarity between Plans, this is not the case, and there is considerable variability across the approaches taken. However, assessing where those differences lie reveals some challenges. Firstly, governments have implemented their marine planning processes at very different times, using different approaches at different stanges. Consequently, documents like the Irish Plan reflect a very early stage of marine planning where policy areas and strategic direction are being established, whereas Plans like the Shetland Plan are already in their fourth iteration.   Secondly, the variety of approaches presented across the Plans makes it very clear that there is no one way to deliver marine planning, and any assessment must consider each Plan in its own context. The benefit of such variety is the opportunity for multiple examples of good practice to exist, but the associated absence of standardization across Plans can make it more difficult to ensure that 'Yes/No/Partly' responses are applied consistently. Thirdly, some of the Plans are not independent of one another, which can affect the assessment response. For example, the Scottish marine planning process includes a national plan and more specific regional plans (e.g. the Shetland Plan).   While the two Plans have been assessed separately, the assessment has taken account of this approach in order to evaluate alternative ways to implement the Ecosystem Approach.

The assessment of all seven plans against a common checklist, combined with the resulting comparison across questions (Section 3.3), provides a good opportunity to identify elements of planning that could be improved, as well as particular approaches that successfully meet the checklist criteria. As noted, there is no single way to undertake marine planning, therefore the identification of *best practices*, beyond simply embodying an ecosystem-based approach, is not considered appropriate. However, a number of *good practices* emerged from the assessments. While there were several Plans that were strongly ecosystem-based overall, the good practices identified below specify aspects of marine planning approaches that successfully met several of the checklist criteria, or were particularly effective in meeting a the criterion. The good practices highlight in the context of general areas needing improvement found across all Plans.

1) Ensuring an equitable balance between social, environmental and economic factors

All marine plans present social, environmental and economic policies but it was a particular challenge to assess whether the balance of policies overall was equitable, or more specifically, that the overall effect of the combination of policies would ultimately result in development outcomes that considered social, environmental and economic factors equitably, particularly in a situation where there might be a conflict between policies. Ensuring balance was particularly difficult when imagining a scenario where a development proposal might create conflict between policy aims, but there was no clear prioritization between policies outlined in the plan.

Good practice: **A two-tiered policy framework**

The Scottish, Welsh, Shetland and Sound of Mull Plans all adopted a two-tier policy framework that identified a set of general (or priority theme, in the case of the Shetland Plan) policies and a set of sector-specific policies. In all cases, development proposals were required to fulfil all the requirements of the first tier (general/themed) policies in addition to the policies relating to their specific sector. In the case of the Shetland Plan, the first tier policies were all those within the 'clean and safe' and 'healthy and diverse' policy clusters. In all cases, this two-tier approach provided a strong prioritization across policies, and with environmental and ecological policies in the first tier, a precautionary and ecosystem-based approach appeared far more likely a result, even in the case of conflicting policies.

2) Developing spatially-explicit policies

Policies that were spatially-explicit considerably reduced the uncertainty around the likely negative impacts from current or future activities, by reducing the geographic coverage of sector-specific policies but also by prioritizing areas dedicated to current or future activities. As a result, plans that were more spatially prescriptive produced more robust SEAs/SAs that appeared better able to predict potential adverse effects and provide

recommendations for mitigation measures. In several of the Plans, uncertainty surrounding the likely outcome of policies was a significant challenge, and this seemed particularly associated with the extent to which plans were spatially-explicit. However, in some cases, spatial data were not sufficiently robust to allow spatially-prescriptive policies, particularly where the plan covered a large area.

Good practice: *Regional Locational Guidance* (Shetland Plan)

Both the Shetland and Welsh Plans incorporated spatial areas to guide sectoral policies. However, the Resource Areas and Strategic Resource Areas contained within the Welsh Plan appeared to have been identified on the basis of predominantly economic factors. The Shetland Plan, however, provided 'Regional locational guidance' alongside many of its policies, which identified areas that were more (or less) suitable for developing specific activities based upon social, environmental and economic constraints that would factor into any development proposal decision. In addition to ensuring an equitable balance between the consideration of social, environmental and economic factors, the fact that this approach identifies constraints rather than opportunities means that it is a much clearer embodiment of the precautionary principle.

Good practice: *A nested planning process* (Scottish national and regional plans)

The Scottish marine planning process avoided this challenge through its nested approach, involving a national marine plan that was a high-level strategic document that provided the broad policy framework for a set of regional marine plans, identified at a scale that allowed robust spatial data to be collected and therefore spatially prescriptive policies to be possible. This approach provided a clearer scope for the associated SEA/SAs, which were able to better appraise national and regional plans according to their focus, and take into account that some aspects would be more appropriate to assess at one or other spatial scale.

3) **Manifesting the Precautionary Principle**

Just as there was considerable variation in the general planning approach, plans used different definitions of the Precautionary Principle and exhibited conservative, moderate and flexible interpretations as a result. The more flexible interpretations considered it necessary to have pragmatic, risk-based approaches that balanced social, environmental and economic factors when encouraging sustainable development. Whereas the more conservative interpretations emphasized the need to avoid development that might cause adverse effects where the underlying evidence base was insufficient to prove otherwise. This begs the question whether all interpretations of the precautionary principle contribute equally well to a successful ecosystem-based approach. In several of the plans, the level of uncertainty in predicting ultimate outcomes and possible adverse effects (due to a lack of spatially-explicit policies or prioritization across policies) was high. In such circumstances, one could argue only a conservative interpretation of the

Precautionary Principle should be applied. Similarly, the more predictable the plan outcomes, the less high-risk a flexible interpretation of the Principle becomes. In several cases, high uncertainty was combined with flexible interpretations of the Precautionary Principle, which would arguably lower the likelihood of the plan achieving a comprehensive ecosystem-based approach in implementation.

Good practice: *Taking a conservative approach* (The Shetland Plan)
Despite being spatially-explicit, the Shetland Plan adopted a conservative definition and interpretation of the Principle, and as such adopted all of the safeguarding and precautionary elements that were visible in other plans. These included very strong policy prioritization (though the two-tiered approach to policy requirements and spatial guidance for sectors based on constraints), clearly precautionary policy wording (in some cases requiring proposals to have 'no adverse effects' rather than no *significant* effects), and supporting explanations that highlight the need to ensure development is truly sustainable.

4) **Incorporating comprehensive ecosystem service assessments**
Identifying and safeguarding ecosystem services is a fundamental part of an ecosystem-based approach, yet many of the Plans focused primarily on the most basic provisioning services, such as fisheries, habitats, and mineral resources. Many of the less obvious services, such as coastal protection, climate regulation, water purification or cultural value, were underrepresented in the Plans.

Good practice: Incorporating the NEA findings (Scottish Plan)
The Scottish Plan incorporated findings from the National Ecosystem Assessment, which provides a comprehensive assessment of Scotland's ecosystem goods and services, as well as identifying valuable services that are not adequately safeguarded. Such information is critical to ensuring that all development is sustainable in the long term. NEAs have been undertaken (or piloted) for the UK, including Scotland, Ireland and Wales.

5) **Aligning marine and terrestrial planning processes**
While most plans indicated that they had taken account of other plans, usually local terrestrial or coastal plans, and some explicitly noted the link they had made with integrated coastal zone management (ICM or ICZM) processes, it was not usually obvious how such consideration had shaped the plan.

Good practice: Overlapping jurisdictions in the coastal zone (Shetland Plan)
The public authorities within the Shetland Plan area had purposely overlapped their areas of competence at the coastal zone, such that terrestrial planning boundaries extended to Mean Low Water and marine planning extended to Mean High Water, making it essential that the two authorities collaborated in planning the intertidal area. Given the growing problem of land-based sources of pollution and the reliance of marine activities and

developments upon land-based infrastructure, this sort of governance regime enhances the essential linkages between marine and terrestrial planning and requires planners to go beyond simply 'taking account' of the other policies and plans.

6) Providing the evidence base to support co-location of activities

Several of the Plans have policies that explicitly promote co-location, or co-existence, of activities in the marine environment in order to reduce the developmental footprint and to take advantage of infrastructure and economies of scale. In practice, however, the evidence base required to make such decision is often lacking, or is considered to be insufficiently robust, which ultimately prevents the necessary co-location decisions from being made within the necessary planning timeframes.

Good practice: **Supporting the evidence base**

Across the Plans, there was generally very little supporting guidance on this issue, with the exception of the Sound of Mull Plan, which provided a sensitivity matrix for habitats and species, as well as hard and soft constraints for sectoral activities, and the Scottish Plan, which provided a sector-specific section within each policy noting how the sector interacts with other users. More comprehensive information on how the habitat/species sensitivities is linked to pressures, and which sectoral activities produce such pressures would improve this situation.

These areas of improvement demonstrate that there are still numerous challenges facing the comprehensive adoption of an ecosystem-based approach in MSP. None of these issues represents a true barrier to the ecosystem-based approach because they are not either present or absent, but may often be at the less, rather than more, ecosystem-based end of a continuum. However, it is worth considering whether a more general barrier to the ecosystem-based approach may be the concept itself, which has evolved originally from within the conservation and sustainability schools of thought. As such, the term is not one that industry representatives, sectoral authorities or typical marine users are familiar with, and in some circumstances, it may be negatively associated with a 'protectionist' attitude to the marine environment that acts as an unwelcome counterbalance to development and growth. As a tool for resource use management, Marine Spatial Planning has garnered support from across sectors by being a mechanism for reducing uncertainty, improving the efficiency of consenting and licencing, identifying opportunities for sectoral growth, and reducing cross-sectoral conflicts. Where planners are tasked with developing plans that are fully supported by all sectors and specifically industry, it is likely that the resulting plans will emphasize these familiar benefits, and potentially downplay the unfamiliar, more theoretical, and possibly negative ecosystem-based approach principles.

Recommendations for improving effective implementation of an ecosystem-based approach in MSP

o National governments should adopt a nested approach to marine planning to allow plans to become more spatially-explicit and prescriptive at finer scales (e.g. national to regional to local). Coarser scales can provide the policy frameworks, and finer scales can provide the detail and deliver the outcomes.

o At the appropriate level, spatially-explicit policies should be strongly encouraged wherever possible to reduce uncertainty and provide clear prioritisation for specific activities, but these areas should be identified based upon a balanced set of social, environmental and economic constraints, and consider future trends.

o Planners should incorporate a comprehensive assessment of ecosystem services into MSP, and ensure that the less used, and less obvious services are protected in a prioritised way.

o Scientists, practitioners and managers should pool knowledge and experience to establish good practice guidance on the use of the Precautionary Principle, using the evidence base to investigate the conditions in which more flexible vs more rigorous characterisations of the Principle lead to successful ecosystem-based management outcomes.

o Authorities should provide stronger frameworks for integrating marine and terrestrial planning more comprehensively, considering the Shetland Plan approach of purposely overlapping boundaries and therefore shared responsibility to manage the coastal zone.

o Those aiming to encourage the adoption of ecosystem-based approaches in MSP should consider, and investigate, private sector and industry attitudes to the concept in order to identify any barriers to its comprehension and support, and to consider ways to improve communication and effective incorporation of the necessary ecosystem-based elements in marine planning processes.

4.2 Appraisal of the checklist approach for evaluating ecosystem-based MSP

The checklist approach is a very simple and widely used analytical tool to support the standardisation and efficiency of assessments and evaluations, as well as to improve the consistency of practices and protocols in a range of professional and personal contexts. Checklists are typically single dimensional lists of questions or elements, each one representing an aspect that can be assessed as being present or absent, and in some cases partly present. The benefit of the checklist approach is that, once completed, it should be very easy to see which aspects are underrepresented.

This appraisal of the checklist approach includes both the approach and the contents of the two checklists themselves, and considers four main areas of efficacy:

- **Suitability for the subject matter** - does the checklist cover all the necessary elements of ecosystem-based MSP? Are there disadvantages in using it for ecosystem based MSP specifically?
- **Suitability for the audience -** does the checklist translate to the different MSP audiences who may need to use it (e.g. practitioners, evaluators, researchers)?
- **Ease of use** – was the methodology intuitive? Were questions easy to interpret? Was the effort required commensurate with the task objectives?
- **Effectiveness as an assessment tool** – does it provide a comprehensive assessment for ecosystem-based MSP? Are there disadvantages to assessing ecosystem-based MSP in this way?

Each of these areas is considered below, and where examples are given, checklist questions are referred to by their abbreviation (e.g. BSCT 7 or WWF 2).

Suitability for subject matter

The Baltic SCOPE Checklist Toolkit guidance document notes that undertaking a checklist assessment across multiple plans exposes the reality that there is 'no single right way to implement the Ecosystem Approach' and different initiatives will inevitably find different ways to apply the necessary elements. Our assessment of the seven UK and Ireland plans certainly supports this notion, and the checklist approach did not prevent such variations from being presented. However, the Baltic SCOPE guidance document also suggests that all the (MSP) checklist elements need to be considered, yet it is clear from our literature review that the lack of consensus on the principles of EBM or ecosystem-based MSP makes it challenging to suggest that there is simply one set of essential elements that are required to make MSP ecosystem-based.

In assessing the UK and Ireland plans, it was apparent that the phraseology of certain questions (e.g. 'does the plan allocate development based on ecological factors, as well as economic and social?' [WWF Q3]) made an implicit assumption that all MSP plans would be designed to allocate development. In certain cases where this is not typically true, such as the England Plans, the resulting response required considerable explanation.

Suitability for the audience

Both WWF and the Baltic SCOPE project expected the checklist approach to be a useful implementation tool for practitioners as well as an effective assessment tool for evaluators or researchers. The simplicity of the checklist approach does mean that it can be intuitively adapted to these two uses and general audience types. One of the characteristics of MSP is that it is very rarely applied consistently, as local conditions and governance frameworks

tend to emphasize specific issues that drive a context-specific approach. In addition, technical, financial and human capacities play a major role in influencing the nature and scope of the MSP approach. Any attempt to assess MSP needs to be equally applicable to all MSP contexts. With the exception of the SEA checklist, which is strongly worded to match the European situation where the SEA Directive puts obligations on Member States, both MSP plan checklists address concepts that are, or could be, applicable in a wide range of contexts.

As noted in the section above, the checklist approach does present a challenge where there is not universal understanding of EBM principles. The equally important status of all the questions prevents any form of prioritisation exercise across elements and therefore areas of potential efficiency may be lost. Since one of the checklist objectives is to support practitioners in implementing the Ecosystem Approach during planning, identifying a set of 'essential' checklist elements, associated with a set of 'highly desirable' elements, could help practitioners streamline their approach, particularly where there may be some overlap in the questions or less tangible linkage to the original EBM principles (e.g. WWF Qs 4 & 10).

Ease of use

In developing the Checklist Toolkit, one of the Baltic SCOPE Project objectives was to simplify the method of implementing the Ecosystem Approach for MSP responsible authorities and consultants, and indeed the checklist approach is a very simple tool to understand and apply. However, several issues arose during the assessment stage.

For several of questions, the clarification provided in the guidance document could have been improved with more detail or some illustrative examples in order to avoid any confusion (e.g. 'holistic systems perspective' [BSCT MSP Q7]; 'subsidiarity aspect and coherence' [BSCT MSP Q9]). In some cases, such as 'does the plan have a *strong* SEA?' (WWF Q7), questions required a value judgement to be made but did not have any supporting text to help define the meaning (i.e. what constitutes 'strong'?). Several questions, mostly in the SEA were phrased very generally (e.g. BSCT SEA Qs 3, 7 & 8), which made searching for responses within the plan something of a challenge.

Notwithstanding clarification issues, the questions that related to the MSP plans themselves were not too numerous (two checklists of ten questions each) and therefore the checklists were straightforward to complete. However, the SEA checklists was considerably longer (24 questions) and most of these questions were open ended (BSCT SEA Qs 2-11, 14-16, 18, 19, 22) sometimes requiring lengthy responses (e.g. BSCT SEA Q19).

Effectiveness as an assessment tool for ecosystem-based MSP

The lack of consensus – certainly in the peer reviewed literature – on EBM principles represents a real hurdle for consistent application of ecosystem-based MSP, as well as for the evaluation of such initiatives. There is clearly a need for a tool that can reduce confusion

and provide an easily accessible method of approaching the implementation of ecosystem-based MSP. While the checklist approach has many advantages, its simplicity could be a hindrance where it is used to assess a process that is highly variable, long-term and, in reality, often implemented in a series of stages over decades.

In many cases, we found that assessing a plan against simple questions was surprisingly challenging because the level of detail required in affected the answer. For example, one of the fundamental principles emerging from most definitions of EBM is the need for decision making to take economic, social and environmental considerations into account and this is captured in the checklists through the question 'does the MSP plan allocate development based on environmental criteria, as well as economic and social factors?'. Given this is a key principle of sustainability, the need to balance considerations appears in all marine planning legislation in the UK and Ireland, and it would therefore be valid to suggest that the answer to the question was positive. However, many MSP plans – certainly those in England – are drawn up at the policy level, which makes it extremely difficult to say from the plan whether the combination of policies would result in the final decision makers adhering to this principle of sustainability. In practice, the assessment requires a much more refined examination of the overall balance between ecological, economic and social policies, as well as their relative strength in determining where activities will be permitted or restricted, which is extremely time-consuming, and sometimes impossible to conclude in the situation. As such, simple questions are restricted in their ability to reveal the nuances that exist in most plans.

Now that the concept has become widely supported, it is likely that all spatial planning initiatives demonstrate at least some elements of the Ecosystem Approach. As such, it is arguably less useful to consider the simple 'yes' and 'no' situations, and far more productive and encouraging to try to characterize stages along a trajectory towards comprehensive ecosystem-based MSP. Closed questions demanding yes/no answers can be replaced with open questions that ask 'to what extent…' and subsequent answers chosen from a set of progressively more ecosystem-based answers. Such an approach has been successfully applied in integrated coastal zone management (GESAMP 1996), ecosystem-based management (UNEP/GPA 2006) and most recently in marine spatial planning (Carneiro *et al.* 2017).

This type of open questioning is emerging in the SEA checklist (e.g. 'what is known on the coherence of the MPA network' [BSCT SEA 9]; 'How is the "zero alternative" defined and used in the assessment? '[BSCT SEA 14]), but without some way of assessing the significance of the response, the SEA checklist does not currently form an effective tool for evaluating ecosystem-based MSP.

Recommendations for developing a checklist approach

Based upon the appraisal points above, we would make the following recommendations for improving the checklist approach:

1. Provide detailed guidance for each question in the checklist, describing the link to the core Ecosystem Approach principle, explaining the meaning of specific terms in the case that these are not consistently used and providing illustrative examples of how this principle could be evident in practical terms.

2. Consider a tiered approach to the checklist questions, identifying those that embody the core EBM principles and those that may be less fundamental, in order to indicate some level of prioritization and to facilitate efficient evaluation and implementation.

3. Where the complexity of the MSP process may affect an assessment answer depending upon the level of exploration undertaken, ensure that additional, more focused questions are provided to guide the necessary analysis to the appropriate areas. For example, the question 'Does the MSP plan embed the precautionary approach (WWF 9) could be refined by questions such as 'is the precautionary approach clear in policy terminology, plan objectives, alternatives/options and mitigation measures?'

4. Consider incorporating graduated markers for progress into the checklist, following the approach by GESAMP 1996, UNEP/GPA 2006 and Carneiro *et al. (*2017).

5. Consider the applicability of the SEA checklist (in its current form) to an assessment of ecosystem-based MSP. Should an SEA checklist be useful, improvements could be to provide guidance as to how to assess responses to open ended questions, to convert open questions into closed questions (in line with the MSP checklists) and provide additional explanations (as noted in 1), or to incorporate graduated marker responses (as noted in 4).

4.3   Conclusions

The adoption of an ecosystem-based approach is present in all the UK and Ireland Marine Plans, but to varying degrees. When assessed against the WWF and Baltic SCOPE checklists, most of the Plans only partly met many of the criteria. Overall, plans needed to more comprehensively incorporate ecosystem service assessments, ensure clear prioritization across policies, include spatially-explicit policies wherever possible, take a conservative interpretation of the precautionary principle, better integrate between marine and terrestrial planning, and provide guidance (and evidence where possible) to support co-location of marine activities. Comparing all seven plans, the Scottish and Welsh Plans showed the strongest evidence of taking an ecosystem-based approach.

While the checklist approach is a simple tool for assessing ecosystem-based elements within marine plans and can be used by almost anyone, it had significant limitations. The very varied nature of marine plans, from high-level policy documents to smaller scale spatially-prescriptive plans, means that simple questions needed to be more nuanced, as well as supported by fuller explanations and sub-questions, in order to be able to extract out the necessary information and to direct the deeper analyses. Further revisions to the checklist approach could include detailed guidance, but could also consider moving away from the more simplistic 'Yes/No/Partly' answers towards a more graduated assessment of the extent to which a criteria is met.

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Conference of the Parties Decision V/5 (Annex B)

Principle 1: The objectives of management of land, water and living resources are a matter of societal choice.

Rationale: Different sectors of society view ecosystems in terms of their own economic, cultural and societal needs. Indigenous peoples and other local communities living on the land are important stakeholders and their rights and interests should be recognized. Both cultural and biological diversity are central components of the Ecosystem Approach, and management should take this into account. Societal choices should be expressed as clearly as possible. Ecosystems should be managed for their intrinsic values and for the tangible or intangible benefits for humans, in a fair and equitable way.

Principle 2: Management should be decentralized to the lowest appropriate level.

Rationale: Decentralized systems may lead to greater efficiency, effectiveness and equity. Management should involve all stakeholders and balance local interests with the wider public interest. The closer management is to the ecosystem, the greater the responsibility, ownership, accountability, participation, and use of local knowledge.

Principle 3: Ecosystem managers should consider the effects (actual or potential) of their activities on adjacent and other ecosystems.

Rationale: Management interventions in ecosystems often have unknown or unpredictable effects on other ecosystems; therefore, possible impacts need careful consideration and analysis. This may require new arrangements or ways of organization for institutions involved in decision-making to make, if necessary, appropriate compromises.

Principle 4: Recognizing potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem-management programme should: (a) Reduce those market distortions that adversely affect biological diversity; (b) Align incentives to promote biodiversity conservation and sustainable use; (c) Internalize costs and benefits in the given ecosystem to the extent feasible.

Rationale: The greatest threat to biological diversity lies in its replacement by alternative systems of land use. This often arises through market distortions, which undervalue natural systems and populations and provide perverse incentives and subsidies to favour the conversion of land to less diverse systems. Often those who benefit from conservation do not pay the costs associated with conservation and, similarly, those who generate environmental costs (e.g. pollution) escape responsibility. Alignment of incentives allows those who control the resource to benefit and ensures that those who generate environmental costs will pay.

Principle 5: Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the Ecosystem Approach.

Rationale: Ecosystem functioning and resilience depends on a dynamic relationship within species, among species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment. The conservation and, where appropriate,

restoration of these interactions and processes is of greater significance for the long-term maintenance of biological diversity than simply protection of species.

Principle 6: Ecosystems must be managed within the limits of their functioning.

Rationale: In considering the likelihood or ease of attaining the management objectives, attention should be given to the environmental conditions that limit natural productivity, ecosystem structure, functioning and diversity. The limits to ecosystem functioning may be affected to different degrees by temporary, unpredictable or artificially maintained conditions and, accordingly, management should be appropriately cautious.

Principle 7: The Ecosystem Approach should be undertaken at the appropriate spatial and temporal scales.

Rationale: The Ecosystem Approach should be bounded by spatial and temporal scales that are appropriate to the objectives. Boundaries for management will be defined operationally by users, managers, scientists and indigenous and local peoples. Connectivity between areas should be promoted where necessary. The Ecosystem Approach is based upon the hierarchical nature of biological diversity characterized by the interaction and integration of genes, species and ecosystems.

Principle 8: Recognizing the varying temporal scales and lag-effects that characterize ecosystem processes, objectives for ecosystem management should be set for the long term.

Rationale: Ecosystem processes are characterized by varying temporal scales and lag-effects. This inherently conflicts with the tendency of humans to favour short-term gains and immediate benefits over future ones.

Principle 9: Management must recognize that change is inevitable.

Rationale: Ecosystems change, including species composition and population abundance. Hence, management should adapt to the changes. Apart from their inherent dynamics of change, ecosystems are beset by a complex of uncertainties and potential "surprises" in the human, biological and environmental realms. Traditional disturbance regimes may be important for ecosystem structure and functioning, and may need to be maintained or restored. The Ecosystem Approach must utilize adaptive management in order to anticipate and cater for such changes and events and should be cautious in making any decision that may foreclose options, but, at the same time, consider mitigating actions to cope with long-term changes such as climate change.

Principle 10: The Ecosystem Approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Rationale: Biological diversity is critical both for its intrinsic value and because of the key role it plays in providing the ecosystem and other services upon which we all ultimately depend. There has been a tendency in the past to manage components of biological diversity either as protected or non-protected. There is a need for a shift to more flexible situations, where conservation and use are seen in context and the full range of measures is applied in a continuum from strictly protected to human-made ecosystems.

Principle 11: The Ecosystem Approach should consider all forms of relevant information, including scientific and indigenous and local knowledge, innovations and practices.

Rationale: Information from all sources is critical to arriving at effective ecosystem management strategies. A much better knowledge of ecosystem functions and the impact of human use is desirable. All relevant information from any concerned area should be shared with all stakeholders and actors, taking into account, <u>inter alia</u>, any decision to be taken under Article 8(j) of the Convention on Biological Diversity. Assumptions behind proposed management decisions should be made explicit and checked against available knowledge and views of stakeholders.

Principle 12: The Ecosystem Approach should involve all relevant sectors of society and scientific disciplines.

Rationale: Most problems of biological-diversity management are complex, with many interactions, side-effects and implications, and therefore should involve the necessary expertise and stakeholders at the local, national, regional and international level, as appropriate.

Annex 2: Requirements of ecosystem-based management criteria (Arkema *et al.* 2006)

Criteria category	Criteria name	Criteria requirement	Citations*
General criteria	Sustainability	Emphasises maintenance of one or more aspects of the ecosystem	1,2,3,5,8,9,10,11,12,13,14,15,16,18
	Ecological health	Includes non-specific goals for ecosystem health or integrity	1,15
	Inclusion of humans in ecosystem	Recognizes that humans are elements in an ecosystem and their education and well-being are important components of management decisions	1,8,11
Specific ecological criteria	Complexity	Acknowledges that linkages between ecosystem components, such as food web structure, predator–prey relationships, habitat associations, and other biotic and abiotic interactions, should be incorporated into management decisions	2,3,5,6,7,8,9,10,11,12,13,16,17,18
	Temporal	Incorporates temporal scale and the dynamic character of ecosystems	2,5,6,7,8,9,10,13,16,17,18
	Spatial	Recognizes that ecosystem processes operate over a wide range of spatial scales	2,4,5,6,7,8,9,10,11,13,14,16,17,18
Specific human dimension criteria	Ecosystem goods and services	Recognizes that humans use and value natural resources, such as water quality, harvested products, tourism, and public recreation	2,5,9,10,12,14,15,16,17,18
	Economic	Integrates economic factors into the vision for the ecosystem	3,5,6,7,9,10,14, 16,18
	Stakeholder	Engages interested parties in the management planning processes to find common solutions	2,4,5,10,14,16,17,18
Specific management criteria	Science-based	Incorporates management decisions based on tested hypotheses	1,2,4,5,7,8,10,12,13,15,16,18
	Boundaries	Recognizes that management plans must be spatially defined	2,5,6,8,9,10,11,14,16,17,18
	Technological	Uses scientific and industrial technology as tools needed to monitor the ecosystem and evaluate management actions	5,6,16
	Adaptive	Continue to improve management actions through systematic evaluation	2,4,5,6,7,9,16,18
	Co-management	Promotes shared responsibility for management between multiple levels of government and stakeholders	5,6,7,10,14,18
	Precautionary approach	Manages conservatively when threats to the ecosystem are uncertain	2,5,16,18
	Interdisciplinary	Bases management on scientific understanding from several disciplines (ecology, economics, sociology)	1,5,6,9,10,13,14,15,18
	Monitoring	Tracks changes in biotic, abiotic, and human ecosystem components for management purposes	2,4,5,6,7,13,16,18

[1]Grumbine 1994; [2]Christensen *et al.* 1996; [3]Larkin 1996; [4]Stanford and Poole 1996; [5]Thomas and Huke 1996; [6]Brussard *et al.* 1998; [7]Haeuber 1998; [8]Lackey 1998; [9]Slocombe 1998; [10]Szaro *et al.* 1998; [11]NRC 1999; [12]Yaffee 1999; [13]Cury 2004; [14]Hilborn 2004; [15]Jennings 2004; [16]Pikitch *et al.* 2004; [17]Sissenwine and Murawski 2004; [18]McLeod *et al.* 2005)

Annex 3: Recommended operating principles for ecosystem-based MSP **(Gilliland and Laffoley 2008)**

i)   provide a strategic, integrated, and forward-looking framework for all uses of the sea that takes account of economic, social, and environmental objectives and so helps to achieve sustainable development;

ii)   apply the Ecosystem Approach to the regulation and management of development and activities in the marine environment by safeguarding ecological processes and ecosystem resilience, thus ensuring the environment retains the capacity to deliver ecosystem services and so support social and economic benefits;

iii)   provide a means to articulate policies and activities affecting the marine area and improve integration between those policies and activities to achieve multiple, shared objectives;

iv)   enable more efficient decision-making, offering benefits to marine managers and regulators, developers, users, and their advisors;

v)   provide a framework to identify, conserve, and where appropriate, recover important components of coastal and marine ecosystems, including species, habitats, physical features, natural processes, and natural heritage;

vi)   embrace all existing and future marine uses, developments and activities, together with natural resources, features, and processes;

vii)   extend to all marine waters within the relevant jurisdiction, e.g. EEZ or equivalent;

viii) contain a hierarchy of spatial scales that comprises, as a minimum, national and sub-national (e.g. regional) levels;

ix)   create a more efficient and rational use of marine space to provide a balanced view between competing uses, highlighting where one human activity might preclude another, helping avoid or minimise conflicts of interest, and, where possible, optimising the co-location of compatible activities;

x)   enable a better understanding of the cumulative effects of different types of human activities, both on marine ecosystems and each other;

xi)   promote participation of stakeholders by being transparent, open, and inclusive, and ensure involvement of all relevant stakeholders, including marine users and local communities;

xii)   facilitate co-ordination with and between other governance tools and measures, such as land use planning, watershed management, and marine protected areas, and thereby contribute to integrated coastal zone management;

xiii) be based on the best available information and evidence, including local knowledge. Where information is lacking, decisions should be guided by the principles on which MSP is based including the precautionary principle (see Section 4.2) until such time as relevant information becomes available;

xiv) provide a strategic and efficient (and thereby cost-effective) approach to information gathering, collation, management, and access, thus reducing the burden and duplication of effort between individual sectors and encouraging greater data availability than at present.

WWF (draft) Ecosystem Approach (hyperlinks)
Does the MSP plan and process…
1	Set out a long-term vision and a path to get there?
2	Support the designation and management of Marine Protected Areas?
3	Allocate development based on environmental criteria, as well as economic and social factors?
4	Show support for integrated coastal management?
5	Safeguard and enhance key ecosystem services?
6	Involve stakeholders and community knowledge/expertise from an early stage?
7	Have a strong strategic environmental assessment?
8	Have an adaptive approach to deal with new circumstances?
9	Embed the precautionary principle?
10	Show evidence of coordination with other plans?

WWF Ecosystem Approach Checklist

1	**Does the MSP plan and process set out a long-term vision and a path to get there?**			
EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS		YES	NO	PARTLY

The Plans look forward 20 years to 2033 and a specific vision is articulated, which is to be delivered by a suite of objectives (and associated policies) relating to sustainable economic development, job creation, renewable energy development, improving health and social well-being, conserving heritage assets and protected seascapes, healthy marine ecosystems, marine biodiversity protection and recovery, MPA support, climate change adaptation and mitigation, policy integration, and knowledge gathering. The Plan has regular review milestones (every three years) with a mechanism in place to measure progress against objectives and review future steps. The Plan's objectives will be applied in practice through public authority consenting decisions. However since the Plan policies are not themselves prioritised (as they are in all the other Plans), there is a lack of clarity on how the consenting process will prioritise between interests where there might be conflicts between policies.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS		YES	NO	PARTLY

The South Plan presents a vision towards 2036, which is to be achieved by meeting the Plan's 12 objectives and associated policies. The practical steps to delivering the Plan's objectives occur during the development and evaluation of development 'proposals', which will be assessed in terms of their contributions to the achievement of the South Plan vision. These steps are briefly described in the Plan but do not provide a comprehensive explanation of the follow-on process. As with the East Plan, there is no clear description of the prioritisation decisions that may need to be made where there may be proposals that support some policies but not others. The Plan has regular review milestones (every three years) and a mechanism in place to measure progress towards objectives and review future steps.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The Welsh Plan sets out a 20 year vision and objectives for Welsh seas. The vision is consistent with the shared UK vision elaborated in the UK's Marine Policy Statement and the Welsh Government's commitments to Sustainable Development and the Sustainable Management of Natural Resources, all of which aim to integrate the Ecosystem Approach into marine planning. The Plan's vision itself includes the Ecosystem Approach as a way to deliver clean, healthy, safe, productive and biologically diverse seas, and the Plan contains a specific description of how the Ecosystem Approach has been applied in the development of the Plan. The vision is supported by 13 strategic plan objectives that adhere explicitly to the High Level Marine Objectives within the UK Marine Policy Statement. These objectives also contain an explicit reference to delivering the plan 'in line with Ecosystem Approach principles' but also contain various elements of an ecosystem-based approach (e.g. precautionary principle, integrated decision making, accessible evidence base, present and future planning, consideration of cumulative effects). These objectives provide the framework for general policies, which are cross-cutting plan policies that apply to all sectors and activities, and sector-specific policies, which support the development and safeguarding of a particular activity. This two tiered policy approach provides a prioritisation framework. Unlike the other national level plans, the Welsh Plan provides 'spatial prescription on the application of policies where appropriate', creating a very evident pathway to achieve the vision. This is the first marine plan for Wales and represents the start of a process of shaping a future for Wales' seas through marine planning.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

The Irish Plan sets out the Government's Vision, high-level goals and the Key Actions it will take to realise significantly more of Ireland's marine potential. Ireland has not yet developed a Maritime Spatial Plan, which forms one of the 39 key actions within the Irish Plan. The Irish Plan vision is underpinned by three key goals: 1) a thriving marine economy; 2) a healthy marine ecosystem; and 3) increased engagement with the sea. In addition, two clear targets have been set for 2020: 1) Ocean wealth represents 2.4% of GDP by 2030; 2) EUR 6.4 billion turnover from ocean economy. The path to achieve the goals and targets is characterised by eight interlinked 'enablers', which describe the conditions necessary to meet the goals. The framework to implement the Irish Plan involves assigning overarching responsibility to the Marine Coordination Group and the Minister for Agriculture, Food and the Marine, who will supervise cross-government delivery, communication and implementation amongst the individual departments. 39 actions provide the steps to reach the enablers and the goals, and these actions have short, medium and long term timeframes associated with them.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Scottish Plan sets out a national level framework for the management of Scotland's marine environment. Scotland's vision for the marine and coastal environment is one that is clean, healthy, safe, and productive and managed to meet the long-term needs of nature and local people. The Plan adopts the UK High Level Marine Objectives as strategic objectives reflecting the Plan's commitment to the five guiding principles of sustainable development, with General Policies being organised under these principles and thereby outlining the priority objectives within the plan . In addition, each sector chapter contains a number of objectives specific to that marine sector. A review process is described, that involves an integrated process that

combines the requirements of both the UK and Scottish Marine Acts. It must also be noted that the Scottish Plan provides an overarching strategic policy framework for subsequent Regional Marine Plans, which are more detailed, spatially-explicit and prescriptive. Considered together, the Scottish Plan and Regional Marine Plan package form a very clear pathway towards delivery of the overall vision. However, the vision would definitely benefit from having a clear time-bound window for delivery.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

Shetland's vision for the marine and coastal environment is one that is clean, healthy, safe, and productive and managed to meet the long-term needs of nature and local people, following the Scottish Plan. The Plan outlines objectives that are relevant to social, environmental and economic aspects of the marine and coastal environment of Shetland. A clear focus within the Plan is to ensure sustainable development and climate mitigation and adaptation. Achievement of the objectives is expected to be through the planning mechanism, involving licensing and consenting of developments and activities, which must adhere to the policies within the Shetland Plan. The Shetland Plan clearly articulates its policies, and the chapter describing the planning mechanism is detailed and helpful in terms of explaining the procedure for proposals. There is no ultimate date chosen for the achievement of the vision, notably because the Shetland Plan is expected to be continually updated to reflect changes, but this would be beneficial in ensuring progress is timely. However, there is a review process, as specified under the Marine (Scotland) Act, every five years where progress towards the vision will be measured. As noted above, the Scottish Plan provides an overarching strategic policy framework for subsequent Regional Marine Plans, which are more detailed, spatially-explicit and prescriptive. Considered together, the Scottish Plan and Regional Marine Plan package form a very clear pathway towards delivery of the overall vision.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Sound of Mull Plan has a clear vision for a healthy and productive marine and coastal environment within the Sound of Mull, which will support and maintain a rich variety of habitats and species, a diverse and sustainable economy, and benefit the surrounding communities. However, because the Sound of Mull Plan is in itself a pilot project, compared with other formal and legally binding plans, the plan objectives are rather light on the thematic priorities (e.g. safeguarding natural and cultural heritage) and heavy on procedural approaches (e.g. providing regulatory guidance; encouraging stakeholder diversity; encouraging the delivery of best practice examples). Its pilot project status also means the Sound of Mull Plan does not have any formal review process beyond a single review of Plan performance within the lifetime of the project. However, the Plan contains a recommendation for review once the Scottish Plan has been prepared, and also includes several time-bound actions and recommendations for assisting with the delivery of Plan policies, as well as improving the current sectoral management and sectoral interactions.

2	Does the MSP plan and process support the designation and management of Marine Protected Areas?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

Achievement of the 2033 vision is dependent upon a 'well-managed and ecologically coherent network of MPAs' which refers to the ongoing process (begun in 2010) of identifying existing and new MPAs (Marine

Conservation Zones) to form a coherent network. A specific objective (no. 8) supports the objectives of MPAs and other designated sites around the coast, individually and as part of a network, and associated policies are in place to take account of any impacts on the MPA network (policy MPA1). Although the process to establish the MPA network is not yet completed, the objective and policy do not explicitly support the designation of MPAs, but contribute to their objectives once they have been designated. Ideally, the East Plan would have included policies that support the protection of areas that may yet be included within the MPA network, much as the South Plan has done, taking account of the fact that the MPA network process has been a lengthy process from identification to designation. However, the East Plan does contain a policy that should serve to protect wider species, habitats and ecosystems outside of MPAs, making the MPA policy sufficient.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

Objective 10 supports the completion, designation and delivery of the Marine Conservation Zone (MCZ) network, as follows: "To support the objectives of marine protected areas and the delivery of a well-managed ecologically coherent network by ensuring enhanced resilience and the capability to adapt to change". Policies under this objective ensure that proposals do not threaten the features for which the MCZs might be designated (as the coherence of the network has not yet been completed), and once the MCZs are in place, proposals must take account of any adverse impacts on the MCZ objectives and those of the network as a whole, including their ability to adapt to climate change.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The Welsh Government already makes a significant contribution towards the protection of biodiversity and the marine environment through the extensive MPA network that covers 75% of the coastline and 69% of the inshore plan area. The MPA network includes Special Areas of Conservation (SACs); Special Protected Areas (SPAs); Marine Conservation Zones (MCZs); Sites of Special Scientific Interest (SSSIs); and Ramsar sites. Policy Env_02: supports the delivery of a "well-designed, well-managed network of MPA". Furthermore, Policies SOC_05 to SOC_08 set out requirements to optimise benefits from the historic environment; designated landscapes; and seascape and character. Future proposals need to demonstrate how they: a) Avoid adverse impacts on individual MPAs and the coherence of the network as a whole; b) Have regard to the measures to manage MPAs; and c) Avoid adverse impacts on non-marine designated sites.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

In Ireland, MPAs (specifically SACs and SPAs) have been established under the EU Natura 2000 regulations and national regulations. A key action in the Irish Plan supports the continued designation and management of SACs and SPAs under the Natura 2000 framework. However, the coverage of MPAs in Irish waters does not currently meet the 10% stated under international obligations (e.g. CBD Aichi Target 11, or SDG 14), which would suggest that further work is necessary – possibly requiring actions beyond the Natura 2000 requirements - to identify a comprehensive network of MPAs. This action or aspiration is not included within the Irish Plan.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Marine Scotland Act (2010) and the Marine and Coastal Access Act 2009 both contain powers to designate MPAs. The Scottish Plan supports the designation and management of MPAs as a priority through a General Policy. Policy GEN 6 Historic environment describes the "development and use of the marine environment should protect and, where appropriate, enhance heritage assets in a manner proportionate to their significance". Designated sites should be protected in situ and any substantial loss or harm to designated sites should be exceptional and should only be permitted if this is necessary to deliver social, economic or environmental benefits that outweigh the harm or loss.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

The Plan outlines the spatial distribution of international and national nature conservation designations. These include SPAs, SACs, Ramsar sites, SSSIs and MPAs, amongst local and other nature conservation designations. Together these help to form an ecologically coherent network as per international agreements including the OSPAR Convention and the Convention on Biological Diversity. Policies MSP HER 1, 2, 3 and 4 all refer to any developments that might affect a site designated or proposed to be designated and require competent authorities to carry out a Habitat Regulations Appraisal. There is an extensive list of information documents which should be consulted by new marine-related developments. The Plan also makes reference to a draft Nature Conservation MPA Management Handbook that sets out clear objectives and management measures for the MPA network.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

Two general policies have been developed to provide an over-arching policy framework for the Plan, one of which (Policy SOM G2) provides a comprehensive list of features of importance which need to be safeguarded through the due consideration by all development and activity interests in the Sound of Mull. Proposals must demonstrate that they 'will not have any significant adverse effects' on the features of importance. The list of features includes designated sites (e.g. SPAs, SACs, SSSIs and Areas of Great Landscape Value). The Plan presents spatial information on sites designated under European Law or in national or local Biodiversity Action Plans. There is no specific mention of safeguarding any site that may be proposed for designation as MPAs, (nor Nature Conservation MPAs which were designated in 2014, subsequent to the Sound of Mull Plan), but as sites, habitats and species of significance are listed, these features are most likely to be those that would have formed the basis of any proposal for MPA designation.

3	**Does the MSP plan and process allocate development based on environmental criteria, as well as economic and social factors?**
	Clarification questions added by authors to guide the analysis:
	• If/where spatial policies for development occur (e.g. tidal energy), do these policies demonstrate that environmental, economic and social factors are considered in balanced way?
	• Do non spatial policies encourage development that is in line with ecosystem-based management - i.e. considers environmental as well as economic and social factors?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The East Plan does not 'allocate development' *per se*, because 'gaps in evidence base mean that these first marine plans do not include specific spatial or resource allocations for some policies'. In practice, the policies in the East Plan that do have spatial or resource allocations are very limited in number.

Consequently, the East Plan is intended to inform and guide regulation, and the practical application of the Plan's objectives are achieved through the decision making process of public authorities when they evaluate 'development proposals' and grant (or otherwise) consent. Proposals will need to be aligned with the Plan, which contains a clear balance of environmental, social and economic objectives and associated policies. However, the Plan contains very limited details of this public authority decision-making process, and while it is made clear that all policies should be considered together, there is no description of any prioritisation process that may be required where there might be conflicts between policies. In the case that two mutually incompatible activities are suggested for the same area, without a full understanding of the process of prioritisation between activities, it is not possible to ascertain whether environmental, economic and social factors would be fairly balanced in the subsequent decision making process.

There are some spatially explicit sectoral policies in the Plan (e.g. tidal energy, offshore wind energy, aggregate dredging), some of which refer to highly localised parts of the Plan area and are constructed to give maximum priority to the activity identified. However, given that data gaps were the reason for avoiding spatially explicit policies, the data used for some of these policies do not seem to be as robust as might be expected. For example, in the tidal energy policy (TIDE1), the data used to identify the resource areas are based upon theoretical estimates of tidal energy resources, and are therefore stated to contain a level of uncertainty and do not take into account other sectoral activities (East Inshore and East Offshore Marine Plans Annex 1: Supporting information on the production of maps).

The general absence of spatially explicit policies, and therefore spatial allocation, makes the East Plan more akin to a strategic guide to development than a marine spatial plan. Whilst the Plan contains a good balance between environmental, economic and social policies that will definitely assist in improving the sustainability of future developments in the East Plan area, the absence of any clear prioritisation across these policies makes it impossible to assess the extent to which public authority decisions will incorporate a similar balance of contributing factors at proposal evaluation stage.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The South Plan describes policies that are 'presented within an economic, social and environmental framework'. The Plan sets out policies that will guide proposals for development. Proposals will need to be aligned with the policies, which consider environmental, social and economic elements, e.g. Objective 1 supports co-location to avoid conflicts and achieve sustainable economic development; under Objective 4, policies support the growth of marine related skills; Objective 5 supports the avoidance and mitigation of displacement activities that would significantly impact upon social benefits; Objective 10 supports MPAs; Objective 11 supports GES; and Objective 12 supports the maintenance of ecosystem goods and services. The wording of individual policies does support the need for sustainable development. However, in the case that there could be some conflicts between proposals in a given area, or conflicts between policies for desired activity development, there is no obvious description of how policies would be prioritised by public authorities in the decision making process. Therefore, it is not possible to say if the balance of environmental, economic and social objectives will be similarly reflected in long-term implementation.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The overarching objective of this Plan is to support the sustainable development of the Welsh marine area. In order to allocate space and focus future use, this plan identifies Resource Areas (RAs)– broad areas

describing a particular resource used or potentially used by sectors – and Strategic Resource Areas (SRAs) within RAs, which identify areas with the greatest potential to support future growth for specific sectors. RAs and SRAs have been 'identified by a process of evidence collection and interpretation' as well as 'mapping and analysis which has taken account of other current and potential future uses', although it is not clear to what extent this evidence base or consideration includes social or environmental interests or uses. The SRAs appear to be identified on the basis of primarily economic considerations (where resource use feasibility and constraints are better understood, and/or where there is an economic market, potential for new opportunities and strategic sectoral importance). The SRAs are afforded a degree of policy safeguarding to encourage strategic decisions on the future use of a resource. The plan-level SRAs cannot fully reflect site specific, detailed considerations of opportunity and constraint, for example, aspects of designated conservation sites. The Plan notes that "such considerations must be part of project level assessments where appropriate, where the specific project details (location, timing, scale) can be adequately taken into account". The Plan itself does not describe the project level assessments used to allocate development and therefore it is not possible to ascertain whether environmental, economic and social factors would be fairly balanced in the decision-making process.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

The Irish Plan is not yet at a stage where development is spatially rationalised/allocated. However, the Irish Plan focuses on identifying the thematic areas that have the potential for supporting further growth and development, which clearly highlights that economic and social factors are major considerations. In this context, it would be important for these priority thematic areas for growth to be selected because they are agreed to have no or minimal negative impact on the environment. While the process for selecting priority growth areas has not been made clear and selection criteria do not appear to be available, environmental considerations are apparent (e.g. in the briefing doc on sectoral profiles prepared for the public consultation). For example, sea fisheries are highlighted as having significant potential for growth. Opportunities for growth highlight the need to 'rebuild and manage fish stocks'. Since Irish fisheries are managed under the Common Fisheries Policy (CPF), reforms to the CFP (e.g. greater application of the ecosystem approach) are noted as likely to have a significant impact on Irish fisheries. The Irish policy for the development of fisheries (Food Harvest 2020) explicitly includes environmental principles (e.g. prioritising environmental protection, embedding sustainability down the supply chain, conserving biodiversity). As the Irish Plan progresses towards spatial planning and then localised allocation of development, it will be important to assess the extent to which actions taken are ecosystem-based.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The spatial allocation of areas for development are not explicitly presented in the Scottish Plan and the Plan is designed to guide decision makers to achieve sustainable development and use as a general principle of the Plan. The Plan policies take a nested approach, where several general policies lay out the priority issues and sectoral policies are developed to outline specific conditions required to ensure sustainability of the activity in question. These general policies clearly support economic growth, but such growth must be sustainable, and is encouraged to deliver Scottish community benefits and social benefits. There are some spatially explicit sectoral policies in the Plan (e.g. RENEWABLES 1) which refer to proposals for commercial-scale offshore wind and marine renewable energy development to be sites in the Plan Option areas identified

through the Sectoral Marine Plan process. These Plan Options are considered the preferred strategic locations for sustainable development of offshore wind and marine renewables. RENEWABLES 2 refers to sites with agreements for lease for wave and tidal energy development in the Pentland Firth Strategic Area. However, the Renewables is the only spatially explicit policy in the Plan. The Plan could thus give more spatial guidance where possible in relation to aquaculture development or shipping routes etc.

SHETLAND ISLANDS MARINE SPATIAL PLAN	**(YES)**	NO	PARTLY

The Shetland Plan aligns with objectives set out in the Local Development Plan's policy for Coastal Development, which clearly highlights that the avoidance of ecological and environmental adverse effects will be made a priority in the allocation of development. All development or activity proposals will be assessed against the Shetland Plan which sets out a spatial strategy and policy framework to guide marine developments in the coastal waters around Shetland. The Plan outlines three objectives, specifically focused on social, environmental and economic aspects. It promotes sustainable marine development, clearly defining 'sustainability' as 'dynamic economic activity supporting a prosperous community whilst maintaining and enhancing marine wildlife, habitats and ecosystems' but emphasizes that 'sustainable use should not lead to loss of biodiversity or ecological balance, or reduce the availability of natural resources for future generations'. Policies are grouped into three thematic clusters: 'Clean and Safe'; 'Healthy and Diverse' and 'Productive' and the Shetland Plan very clearly states that development proposals must comply with the legal requirements for all policies in the first two clusters before considering their relevant development sector within the 'Productive' policy cluster. As such, there appears to be an equitable balance struck between social, environmental and economic factors that will influence the allocation of development.

SOUND OF MULL MARINE SPATIAL PLAN	**(YES)**	NO	PARTLY

The Sound of Mull Plan aims to complement and support the local authority development plans for the adjacent terrestrial areas and the plan policies are designed to inform and guide developments and activities. However, development is not allocated specifically. The Plan policies take a nested approach, with two 'all-embracing' general proposals that aim to meet the needs of local communities and to safeguard 'Local Features of Importance'. These general policies must be given due consideration by all proposed developments and activities, and this nested policy approach therefore encourages a good balance between social, environmental and economic factors in decision making.

4	**Does the MSP plan and process show support for integrated coastal management?**			

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	**(PARTLY)**

The East Plan implicitly shows support for the overarching aims of integrated coastal management by stating that 'The boundary between land and sea is the focus of many activities and marine planning will help facilitate an integrated and holistic approach to the planning and management of coastal areas; contributing to the economic regeneration and development of local communities'. As with all UK Plans, the East Plan responds directly to the requirements and framework laid out in the Marine Policy Statement and the EC Maritime Spatial Planning Directive, which refer to the EC Recommendations for Integrated Coastal Zone Management (ICZM). Local Development Plans and Neighbourhood Plans are the relevant planning tools used in coastal/land planning. Production of the East Plan has paid specific attention to assessing these

plans in order to support integrated coastal planning.   In general, the East Plan certainly seems to adhere to a large number of the other ICZM principles (e.g. a broad overall perspective that integrates natural systems with human activities; a long-term perspective; involvement of stakeholders; coordination across relevant authorities; adaptive management; using a combination of instruments to ensure policy coherence). However, there is considerable uncertainty in many of the policies, and the Plan does not specify where or how development will actually be allocated, making it challenging to see how some key ICZM principles (e.g. respecting the carrying capacity of ecosystems) might be comprehensively followed without further assessment at the point of development proposal evaluation.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The South Plan states that it is in line with the principles of Integrated Coastal Zone Management, addressing the importance of land-sea interactions. This statement primarily refers to the fact that both the Marine Policy Statement and the Maritime Spatial Planning Directive – to which the East and all UK Plans respond directly – require that MSP builds upon the 2002 EC Recommendation on Integrated Coastal Zone Management, which contains a set of eight ICZM principles. Several of these principles are closely aligned with principles of the Ecosystem Approach (e.g. integration of natural systems and human activities; long term approach that includes the precautionary principle; adaptive management; participatory involvement of all relevant stakeholders and authorities). However, there is no further description of these principles, or assessment of their fulfilment within the South Plan. Just as with the Ecosystem Approach principles, without detailed assessment, it is impossible to confirm the level of support (and for which specific principles) the Plan shows for ICZM. Since the South Plan is very similar to the East Plan in process terms, it is likely that the same conclusions could be drawn (see East Plan response).

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The UK Marine Policy Statement includes a requirement to apply integrated coastal zone management (ICZM), recognising the need to join up across land and sea to develop complementary proposals and plans at the coast. The Welsh Plan emphasizes that marine planning is not the only mechanism to deliver ICZM; all relevant planning, management and regulatory regimes should apply the principles. The Plan includes policies to help ensure such integration, including between neighbouring marine planning authorities and sets out how ICZM should apply through the wider Welsh marine planning process. Policies Soc_7 – Soc_9 refer to the use of the Landscape Character Assessment methodology, a strategy in place to aid planning, integrated coastal management and development management. This strategy in combination with visual resource mapping should be considered in any proposal. As part of land-use planning, Planning Policy Wales advises that local planning authorities characterise their coastline and develop or apply specific policies which reflect the characteristics of their coastlines. Policy Gov_2 sets out key documents for consideration when developing proposals for individual development. Authorisation decisions should also take account of other relevant statutory and non-statutory plans, projects, programmes, and national policies and guidance prepared by public authorities. Examples include, but are not restricted to: development plans in the land-use planning system; Shoreline Management Plans; River Basin Management Plans and Flood Risk Management Plans.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

While the Irish Plan does not explicitly refer to the process of integrated coastal zone management or integrated coastal management, the principles of ICZM (stakeholder participation in decision making; balancing of environmental, social and economic objectives; integration across sectoral policies and relevant authorities; consideration of terrestrial and marine elements together) are inherently built into the Irish Plan itself. However, there are areas where this support could have been strengthened. Whereas the action (no 1) that specifies sectoral policy development is encouraged 'through effective coordination of actions across a range of government departments and agencies', the action (no 34) that specifies promotion of coastal infrastructure development does not specify an integrated approach across government departments to ensure the necessary balance between environment, social and economic considerations. However, examination of the Enablers Task Force for Marine Spatial Planning identifies that any MSP should conform to relevant EU policies, which includes the recommendation within the EU MSP Directive (as then draft) to coordinate between MSP and ICZM.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

Integrated Coastal Zone Management is considered through both marine and terrestrial planning processes. A Planning Circular has been developed that elaborates the relationship between the statutory land use planning system and marine planning and licensing. It includes guidance on Integrated Coastal Zone Management. The Scottish Plan includes a general policy (GEN 16) that encourages the alignment of marine planning with other planning, regulation and management that affects the marine area, and urges regional marine plans to consider locally relevant policies such as integrated coastal zone management plans.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

While there no explicit mention of Integrated Coastal Zone Management, coastal management is inherently built into the Shetland Plan. As the jurisdictional limits for Local Development Plan (LDP) policies for land-based planning intentionally overlap with the marine planning policies over the coastal zone, this overlap ensures that marine and land planning will address the whole of the marine and terrestrial environment and not be restricted by an artificial boundary at the coast.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The framework of policies outlined in the Sound of Mull Plan promote integrated management of the marine and coastal environment. Integrated coastal plans have already been prepared at the local level for specific parts of the Highland and Argyll & Bute. However, the Plan is a pilot project designed to test new management approaches and is one of the first cross-border projects, the Sound of Mull Plan includes the expectation that it will provide examples of good practice for Integrated Coastal Zone Management.

5	Does the MSP plan and process safeguard and enhance key ecosystem services?			

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

Objective 6 of the East Plan is to have a healthy, resilient and adaptable marine ecosystem, which is recognised as being able to 'sustain the benefits that it provides to people' and 'includes the need to prevent activities in the marine area from damaging the functioning of the marine ecosystem and the benefits it

provides.' Objective 7 supports elements of the ecosystem beyond specific biodiversity interests, although these aspects are not clearly defined or definitively included: 'these interests might include [„,] benefits to people from the provision of ecosystem services'. Some policies clearly support the safeguarding of key ecosystem services (e.g. Policy CC1 supports the maintenance and enhancement of habitats such as saltmarsh that provide coastal protection; FISH2 supports the avoidance of adverse impacts on spawning and nursery areas and any associated habitat; SOC3 supports the protection of the terrestrial and marine character of an area given the importance of these aspects for health and well-being). Beyond the ecosystem services stated in the Plan, there does not appear to have been a comprehensive assessment of the ecosystem service provision in the East area, nor do UK National Ecosystem Assessment findings appear to be taken into consideration as they are in the Scottish plan. It is possible that incorporating an assessment of this kind could highlight specific services that are of particular value to the economy, suggest particular safeguarding efforts, or identify hotspots for multiple service delivery.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The South Plan makes explicit references to the importance and value of ecosystem goods and services, specifically the need to consider the provision of climate change mitigation measures though natural flood defences or carbon sequestration, the contribution of heritage assets to the cultural value of the South Plan area, the need to protect the visual integrity of the 'seascape' in order to maintain its beauty for tourism and recreation, the need to ensure protection for marine biodiversity and habitats, the need to support sustainable fisheries for coastal livelihoods, culture and food security. There is no comprehensive assessment of ecosystem services in the plan, nor are the UK National Ecosystem Assessment findings taken into account in the plan. However, key ecosystem goods and services are explicitly identified and included in the plan.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

Objective 10 of the Welsh Plan is to "maintain and enhance the resilience of marine ecosystems and the benefits they provide in order to meet the needs of present and future generations." The Environment (Wales) Act 2016 puts in place a legislative framework to promote the Sustainable Management of Natural Resources (SMNR). It applies to all devolved policy in this Plan and is defined as "using natural resources in a way and at a rate so as to maintain and enhance the resilience of ecosystems and the benefits they provide and, in so doing, meet the needs of present generations of people without compromising the ability of future generations to meet their needs". The Welsh Plan clearly recognizes the contribution of the marine and coastal ecosystem services and has developed specific sectoral policies to support the marine economy in providing goods and services to society including goods such as food (FIS_01 supports the sustainable development of the fishing industry through marine planning), fuel (O&G_01) and aggregates (AGG_01). The marine ecosystem also provides services that provide non-material benefits and are less obvious. The Welsh Plan general policies do, however, support such less obvious services, such as cultural services (e.g. SOC_02 supports the well-being of coastal communities) and regulating services including coastal protection (e.g. ENV_02 supports maintenance and enhancement of vulnerable coastal habitats such as saltmarshes, sand dunes and foreshores that provide coastal protection) are supported by the general polices.

The sector-specific objectives explicitly address the need to safeguard key ecosystem services through the sector-specific policies. For example, Policies FISH_02 & 03 help manage the potential adverse impacts of

other sector activities on existing activities of the fisheries sector and areas of ecological importance that support fisheries. Policies T&R_01 ensure that appropriate measures have been taken to avoid, minimise or mitigate adverse effects on existing and known planned tourism and recreation activities.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

There is explicit recognition in the Irish Plan of the goods and services (both monetary and non-monetary) provided by the marine environment, including food production, provision of habitats supporting biodiversity and food production, regulation of climate, absorption of carbon dioxide and provision/regulation of oxygen. However, there is apparently no comprehensive assessment of ecosystem services included within the Irish Plan. Cultural services (e.g. recreational aesthetic, therapeutic, cultural) appear to be somewhat underrepresented, although this is not too concerning given that the Irish Plan is a high-level document and not the MSP itself. In addition, one of the key actions in the Irish Plan is 'Promote further research into economic values of marine biodiversity and ecosystem services to ensure best practice planning and management of the ocean resource', which would fill this existing gap.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Scottish Plan refers to ecosystem services throughout. General Policy 5 (Climate Change) is clear that safeguarding ecosystem services such as natural coastal protection and natural carbon sinks (e.g. seagrass beds, kelp and saltmarsh) should be considered during planning. It stipulates that in some cases, "compensatory habitat creation or enhancement may be possible and should be considered". The policy also requires that consideration is given towards appropriate proactive opportunities for enhancing natural carbon sinks. GEN 8 Coastal process and flooding is clear about the important role marine ecosystems play in offering flood protection and improving the resilience of ecosystems so that they can deliver benefits for biodiversity and support ecosystem services, and thus has put in place various safeguards that minimize or mitigate potential impact on key ecosystem services such as fisheries and on key coastal heritage sites.

A National Ecosystem Assessment (NEA) has been conducted for the planning area in 2011. The Plan highlights key NEA findings, which are that provisioning services (e.g. fin fisheries, shellfisheries, wave and tidal energy, tourism revenue) have a particularly high economic value but exploitation has significantly reduced the capacity of ecosystems to support sustained use, and that regulating services (climate regulation through carbon sinks and surrounding seas) are of significant importance to the economy . The Plan subsequently considers these key ecosystem services, such as coastal protection, natural carbon sinks, fisheries, key habitats for biodiversity, and provides details of specific marine policies to safeguard them, including mitigation measures where harm to habitats providing services cannot be avoided.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

The Shetland Plan vision identifies the need to have a marine and coastal environment that is 'managed to meet the long-term needs of nature and the local people'. Although the vision and objectives of the Plan do not specifically mention ecosystem services, specific policies recognize the importance of, for example, fisheries to local communities (MSP FISH1: Safeguarding Fishing Opportunities), the importance of supporting natural forms of (i.e. 'soft') coastal defences (e.g. MSP CD2: Coast Defence Construction) in order to mitigate climate change hazards, and the need to safeguard scenic areas for recreational and aesthetic value. Unusually, ecosystem services are explicitly considered within the concept of 'geodiversity', which is

defined as *'the variety of rocks, fossils, minerals, natural processes, landforms and soils that underlie and determine the character of our landscape and environment'*, and is noted as contributing to a number of provisioning (fresh water, mineral resources), regulating (carbon sequestration, climate regulation, erosion regulation), supporting (soil formation, habitat creation) and cultural (aesthetic values, recreational resources) ecosystem services. Although no systematic assessment of ecosystem services has been undertaken (the Scottish National Ecosystem Assessment findings are not mentioned in the Plan), and the Plan does not address ecosystem services in a particularly consistent way, the heavy emphasis of the Shetland Plan on facilitating sustainable use of the marine and coastal environment would suggest that ecosystem services are inherently well captured.

	YES	NO	PARTLY
SOUND OF MULL MARINE SPATIAL PLAN			(PARTLY)

The term ecosystem services is not explicitly mentioned, and while the most obviously important services are included in the Plan's policies, for example IF1 encourages sustainable inshore fishing, RT1 supports the maintenance and increase in tourism attractions (e.g. safeguarding wreck dive sites; supporting proposals that present opportunities for recreation), there is a surprising lack of policies to safeguard the necessary services. For example, there are no policies to protect spawning and nursery grounds for fish populations, no mention of the need for natural coastal protection mechanisms and no consideration for climate regulation processes. Water quality issues are not covered by any policy but are included in the Plan as 'soft' or 'hard' constraints on other interests, which need to be considered. It is possible that the small scale of the Plan, and the specific biophysical conditions of the Sound of Mull specifically, result in the reduced need for some of the broader ecosystem services to be considered (e.g. coastal protection may not be an issue in the Sound of Mull). Nevertheless, the Plan would certainly have benefitted from the consideration of ecosystem services in a more comprehensive way in order to increase the likelihood of successful sectoral policies.

6	**Does the MSP plan and process involve stakeholders and community knowledge/expertise from an early stage?**			
EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS		(YES)	NO	PARTLY

The East Plan vision and objectives were developed through 'informal consultation with stakeholders, including individual focus and steering group meetings.' The SA involved consultation with stakeholders specifically through the development of alternatives ('alternative approaches were also (concurrently) discussed with an SA Advisory Group comprising representatives of Natural England, Wildlife and Countryside Link, Joint Nature Conservation Committee, EH, the EA, industry umbrella bodies and representatives of key local authorities.)

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	(YES)	NO	PARTLY

In the South Plan, stakeholder engagement commenced at an early stage through a series of workshops in January 2013 to consult on the Statement of Public Participation, in October 2013 to gather evidence, and in July 2014 to refine the vision and objectives. Throughout the development of the Plan, stakeholder engagement is outlined and formal, legally required consultations are also involved.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The Plan encourages and promotes collaborative working. The Plan has been developed through various engagement and consultative processes. The Welsh Government sees engagement as a crucial part of the Plan's development. A Statement of Public Participation for the Welsh Plan was published in January 2017. The purpose of the publication is to provide an up-to-date timetable and sets out how interested parties can be involved in the marine planning process.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

In 2011, the Irish Government launched 'Our Ocean Wealth: Seeking Your Views: New Ways; New Approaches; New Thinking' in order to canvas public opinion. Briefing documents on ocean wealth and sectoral profiles were provided and an online survey was created. 192 submissions were received from a wide range of stakeholders, and opinions fed into 'Harnessing Our Ocean Wealth' Integrated Marine Plan (The Irish Plan). The Irish Plan states that the public consultation revealed that a more transparent and inclusive form of decision making was called for, and that the Irish Plan will take this forward. Feedback from the consultation was included within the Plan, demonstrating the high level of transparency. For example, public views commented on the vision for the Irish Plan and the key actions that will deliver the enablers, which were subsequently revised following the consultation. Consultation also involved comment on a number of options for governance (e.g. new department, combined departments). Moving forward into the planning process, one of the commitments made in the Irish Plan is 'Ongoing consultation and participation in current and future policy and plans (international, national, regional and local)'.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Scottish Plan emphasises the involvement of stakeholders and community knowledge from an early stage in planning. GEN 18 Engagement provides guidance on participation and public engagement. The Plan should reflect the views of a range of stakeholders including those involved in marine use or are potential users, planners and decision makers, statutory consultees, communities, representative organizations, public bodies, government and the general public should all contribute where necessary.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

Stakeholder and local community engagement has been part of the process since the onset of the Shetland Plan in 2006. Feedback received from on-going consultations has added significant value to the marine planning process in Shetland.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Sound of Mull Plan was developed through various working and liaison groups. The wider community fed into the MSP development process and various community meetings were held. Collection of relevant information also involved an extensive process of engaging with a broad range of stakeholders.

7	**Does the MSP plan and process have a strong strategic environmental assessment?**

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The East of England Strategic Assessment (SA) covers all the SEA Directive requirements and follows the framework outlined in the Defra SEA guidance. The SA is well integrated into the East Plan, and several iterations have been undertaken to appraise the draft Plan and provide recommendations. However, several SEA requirements are particularly challenging for the East Plan process because it is not spatially explicit. For example, the generation of options was severely constrained to looking at only wind and aggregate policy options as these were the only spatially explicit policies that could be included. While the analysis itself was very thorough, the creation and assessment of 'reasonable' options was not particularly representative of the wider interests and activities in the East Plan area. Similarly, the lack of spatially-explicit policies produced considerable uncertainty around where activities would be occurring in the Plan area, which created significant challenges for predicting potential impacts of the Plan and options, as well as considering cumulative effects. The resulting conclusions appear uncertain themselves, being characterised by neutral effect or moderately positive in the majority of cases. Within the constraints of the Plan, strategic level mitigation measures are offered, several of which are useful (e.g. highlighting that the plan's policies have no obvious prioritisation, which leads to uncertainty in predicting impacts and effects), but such recommendations appear to be ignored by plan makers, putting into question the validity of the SEA process. Despite growing recognition of their importance, the SEA does not mention ecosystem services or consider the Plans' impacts upon them in a systematic way. While there has been considerable engagement and consultation with stakeholders, it was challenging to find reports of their feedback, and therefore to assess if public/stakeholder opinion had been taken into account.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The Sustainability Appraisal contains all the SEA Directive requirements. The SA is integrated carefully into the South Plan process and draft plans are appraised by interim SA's and recommendations provided. GES is fully embedded within the process. However, as is the case with the East Plan, the lack of spatially-explicit policies or actions in the South Plan make it extremely challenging to assess impacts of the Plan or of options, even though the options are sensibly and carefully developed. The resulting conclusions are also very moderate (neutral or mildly positive) suggesting that at this strategic level, it is too difficult to predict the location of activities and therefore their likely impacts, particularly cumulative effects. In the South Plan, there is some evidence that neutral effect assessments may also be made on the assumption that mitigation measures will definitively counteract any negative effects of activities. However, given the lack of prioritisation across policies, this may well not be the case. The monitoring framework of the SEA is very comprehensive and stakeholder engagement and consultation has clearly featured strongly in the SEA, however, it was challenging to find stakeholder feedback and to see how such feedback had been taken into account.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The Sustainability Appraisal of the Draft Welsh Plan duly considers a range of SEA topics under the Directive. The SA considers socio-economic and environmental effects in the same way as are required to be assessed by the Strategic Environmental Assessment. There is evidence to show how the Sustainability Appraisal has been undertaken iteratively alongside the development of the Draft Welsh Plan in order to enhance its

sustainability performance. Based on the appraisal of the Draft Welsh Plan, amendments to policy wording and/or supporting text have been suggested in order to further enhance the performance of the Draft Welsh Plan against the SA criteria.

An important part of the SA process is the assessment of reasonable alternatives. Assessments were undertaken using a series of questions to identify if options for the Welsh waters were necessary and how such options should be done and the extent to which they should specific locations for future development and use of the marine plan area. The appraisal identified one reasonable alternative to the Draft Welsh Plan (as proposed), namely a 'High level strategic Draft Welsh Plan that would be taken forward. A high level strategic marine plan would provide a lower level of spatial specificity relative to the Draft Welsh Plan as proposed. This would be similar to the marine plan that has been adopted by Scottish Plan (although Scotland has a two tier approach to marine planning unlike Wales).

The presence of Strategic Resource Areas and related spatially-explicit policies provides greater certainty with respect to future development/activity in the marine area helping to support economic development and provide positive protection for the environment (for example, by excluding sensitive features of designated nature conservation sites from SRAs). This allows for predicting potential impacts of the Plan and options, as well as considering cumulative effects.

According to the SA, the general cross-cutting policies of the Draft Welsh Plan provide a strong framework to manage impacts associated with the development and use of the marine area and the associated provision of services and benefits and a precautionary, risk-based approach is embedded across all the general policies.

The Plan identifies a number of potential indicators that could be used for monitoring the sustainability effects of the Welsh Plan implementation. Furthermore, The Welsh Government will develop a monitoring plan for the Welsh Plan which can be used to monitor the effects of the Plan's implementation against the SA criteria. The SA Report is being published alongside the Draft Welsh Plan for formal consultation. Feedback received from consultees will be documented and considered in reviewing the proposals for the Draft Welsh Plan. A Post Adoption Statement will summarise how the SA and the consultation responses have been taken into account and how socio-economic and environmental considerations have been integrated into the final decisions regarding the Welsh Plan.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

The Irish Plan is a high level document that identifies the need for an MSP framework and a robust maritime spatial plan, but this stage has not yet been reached. However, in the Enablers Task Force Report on Marine Spatial Planning, one of the benefits of MSP is recognised to be decreased risk from legal challenges due to robust environmental assessment of marine spatial plans. One of the Task Force recommendations is therefore: 'The [MSP] process should integrate robust environmental assessment of draft plans'.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

Scotland has conducted a detailed Sustainability Appraisal (SA) of the Scottish Plan under the requirement of the Marine and Coastal Access Act 2009 and contains all the SEA Directive requirements. The Scottish Plan is a high level strategic document in which strategic priorities have been identified. The Scottish Plan area overlaps with terrestrial planning boundaries to ensure that the marine terrestrial planning together will address the whole of the marine and terrestrial environment. The SA contains specific objectives, reasonable alternatives and has involved the evaluation of individual and cumulative effects. An addendum to the SA has

been produced to appraise the revisions to the Scottish Plan as a result of the original SA. The Plan preparation process, and the integration with the SA, are detailed in the SA Post Adoption Statement (March 2016).

The SA has undertaken a comprehensive assessment of reasonable alternatives and considered the implications of each, and these include a 'do nothing' option, a second option that considered whether the Scottish Plan should have been a high level spatial plan or a high level strategic plan, and a third option that considered alternative priorities for the Scottish Plan (e.g. economic focus, environmental focus or sustainable development focus). The preferred option did not take a spatial approach because it did not suggest particular benefits across the SA areas and considered the need for a high degree of information gathering and analysis was more appropriate within the regional marine planning process. Instead, the Scottish Plan has opted for "a high level plan setting out the broad policy direction for the marine environment", which was assessed as having more positive effects across the range of environment, economic and community interests.

Given the fact that the focus of the Scottish Plan is on policy, rather than on spatially allocating development (which will occur during subsequent proposal evaluations), cumulative effects have been assessed at the strategic level, meaning the combined effects of the Scottish Plan and Scottish Planning Policy. The SA states that the cumulative effect of two high-level, policy-based documents that set out a framework of social, economic and environmental policies is that economic growth will be supported and the potential adverse effect of development on coastal and marine environment and communities will be reduced.

The monitoring plan has not been clearly articulated in the SA, but is addressed in the Post-Adoption Statement, noting this is dealt within the specific monitoring and reporting document (March 2016). Finally, the consultation on the Scottish Plan and the accompanying SA Report encouraged stakeholder contributions.

While the SA identifies the likely socio-economic impacts of plans and policies, and alternatives to them, the SA could have assessed the impacts of the plan's activities on key ecosystem services in more detail.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

Post-Adoption Statement provides a summary of the comments received from the Consultative Authorities and summarizes how those comments have been taken into account in the finalized Shetland Plan. The SEA has been an iterative assessment process and has undergone significant consultation with the local Advisory Group. The Plan now includes new and improved policies on certain key areas e.g. noise, marine litter etc. In parallel with the Plan development, a review of all marine data was carried out and has resulted in a comprehensive database of spatial marine information.

The SEA focussed on assessing the main objectives and policies set out in the Shetland Plan and consequently, the Plan has been subject to rigorous environmental assessment taking into account the characteristics of the impacts i.e. type and duration of impact and considers alternatives during its completion, leading to the adopted Plan. As with the Sound of Mull Plan, the Shetland Plan does not include any specific strategic actions or measurable activities and the focus of the SEA is to assess the main objectives and policies in the Plan. There is a comprehensive level of data that has been collected and much of the information is now spatially explicit. The assessment of cumulative impacts is a key consideration for any development activity due to take place. The SEA is clear that "in the event that a development would result in a significant adverse effect, either individually or cumulatively on the marine environment, it will not be permitted". The strength of this requirement is set out in Policy MSP DEV1. A monitoring plan has been set up to monitor the significant environmental effects of the implementation of the Plan.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Sound of Mull Strategic Environmental Assessment contains all the SEA Directive requirements. The elements of the Plan were assessed against the SEA objectives, and a series of associated questions to in order to determine the environmental effects of the Plan. The Plan has been assessed, in general, as having no significant negative impacts. According to the SEA, the Plan shows a depth of knowledge of the environment and provides guidance on how interactions should be dealt with and taken forward. However, the impacts of certain activities on certain species and their associated life-history stages has been assessed is an area requiring further research. There are specific activities such as Inshore Fishing that provide inconsistent and conflicting constraints and as such the SEA recommends that these sectors should be revised to take into account such competitive or incompatible constraints.

A Post Adoption Statement was produced and the environmental considerations from the SEA Report were incorporated into the Plan.

The Sound of Mull was chosen as a pilot project area. The area is home to coastal and island communities with a diverse range of marine activities and resource users. Therefore, the Plan itself provides a case study for marine planning at a local scale and the integration with ICZM.

According to the SEA the information contained in the Plan is available through individual sectors, with detailed information of active sectors especially information at the spatial context. A comprehensive analysis of the cumulative effects of sectoral policies are presented in the SEA. In some cases the cumulative effects of the Plan on population and human health have been assessed as positive, driven by excellent spatial information to enable appropriate guidance to stakeholders. Similarly, the environmental performance of the Plan with regard to water has been deemed positive. The Plan was however, encouraged to take into account climate change related issues such as flooding and erosion. As part of the SEA process, an assessment of alternatives to the Plan were considered. One challenge that the Sound of Mull faces is that the area represents a border between two local authorities and the Plan is the first attempt to ensure a holistic approach to the management of this marine and coastal area. The Plan has been developed by the stakeholders, users and regulators of the area and, according to the SEA, reflects the needs of the local community in terms of development opportunities, while taking into account of the sensitivities of the environment and the interactions between different sectors. There is a monitoring plan in place with a number of indicators relating to developments and activities to assess both the environmental baseline and environmental performance.

8	**Does the MSP plan and process have an adaptive approach to deal with new circumstances?**			

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The East Plan will be subject to review every three years during the 20 year timeframe and at each review, a report on the effects of policies, effectiveness of policies in delivering objectives, and progress will prompt the marine planning authority to decide whether or not marine plans need to be amended or replaced. Reporting can be more frequent, if desired, for example if there are significant changes to the evidence base supporting the East Plan.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

As with all plans under the Marine and Coastal Access Act, the South Plan is subject to review every three years, reporting the effect of policies in the Plan, policy effectiveness in delivering objectives, and progress towards overall achievement of Plan objectives. This review can then be used to adapt the South Plan moving forward.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The Welsh Plan recognizes that certain activities are likely to change significantly during the lifetime of this Plan. Monitoring and reporting is an important step in the planning process to ensure that the Plan and its policies are effectively contributing to achieving the Plan's objectives. The Plan will be reviewed and reported at least every 3 years on the effects of policies and their effectiveness at securing the Plan objectives. The planning process is iterative; in accordance with the MCAA, future plans will be developed using experience and understanding gained from previous planning processes.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

The Irish Plan builds in a mechanism for adaptation of the Irish Plan roadmap. Each year Progress Reviews are carried out that also establish actions for the Irish Plan moving forward, thus ensuring 'ongoing evolution of integrated policy and planning'. So far, three Progress Reviews have been carried out (2014, 2015 and 2016). Within the framework of the Irish Plan, the use of regular updates to the MCG from the government departments implementing marine-related policies, or from the Enablers Task Force or Development Task Force, is used as a mechanism to ensure adaptive management. No information is available on the frequency of review of any MSP Plans, as they are not yet developed.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

This Plan will be reviewed and reported upon as is required by the Marine Acts. The intention is to take forward an integrated process of review which leads to the Plan being updated as a single document. The first report would be published within three years of adoption after which the Plan can be amended if necessary. Relevant considerations would be taken into account such as legislative changes.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

This is the fourth edition of the Shetland Plan and it is intended to grow, change and develop as it becomes increasingly relevant to the management of the marine environment around Shetland. The Shetland Plan will be updated to reflect changes that occur and ensure that it is kept up to date. Under the Marine Scotland Act 2010, it is a requirement that Scottish Ministers must from time to time prepare and publish a report on progress. The first report must be published within 5 years of when the Plan was first adopted. The report will help to inform Scottish Ministers on whether or not to amend or replace the concerned Plan.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Sound of Mull Plan is the first integrated planning document for the area, but its pilot project status means it does not have any formal review process beyond a single review of Plan performance within the lifetime of the project. However, the Plan contains a recommendation for review once the Scottish Plan has

been prepared, and to update the Plan frequently (every five years) to take into account new knowledge and developments in the local area.

9	**Does the MSP plan and process embed the Precautionary Principle?**
	Sub-questions: Is the Precautionary Principle used as a guiding principle in the plan?
	Is the Precautionary Principle in evidence through the development of policies, options/alternatives and mitigation measures within the plan?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

During plan implementation (i.e. at development proposal evaluation stage), the relevant public authorities will need to apply precaution within an overall risk-based approach, which assesses the risk of an activity and requires preventative measures where risks are uncertain. Circumstances where the Precautionary Principle applies are listed in the Plan (e.g. where scientific evidence is insufficient and there are reasonable grounds for concern that potentially dangerous effects on the environment may be inconsistent with the requirements of protection). However, it is not clear what the thresholds are when assessing if evidence is sufficient or not and when the precautionary principle would be triggered. The Plan states: 'Ultimately, the Precautionary Principle requires a balancing exercise in which the risks of an activity, in the light of imperfect evidence, must be balanced against the need for sustainable development. In having recourse to the Precautionary Principle, the aim is to identify (and where possible quantify) the plausible risks, reduce uncertainty (to the extent possible) and then employ management measures that are proportionate to the activity in question and the level of plausible risk.' It could be argued that this statement is evidence of a pragmatic rather than a conservative interpretation of the precautionary approach, where the acceptance threshold for risk is relatively high, as compared with the description of lower thresholds required for the precautionary approach in the Shetland Plan. However, the ultimate implementation of the precautionary approach will only be visible at the proposal evaluation and determination stage. Guidance on the Precautionary Principle, and transparency around chosen thresholds for risk would be very beneficial in a more comprehensive assessment.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

Within the South Plan Technical Annex, the precautionary approach is stated as being built into all objectives, as follows: "The Precautionary Principle is applied consistently in accordance with the United Kingdom government and devolved administrations' sustainable development policy." The policy states that '*The UK holds some of the best information about natural resources available anywhere in the world. There are, however, still instances where decisions on managing natural resources will have to be taken on the basis of partial information. In these instances, and where, firstly, there is a risk of significant adverse environmental effects occurring and secondly, any possible mitigation measures seem unlikely to safeguard against these effects, the Precautionary Principle will be adopted. Where evidence exists of likely harm to ecosystems or biodiversity, we will adopt practices that avoid irreversible damage*.' In a similar view to the East Plan, this statement may suggest a more pragmatic rather than conservative interpretation of the Precautionary Principle, as it could be argued that practices should be adopted that avoid damage entirely (particularly where cumulative impacts may contribute to further damage), rather than just irreversible damage. Many of the policies in the South Plan call for proposals to a) avoid; b) minimise; or c) mitigate the significant impacts on other users or the

environment, and several go on to state that proposals that cannot mitigate such impacts will need to make the case for proceeding. While these measures do reflect the adoption of the Precautionary Principle, at this level of resolution it is difficult to say how such precautionary measures will be decided in practice. Obviously, decisions will depend upon the impact threshold considered to be 'significant' and the amount of evidence supporting the linkage between impacts, pressures and sensitivities of habitats and features.

WALES NATIONAL MARINE PLAN	(YES)	NO	PARTLY

The Draft Welsh Plan objectives are framed under the High Level Marine Objective (HLMO) themes in the UK Marine Policy Statement, in which "Promoting Good Governance" espouses the Precautionary Principle. Objective 11 of the Plan will adopt the precautionary approach to '*support proportionate, consistent and integrated decision making through implementing forward-looking policies as part of a plan-led, precautionary, risk-based and adaptive approach to managing Welsh seas'*.

The Plan does not explicitly define the Precautionary Principle but the Strategic Appraisal uses the EUR-Lex (2016) definition of the Precautionary Principle, which states, "if a particular action may cause harm to the public, or to the environment, and if there is no scientific consensus on the issue, the action should not be pursued."

Policy SCI_01 seeks to ensure that policy and management decisions are made using sound science and a risk-based approach and where appropriate they should apply the Precautionary Principle and consider opportunities to apply adaptive management. The general guidance under SCI_01 refers to instances in which insufficient or only limited evidence may be available to inform a decision. In such cases, "management decisions should still be taken but should be done in such a way to deal with any residual uncertainty and minimise the risk of significant adverse impacts on the economy, society, the environment and existing and future potential uses of the marine environment". As such SCI_01 applies the Principle with a risk-based approach thereby enabling appropriate decisions to be made while applying the appropriate level of precaution. Guidance on the "appropriate level" would be beneficial.

The Principle is to a large extent being applied in the overall application of the Plan when considering all policies and objectives together.   There are some key examples, in particular, where sectoral policies apply the Precautionary Principle using sound science. For example, the plan uses a precautionary 50km marine for tidal stream (and wave) proposals based on scientific modelling. The Plan states that it will also use a precautionary approach to the aggregates sector, unconventional gas (e.g. shale gas) and oil and gas. The Plan states "there is a need to carefully consider all the issues, including economic, environmental and social impacts associated with such development."

In general, the Principle is applied in the overall application of the policies and is more apparent due to the spatially-prescriptive policies for some sectors which reduces uncertainty and supports the identification of likely effects.

IRELAND NATIONAL MARINE PLAN	YES	(NO)	PARTLY

There is no mention of the Precautionary Principle or approach in the Irish Plan. Despite the explicit desire to ensure sustainability, many of the key actions involve the development of infrastructure or sectoral policies that could potentially threaten environmental sustainability and the provision of ecosystem services.

Nevertheless, a precautionary approach is not advised or advocated. In the Enablers Task Force Report for MSP, the Ecosystem Approach is noted as being embedded in a number of MSP case studies examined. However, the conclusion appears to be the Ecosystem Approach is still not uniformly understood. The Precautionary Principle being fundamental to the Ecosystem Approach is not noted.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Scottish Plan adopts the Precautionary Principle ('in accordance with the UK Government and Devolved Administrations' sustainable development policy') as one of its strategic objectives, and the Principle is also manifested within the General Policies of the Plan, which encourages a 'precautionary and risk-based approach should be taken in terms of understanding emerging evidence with regards to potential risks, such as sea-level rise or coastal change and flooding'. The Plan requires marine planners to be satisfied that the activities and developments pose minimal impact on the environment and that these impacts are mitigated. In addition, the Scottish Plan lays out 21 general policies, arranged under the principles of sustainable development that must be adhered to in addition to any specific sectoral policies. The nature of these general policies certainly provide the Plan with a strong sustainability character, and facilitate the embodiment of the Precautionary Principle.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

Within the Shetland Plan, there is specific mention of the Precautionary Principle as a key aspect of sustainable development. Policies within the Shetland Plan are strongly worded (i.e. tend to use 'will' and 'shall' rather than 'may') in favour of avoiding damage or impact to the environment. For example, MSP HER 1 outlines the circumstances in which development will be permitted: a) it would not adversely affect the objectives of the site; b) there is no alternative solution; c) there are imperative reasons of over-riding public interest. The wording used in this policy (and in others like it, e.g. HER 2 and 4) demonstrates the use of a lower proof of harm (i.e. proposals must demonstrate they have *no adverse effects*, which is stricter than requiring the avoidance of *significant negative impacts*) that characterises the Precautionary Principle. In addition, policies are prioritised explicitly so as to embody a conservative application of the Principle (development proposals must comply with all policies in the 'clean and safe' and 'healthy and diverse' policy clusters, before supporting sectoral development policies in the 'productive' cluster). In regards to protected areas, the Shetland Plan emphasizes the need for a Habitats Regulation Appraisal where a proposal does not conform entirely to the conservation objectives of a protected site.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Precautionary Principle is not mentioned in the Sound of Mull Plan, and although the development of the Sound of Mull Plan is said to have 'embraced the Ecosystem Approach', the associated definition (from "Sustainable Seas for All") does not include any mention of precautionary decision making. However, the Sound of Mull Plan policies are arranged in a nested fashion, similar to the Scottish Plan, where two General Policies are the 'backbone' of the plan, and should be given due consideration by all interests. SOM G1 seeks to highlight the natural and cultural assets of the community and to achieve sustainable development aspirations, as well as providing conditions for sustainable business growth. SOM G2 requires that any development and activity proposal will 'not have any significant adverse effects' on 'local features of importance', which include natural and historic environment elements such as designated sites, protected species and habitats, ecosystem function that may adversely affect Good Environmental Status,

landscape/seascape character, water quality, and historic assets. These general policies provide a strong safeguard for such features, as they are prioritised over all other sectorally-specific policies within the Plan. However, SOM G2 also includes existing activities, such as aquaculture, commercial inshore fishing grounds and shipping routes and navigational interests that may have significant impacts on natural features and habitats and there does not appear to be any consideration of how existing impacts between these features could be addressed, or how increasing volumes of such activities might impact upon the features to be safeguarded. While the prioritisation between policies supports the embodiment of the Precautionary Principle, there are other aspects of the Sound of Mull Plan that do not appear to be precautionary in nature.

10	**Does the MSP plan and process show evidence of coordination with other plans?**			
EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS		YES	NO	PARTLY

The East Plan seeks to support and complement existing plans wherever appropriate'. The SA considers possible indirect effects in neighbouring areas, including terrestrial and transboundary effects with other EU countries. MMO's data sharing objective (Obj no 11) will arrange data sharing between international planning authorities bordering the East Plan areas to ensure that relevant cross-border evidence is collated wherever possible.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS		YES	NO	PARTLY

The South Plan 'takes all reasonable steps to ensure compatibility with any related relevant development plans (or their equivalent), and having regard to other plans.'

WALES NATIONAL MARINE PLAN		YES	NO	PARTLY

National and local terrestrial planning authorities and marine planning authorities have been involved in the development of the Plan. Strategic Development Plans will allow issues that cut across a number of planning authorities to be considered and planned for. Coordination will involve regular liaison and engagement, planning for activities etc. and will work closely with neighbouring marine planning authorities and put in place joint working arrangements to support collaboration.

IRELAND NATIONAL MARINE PLAN		YES	NO	PARTLY

The Irish Plan is designed to take account of the 'opportunity for synergies with the EU Strategy for the Atlantic (EUSA)'. EUSA priorities are reflected in the Irish Plan e.g. implementing of the Ecosystem Approach in the EUSA is done through the MSFD, which is a key action in the Irish Plan. Key actions in the Irish Plan include implementation of the MSFD, delivery of all CFP measures , delivery of national measures to rebuild fish stocks and ensure sustainable resource exploitation, delivery of the WFD through river basin management, delivery of Natura 2000 measures, support for the UNFCCC Global Climate Observation System and delivery of Ireland's National Biodiversity Plan.

SCOTTISH NATIONAL MARINE PLAN		YES	NO	PARTLY

Regional marine plans will be developed by Marine Planning Partnerships to take account of local circumstances. The first regional plans to be established have been Shetland and Clyde. The Plan details the basic legislative requirements for regional plans.

Under the Scottish Planning Policy, National Planning Framework 2 and Local Development Plans will all be relevant when regional marine plans are being developed to help promote alignment of marine and terrestrial planning policy. As such terrestrial planning authorities are required to give consideration to marine plans when developing Local Development. There is clear guidance set out in a Planning Circular on how to achieve alignment between marine and terrestrial planning. In addition, there should be regular consultation between marine and terrestrial planning authorities to ensure consistency. This is particularly clear in GEN 16 Planning.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

The Shetland Plan aligns with the objectives set out in the Local Development Plan. It also sets out detailed policy advice to help meet the requirements of the Shetland Local Development Plan (LDP). For example, the Shetland Plan will ensure that marine and terrestrial planning align with marine and terrestrial policy documents, such that any overlap between land-based planning and the coastal zone will be addressed holistically.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Sound of Mull Plan has taken account of many of the existing terrestrial plans and policies on both sides of the Sound of Mull in order to ensure coherence with the Sound of Mull Plan objectives (specifically for aquaculture in the coastal zone). The Sound of Mull Plan is a pilot project to demonstrate the process of local marine planning, and demonstrates coordination with other relevant integrated coastal management plans (e.g. Argyll and Lochaber Area Management Plan).

	Baltic SCOPE Checklist Toolkit– MSP (hyperlinks)
1	Does MSP support the achievement and/or contribute to maintaining GES?
2	Is the best knowledge and practice applied in planning?
3	Is the precautionary principle considered during planning?
4	Are alternatives used in planning?
5	Is the assessment of ecosystem services included in planning?
6	Is mitigation applied in planning?
7	Is a holistic systems perspective used in planning?
8	Is participation and communication ensured in planning including the SEA?
9	Is the subsidiarity aspect and coherence between levels considered in planning?
10	Is adaptation considered in planning?

Baltic SCOPE Checklist

1	**Does MSP support the achievement and/or contribute to maintaining GES?**			
EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS		YES	NO	(PARTLY)

Good Environmental Status (GES) is an integral part of the 2033 vision the East Plan. The Marine Strategy Framework Directive (MSFD) objectives have been integrated into marine planning through the Marine Policy Statement. Unlike the South Plan and the Irish Plan, there is no specific target or activity that explicitly supports the achievement of GES, which would have certainly strengthened the likelihood of GES being met. In the East Plan, there is no specific objective supporting the GES directly (as in the South Plan), but many of the pressures identified have been linked to a MSFD descriptor, e.g. cumulative impacts in relation to seabed habitat loss and physical change as a result of potential increased use in addition to current activities (Descriptor 6); changes to water quality […] from marine sources of hazardous substances (Descriptors 5 & 8). With any set of policies that encourage growth and development for specific human activities, particularly where cumulative impacts may occur, there is potentially a risk that the overarching Plan could be at odds with the achievement of GES, particularly if there is no specific objective towards meeting GES. While in principle it could be imagined that carefully managed (i.e. regularly evaluated) and *sustainable* growth in sectors could be compatible with ensuring GES targets are met, there is considerable uncertainty in the East Plan and this could mean that decisions taken down the line may not be subjected to an assessment of their impact on GES.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	(YES)	NO	PARTLY

The Marine Strategy Framework Directive (MSFD) objectives have been integrated into marine planning through the Marine Policy Statement. In the South Plan, Objective 11 supports the achievement of GES, as follows: "Activities within and adjacent to the South Plan area must contribute to the achievement or maintenance of Good Environmental Status under the Marine Strategy Framework Directive (and Good Ecological Status under Water Framework Directive) with respect to descriptors on marine litter, non-

indigenous species and underwater noise, particularly where current measures need to be reconsidered or enhanced and where new measures are under development." In addition, the fisheries related policy established under Objective 12 to safeguard and improve the natural marine environment also supports the achievement of GES. As in the East Plan, there is considerable uncertainty in the South Plan, which makes it hard to predict or guarantee that future decisions will support the achievement of GES. However, having the specific GES objective, with strongly worded requirements ('*must contribute*') in the South Plan increases the likelihood of GES being achieved.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The Environment (Wales) Act seeks to promote Sustainable Management of Natural Resources (SMNR). The objective of SMNR is to maintain and enhance the resilience of ecosystems and the benefits they provide. Principles for delivering SMNR are set out in the Environment (Wales) Act and have been designed to complement the UK Marine Strategy's 11 descriptors of GES.

The policies set out in this Plan play a key role in delivering SMNR and therefore support the achievement of GES. As a result, the Plan specifically presents the policies addressing each GES descriptor, with at least one, but usually three or more policies addressing each GES descriptor.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

The achievement of GES is embedded within the Irish Plan through the implementation of the MSFD being one of the key actions to support the delivery of a clean, green environment for Ireland. It is therefore likely that this action will be carried forward in the development of the subsequent marine spatial plan. However, despite stakeholder consultation responses suggesting it, mention of environmental or ecosystem health was not included in the Vision statement.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Marine Strategy Framework Directive (MSFD) objectives have been integrated into marine planning through the Marine Policy Statement. In the Scottish Plan, achieving and delivering 'good environmental status' (GES) is key to the fisheries related policy established under Policy MSP Dev1: Marine Developments, specifically MSP FISH1 where development will only be permitted where it can be demonstrated that there will be no significant damage or permanent obstruction to an important fishing area.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

The Marine Strategy Framework Directive (MSFD) objectives have been integrated into marine planning through the Marine Policy Statement, which forms an underpinning framework for all plans Scotland. The Shetland Plan also contains several policies that specifically support the achievement and maintenance of GES (e.g. WAT1 and 2) and address the MSFD Descriptors (e.g. INNS1 Reducing the spread of Invasive non-native species; LITT1 Waste Minimisation).

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Marine Strategy Framework Directive (MSFD) objectives were transposed into domestic Scottish law in 2010 but the Sound of Mull Plan notes that at the time of plan development, the indicators of GES were still a work in progress. As such, no GES Descriptors are specifically mentioned. Avoiding wider impacts on ecosystem function that may adversely affect GES of marine waters is noted as a 'Local Feature of Interest' in SOM G2 general policy, and this general policy also safeguards seabed habitats, which is a key component of achieving GES. However, there are several GES elements (e.g. non-native species; pollution) that are noted in the text of the Plan, but are not well represented, or represented at all, in the Plan policies themselves. As such, there appears to be lower support for achieving and maintaining GES than would be expected.

2	Is the best knowledge and practice applied in planning?			
EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS		YES	NO	PARTLY

Objective 11 (para 77-80) aims to continue to develop the marine evidence base to support implementation, monitoring and review of the Plan. Marine plans should be 'based upon the best available evidence'. MMO will collate existing evidence, commission new evidence where necessary, encourage and arrange data sharing between stakeholders. MMO's Evidence Strategy Document outlines the types of data needed and how MMO decisions are based upon best available data.

While the aspiration to apply the best available data is clear, it is apparent that several of the policies in the East Plan are not spatially explicit due to 'a lack of evidence'. As a result, many of the results of the policy impact analyses have considerable uncertainty associated with them. Given the technical capacity present at both national and sectoral levels, spatial information on most if not all sectoral activities would be realistically expected. In addition, while supporting and safeguarding ecosystem services is stated as a Plan objective, the ecosystem service information could be stronger. For example, there appears to be no mention or account taken of the UK National Ecosystem Assessment.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS		YES	NO	PARTLY

The South Plan process involved an exercise to gather the relevant data and evidence. The South Plan Analysis Report (SPAR) represents a compilation of the best available data, and this report was subject to public consultation during the early planning stages.

The SPAR does not contain a comprehensive assessment of ecosystem services. Nor does it provide the evidence base for the pressures produced by impacts and the sensitivity of habitats to those pressures, which will likely be needed for assessments of 'significant impacts'. There seems to be no evidence to support the potential co-location between activities, which forms one of the key policies in the Plan. At this level, these aspects may not be critical, and could be applied in more specific phases of planning.

WALES NATIONAL MARINE PLAN		YES	NO	PARTLY

In order to make best use of the potential of the Welsh seas for economic growth, policy ECON_02 recognizes the need to make use of existing good practice and best available evidence. This will ensure that the relative benefits of supporting one activity over another will not be compromised in the context of this Plan's

objectives and policies. The best available knowledge has been used to consider the "alternatives" and assess the degree of "reasonableness" of the options.

Specifically, the Plan outlines evidence gaps relating to the individual sectoral policies e.g. fisheries sector of relevance to marine planning. Furthermore, the Plan draws on benefitting from the experience and knowledge of institutions like Marine Energy Wales and the Low Carbon Research Institute (LCRI) to develop expertise and technologies under ELC_01: Low carbon energy (supporting).

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

The Irish Plan has a specific section dedicated to Research, Knowledge, Technology and Innovation, which recognises the need for targeted and cross-cutting research to support the delivery of Irish Plan's goals. Key actions include delivery of a Marine Knowledge Research & Innovation Strategy for Ireland 2007-2013; the development and implementation of a new Strategic Marine Research Agenda 2014-2020 and associated Action Plan, 'focused on industry, policy and discovery research through cross-agency collaboration on joint initiatives'; delivery of the INFOMAR Seabed Mapping Programme to support infrastructure development decisions and MSP, and strengthening of socio-economic data collection for decision making. Ensuring access to the best available data is often a challenge, but part of the infrastructure investment within the Irish Plan includes the need to safely store all publically-funded marine data so that it can support the delivery of multiple objectives. Whether privately funded data can be accessed is not mentioned, but would be relevant to the recognition that state efforts must be combined with private ones to achieve the Irish Plan goals.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Scottish Plan highlights existing areas of good practice, for example, collaborative arrangements have been put in place to resolve potential competition for space. An assessment of the condition of Scotland's seas is provided by Scotland's' Marine Atlas: Information for the National Marine Plan. The Atlas includes an economic assessment and summary of pressures and human impacts relating to activities in Scottish waters.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

Best knowledge is being applied by virtue of a detailed glossary of Data Sources presented in the Shetland Plan. GIS data is available and maps have been produced for a range of factors that provide a firm basis for rational and consistent decision-making. Best environmental practice is integrated within the Shetland Plan where possible at every stage.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

A wide range of information has been applied to marine planning via consultation with key stakeholders and regulators within the area. Regional catch statistics have been included to provide an indication of fishing activity. Data is also available on fisheries and fishery dependent employment.

3	**Is the Precautionary Principle considered during planning?**
	Captured in WWF Checklist Q9

4	**Are alternatives used in planning?**			
	Captured in SEA question 10			
5	**Is the assessment of ecosystem services included in planning?**			
	Captured in WWF Checklist Q5			
6	**Is mitigation applied in planning?**			
	Suggested sub-question: Are these mitigation measures consistent with the application of the precautionary principle?			

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

As with all Plans conducted in England, the East Plan must follow the Marine Policy Statement requirement to avoid harm to biodiversity through the appropriate location, mitigation or consideration of appropriate alternatives. Mitigation in the planning process can be evidenced through the wording of policies, which in many cases seek to avoid, minimise or reduce the negative impacts on the target habitat or activity. However, the Plan also allows for the possibility that negative impacts may need to be offset if they are deemed to be of overriding public interest. This range of mitigation options suggests there may be cases where it could be argued that a more relaxed embodiment of the precautionary approach may be taken. Until these specific cases arise and are dealt with, it is difficult to assess whether mitigation measures would be precautionary or not.

Within the Sustainability Appraisal (SA), mitigation and enhancement recommendations are made for each of the topics covered. There are some good examples of where adjustments have been made to improve the Plan, or reduce negative impacts. For example, the SA states 'It was suggested that the phrase 'Where emissions cannot be minimised, suitable mitigation measures will be encouraged' is reconsidered on the basis that it will always be the case that emissions can be minimised'. As a result, the final policy wording is 'Mitigation measures will also be encouraged where emissions remain following minimising steps', which suggests a more conservative interpretation of the precautionary approach.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

As with all Plans conducted in England, the South Plan must follow the Marine Policy Statement requirement to avoid harm to biodiversity through the appropriate location, mitigation or consideration of appropriate alternatives. Mitigation in the planning process can be evidenced through the wording of policies, which in many cases seek to avoid, minimise or mitigate 'significant adverse impacts' on the target habitat or activity area. For example, S-TIDE-1 is a policy that contains the commonly used wording in relation to mitigation: 'proposals [in areas for tidal energy generation] should demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate impacts, d) if it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding'). There is no supporting evidence to define 'significant', or to describe the decision-making process that would allow mitigation over avoidance or minimisation. This range of mitigation options suggests that cases may arise where it could be argued that a more relaxed form

of the precautionary approach has been applied. Until these specific cases arise and are dealt with, it is difficult to assess the extent to which mitigation measures would be precautionary or not.

Within the SA, mitigation and enhancement measures are considered for each topic identified in the Plan. However, these measures may not necessarily be followed in revisions to the Plan. For example, in the Marine Ecology topic, the mitigation measures suggest clearer wording to avoid any potential confusion regarding whether some policies (specifically policies regarding oil and gas development, aquaculture and infrastructure) might have a higher priority over other Plan activities or environmental sensitivities because of the way in which they are phrased. Despite this valuable advice, the South Plan makers have not altered the wording of the policies in question, stating that 'there is unlikely to be any additional negative effects caused by the policies in question'. Furthermore, they note that the 'strength of the policies may offer some degree of priority over other activities but as many of the environmental and social policies are also worded strongly, they must also be adhered to.' As noted above, the lack of information on any prioritisation process, particularly in the event of competing priority policies, challenges the ability to assess if the approach is precautionary.

WALES NATIONAL MARINE PLAN	**YES**	NO	PARTLY

As found in the East and South Plan, the Welsh Plan contains a number of policies that require a proposal to a) avoid, b) minimise, and c) mitigate damage. The Plan also explains that in some cases, proposals will be granted consent with mitigation requirements. The Plan contains policies supporting the adaptation and mitigation of climate change, where mitigation in the planning process can be evidenced through policies SOC_09: Effects on coastal change and flooding; SOC_12: Support for wider resilience to climate change. As such, all proposals are encouraged to include measures to contribute towards climate change mitigation and adaptation to ensure the integrity of the designated site is secured as a result of the proposal. Such measures could include reducing greenhouse gas emissions through increased energy efficiency, or the use of low carbon technology.

IRELAND NATIONAL MARINE PLAN	YES	**NO**	PARTLY

MSP plan not yet developed. The Irish Plan does not reach this level of detail.

SCOTTISH NATIONAL MARINE PLAN	**YES**	NO	PARTLY

Many of the sectoral policies highlight the potential for adverse environmental effects, which should be avoided or, if not possible, minimised and mitigated. In some cases, for example policy GEN 6 Historic Environment, specific mitigation measures are noted (e.g. where change is accepted, record and advance understanding of the significance of the heritage asset before it is lost). Mitigation features prominently with regard to addressing climate change, and planners are encouraged to reduce carbon emissions and transition to a low carbon economy. Examples of possible mitigation measures, such as compensatory habitat creation or enhancement, are also presented where significant harm to ecosystems and ecosystem services is a consideration. On the whole, this approach is considered consistent with the precautionary approach.

SHETLAND ISLANDS MARINE SPATIAL PLAN	**YES**	NO	PARTLY

Mitigation is evident in the Shetland Plan, firstly as requirements within policies, and secondly as a strategic approach to tackling climate change, through the reduction of emissions and the enhancement of carbon storage. Specific policies include MSP NOISE1: Minimising Levels of Noise Including Underwater Noise, which requires a noise assessment and mitigation measures within proposals; and MSP CLIM1: Climate Change Mitigation, which requires all proposals to minimise emissions, resource use and energy use. Other policies contain requirements to mitigate the potential impacts of a proposal. For example, MSP CD1: Coastal Defence Construction requires proposals deemed necessary for public safety to have demonstrated the wider implications of exacerbating flooding or coastal erosion and mitigate potential impacts. In some policies, notably MSP HER6 (Protection of wild birds outside of PAs) and MSP HER7 (Priority Marine Features), mitigation measures are secondary to avoidance measures and required when there is considered to be 'no reasonable alternative' and 'the reasons for the development clearly outweigh the value of the feature by virtue of social or economic benefits of national importance.'

In addition, the Environmental Assessment (Scotland) Act 2005 requires that mitigation measures are integrated into the Plan through the SEA process. The Shetland Plan SEA has a detailed section on Mitigation and has identified two main tiers of mitigation. The first tier involves avoiding impacts through changes to the components of the Plans e.g. policies. The second tier involves general mitigation and best practices that are included for each topic, including Biodiversity, Flora and Fauna, Population and Human Health, Water, Geology and Soils, Climate Factors, Cultural Heritage, Landscape/Seascape and Material Assets.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

Rather than adopt a hierarchical approach to avoiding, minimising and mitigating significant impacts, as the English, Scottish and Welsh Plans do, the Sound of Mull Plan incorporates mitigation into sectoral activity policies through the development of criteria, which, if met, will mean that sectoral development proposals are considered more favourably. In many cases, one such criterion is the mitigation of 'hard or soft constraints' upon the sector, and these constraints are noted in tables within the sector-specific sectors of the plan. While this approach presents useful information as to the type of impact/constraint that a proposal may incur, these are presented at a fairly generic level, and therefore it is possible that additional impacts/effects/constraints are not included and/or more specific impacts are overlooked. In fact, the SEA notes that under the Inshore Fishing sector information, damage to significant sites, species and habitats by mobile gear is not listed as a constraint, which is inconsistent with the constraints listed for other sectors and recommends therefore that the Sound of Mull Plan be revised in this regard.

7	Is a holistic systems perspective used in planning?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The Plan states that 'Marine plans are intended to guide a holistic approach to decision making and consider all the benefits and impacts of all the current and future activities that occur in our marine environment'. In addition, land-sea interaction in the Plan is promoted by following a similar approach to the terrestrial planning process in the development of policy so that the two systems complement one another. Although plans cannot include both inshore and offshore regions (under the MCAA), the MMO has prepared inshore

and offshore plans in an integrated process. The SA process goes further than the SEA Directive, focussing more on socio-economic aspects.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The process followed to deliver the South Plan does demonstrate a holistic systems approach in the sense that the objectives have been identified following an Analysis Report of the sector-based issues arising in the South area. As such, the problems arising within industries and activities have been identified, but these have been used to prioritise objectives that cut across all sectors, and are purposefully not sector focused. Objectives demonstrate that there has been consideration of the interlinkages between the elements of the marine environment, and the different sources (land, noise) of impacts. Objectives contain policies that tackle the need for land-based infrastructure (Objective 2), highlight the importance of protecting and maintaining coastal habitats, such as intertidal mudflats and saltmarsh (Objective 12), recognise the importance of litter-free beaches for recreational value, and consider the impacts of non-visible sources of pollution, such as impulsive noise (Objective 11).

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The Welsh Plan recognises the need to work at the appropriate scale and take a holistic and long-term approach to marine management. The Plan takes an integrated approach by considering all uses of the seas and the way in which they interact with each other and with marine natural resources. It is clear from the Plan that ecosystem interactions are a consideration for any sectoral specific policy. The Plan provides evidence to support "*the need for coherent decision making based on shared evidence and joined-up, mutually supportive management practices and other management processes at all appropriate scales, particularly in cross-border areas such as estuaries*" and at the wider scale, planning, management and decision making should reflect the nature of shared resources and broader ecosystem linkages and dependencies.

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

One of the key stated priorities of the Irish Plan is to tackle the enabling actions in an integrated fashion, which demonstrates the recognition of a need to shift from independent and sector-based approaches to a cross-sectoral and holistic, systems-based approach. In practical terms, the establishment of a Marine Coordination Group with representation from each of the government departments with responsibility for marine activities is a good indication that integration will be facilitated. There is also clear recognition that public sector (state) interventions cannot achieve the goals alone, and that they must be combined with private sector investment and action. The creation of an "overarching marine 'spatial' plan" as an action under the Irish Plan will reinforce this integration. Key actions reinforce the need for integration across government departments, as does the establishment of Enablers Task Forces by the MCG to deliver specific actions. However, one of the main integrating mechanisms within the Irish Plan - 'improved cross-government engagement and communication' - is not fully elaborated, and while there has been a 'statement of intent' from all departments to work together, the Irish Plan does not explicitly outline how exactly this will be achieved.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

The Scottish Plan adopts a strong alignment with the principles of sustainable development, and has general policies that aim to facilitate a good balance between economic, social and environmental benefits. In keeping with this approach, the Plan facilitates the achievement of other relevant marine legislation, such as the MSFD and WFD, both of which promote integration between human use and nature conservation. The Plan promotes existing arrangements between sectors, and encourages initiatives between sectors to resolve conflicts. With regard to the land-sea connection, the Plan makes reference to a Planning Circular (the Relationship between the statutory land use planning system and marine planning and Licensing) which gives careful attention to facilitating integration between terrestrial and marine planning, in terms of outlining the links between the respective authorities, identifying which plans will take account of both terrestrial and marine impacts, providing guidance on alignment between terrestrial and marine plans.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

The Shetland Plan prioritises alignment with key environmental legislation – the MSFD and the WFD – which supports the integration of sustainable use and marine nature conservation. As such, the Shetland Plan itself promotes an integrated and therefore sustainable approach to marine and coastal management. There is clear recognition of the need to avoid sectoral conflicts through promoting co-location where possible and avoiding displacement. The land-sea interaction is clearly addressed, and the coastal area is managed in such a way that terrestrial and marine jurisdictional boundaries are designed to overlap over the Mean Low to Mean High water mark, and ensuring that there is coherence between terrestrial and marine plans.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Sound of Mull Plan certainly aspires to adopting a 'more holistic, integrated strategy' to allocating marine space, and one that 'ensures that demands for economic development do not compromise ecological and social objectives'. In keeping with this, the Sound of Mull Plan has the nested policy approach where environmental, social and economic issues are prioritised. Nevertheless, there is very low support for safeguarding the breadth of ecosystem services beyond the obvious provisional services, and there does not appear to be very obvious measures to protected wider biodiversity outside of protected areas or beyond protected species. While water quality is mentioned, it does not have a specific policy of its own, and other issues that have formed GES descriptors are also not well emphasized. Overall, therefore, the Plan does not seem to fully embody a holistic approach.

8	**Is participation and communication ensured in planning including the Strategic Environmental Assessment (SEA)?** *Captured in WWF Checklist 7*
9	**Is the subsidiarity aspect and coherence between levels considered in planning?**

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The East Plan is undertaken at the regional and strategic level, and is designed to assist decision makers when they approve (or refuse) consent for activities. The East Plan takes forward the Marine Policy Statement at regional levels. The East Plan does not specify activities at a project level, which will be subject

to scrutiny from the relevant authorities. However, the authorities in question will need to refer to the policies within the Plan when making decisions.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS	YES	NO	PARTLY

The South Plan does represent a decentralisation to a regional planning level. The Marine Management Organisation is the coordination body for all UK plans, making sure that there is coherence between planning levels.

WALES NATIONAL MARINE PLAN	YES	NO	PARTLY

The management of activities in Welsh waters is split between devolved functions which are the responsibility of Welsh Ministers, and functions which are retained by UK Government. This Plan applies to the exercise of both devolved and retained functions.

The balance of devolved and retained functions may change with time. At the time of writing further responsibilities are being devolved to the Welsh Ministers (e.g. ports policy, harbour orders and byelaws (with the exception of major trust ports, the only one in Wales being Milford Haven), marine licensing in the offshore area, consenting energy projects up to 350MW). This Plan includes provision relating to both devolved and retained functions, in accordance with the Marine and Coastal Access Act 2009 (MCAA).

IRELAND NATIONAL MARINE PLAN	YES	NO	PARTLY

MSP plan not yet developed. The Irish Plan does not reach this level of detail.

SCOTTISH NATIONAL MARINE PLAN	YES	NO	PARTLY

While the UK Parliament legislates for offshore waters in Scotland, the Scottish Parliament has legislative powers in relation to activities within the marine inshore waters. However, there has been agreement between the two Governments that offshore and inshore waters will be covered in a single plan document that aligns with the UK Marine Policy Statement. Within the Scottish Plan, a tiered approach has been adopted whereby marine planning will be implemented at a local level within Scottish Marine Regions, as embodied within secondary legislation. Regional Marine Plans are to be developed by Marine Planning Partnerships to take account of local circumstances and smaller ecosystem units. Shetland and Clyde has been the first Marine Planning Partnership to be established.

SHETLAND ISLANDS MARINE SPATIAL PLAN	YES	NO	PARTLY

The Shetland Plan is in itself an example of implementation of planning at the local level, as the Shetland Islands are identified as becoming a statutory Scottish Marine Region (SMR), as identified within the Marine (Scotland) Act 2010, which provides specific legislation to support the delegation of marine planning powers at the regional level. As such, the Shetland Plan has been developed through a Marine Planning Partnership, aligning with the Local Development Plans but coherent with national policy.

SOUND OF MULL MARINE SPATIAL PLAN	YES	NO	PARTLY

The Sound of Mull Plan is a pilot project initiated under the Scottish Sustainable Marine Environment Initiative (SSMEI) to test new management framework options for local-scale marine planning. It is considered that the Sound of Mull Plan is too small an area to be designated as a Scottish Marine Region in itself, but it is recognised that this type of pilot project will help to demonstrate the ways in which national level marine policies can be implemented at the local scale.

| 10 | **Is adaptation considered in planning?** |
| | *Captured in WWF Checklist 8* |

Appendix 3: Marine plan SEA assessments (Baltic SCOPE SEA Checklist)

Baltic SCOPE Checklist Toolkit - Strategic Environmental Assessment (hyperlinks)			
1	Will SEA be carried out?	13	How is the "zero alternative" defined and used in the assessment?
2	Which regulation lays the basis for the screening?	14	Which are the significant environmental effects of the plan?
3	Which environmental aspects are relevant to assess?	15	Which are the cumulative impacts?
4	Which descriptors from the Marine Strategy Framework Directive (MSFD) are relevant?	16	Does the plan support the achievement and/or contribute to maintaining GES and other environmental targets?
5	How is SEA integrated in the MSP-process?	17	Which are the impacts on relevant ecosystem services?
6	Which linkages between the planning process and the SEA are present?	18	Who participated in the assessment and what is their opinion on the results?
7	Which are the ecologically important areas, which may be affected by MSP?	19	Have ESPOO-consultations been carried out?
8	What is known on the coherence of the MPA network?	20	Has feedback been given on responses from neighbouring countries?
9	Which are the actual and potential threats on the marine ecosystems?	21	How are environmental impacts minimized or prevented?
10	How are "reasonable" alternatives included in planning?	22	Are the SEA-directives requirements considered?
11	Are different planning solutions presented?	23	How will the environmental impacts of the plan be monitored and audited?
12	Is it possible to identify strategic choices in planning?		

Baltic SCOPE Strategic Environmental Assessment Checklist

1	Will SEA be carried out?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Yes, as a requirement of the UK's Marine and Coastal Access Act (HM Government (2009) Marine and Coastal Access Act 2009) and the EU SEA Directive (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 SA process and report also incorporates an Equalities Impact Assessment Screening.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Yes, as a requirement of the UK's Marine and Coastal Access Act (HM Government (2009) Marine and Coastal Access Act 2009) and the EU SEA Directive (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 SA process and report also incorporates an Equalities Impact Assessment Screening. In addition, the South Plan is subject to a Habitat Regulations Assessment, as a requirement of the Habitats Regulations.

WALES NATIONAL MARINE PLAN
Yes. The Marine and Coastal Access Act (2009) provides the framework for marine planning in Wales and across the UK and is guided by the UK Marine Policy Statement 2011.
IRELAND NATIONAL MARINE PLAN
MSP not yet developed, but Enablers Task Force for MSP makes recommendations that SEA will be carried out in fulfilment of EU SEA Directive. SEA questions below are not relevant for the Irish Plan as it currently stands.
SCOTTISH NATIONAL MARINE PLAN
Yes. A Sustainability Appraisal of the Scottish Plan is required under the Marine and Coastal Access Act 2009 and the environmental component (SEA) is also a requirement under the EU SEA Directive (Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001) and the Environmental Assessment (Scotland) Act 2005, in accordance with The Environmental Assessment of Plans and Programmes Regulations 2004.
SHETLAND ISLANDS MARINE SPATIAL PLAN
The SEA is being carried out under Section 14 and Schedule 3 of the Environmental Assessment (Scotland) Act 2005, the Shetland Islands Council's Local Development Plan.
SOUND OF MULL MARINE SPATIAL PLAN
The Sound of Mull Plan has been subject to a process of SEA under the Environmental Assessment (Scotland) Act 2005.

2	**Which regulation lays the basis for the screening?** *Answered as part of SEA Q1*
3	**Which environmental aspects are relevant to assess?**

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS
Air and climate; marine ecology; economy; geology, geomorphology and coastal processes; landscape and seascape; water environment. Climate change is a cross-cutting issue relevant to all topics identified.
SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS
The South Plan SA has an SA Framework, which outlines the SA coverage for assessment. This includes, Community, health and wellbeing; cultural heritage, marine ecology; economy; geology, geomorphology and coastal processes; landscape and seascape; water environment.
WALES NATIONAL MARINE PLAN

Biodiversity, water, physical environment, air quality, landscape & seascape,
SCOTTISH NATIONAL MARINE PLAN
Biodiversity, population; human health; fauna; flora; soil; water, air, climate factors and material assets
SHETLAND ISLANDS MARINE SPATIAL PLAN
Biodiversity, Flora and Fauna; Population and Human Health; Soils, Geology and Coastal Processes; Water; Climate Factors; Cultural Heritage; Landscape and Seascape; and Material Assets.
SOUND OF MULL MARINE SPATIAL PLAN
Biodiversity loss, flora and fauna, population and human health, water, soil, air, climate, historic and cultural environment, landscape and material assets. However, three issues should be considered more favourably - climate change, coastal erosion and flooding.

4	Which descriptors from the MSFD are relevant?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS
Descriptors mentioned specifically are: no. 6 – seafloor integrity with regard to seabed habitat loss and physical disturbance from cumulative impacts from additional activities under the plan. No. 7 - hydrographical conditions could be affected by the plan. No. 2 - introduction of non-indigenous species in general. No. 11 - noise and potential impact on sensitive species from potential new development combined with current activities. No 10 - marine litter. No 5 and no 8 - related to changes in water quality from hazardous substances, the amount of shipping and busy marine plan area.
SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS
Objective 11 of the plan explicitly notes the need for South Plan activities to contribute to the achievement of maintenance of GES under the MSFD. Relevant Descriptors mentioned specifically are 2 (non-indigenous species); 10 (marine litter) and 11 (underwater noise). Under Objective 12, Descriptor 3 (healthy fish populations) is relevant.
WALES NATIONAL MARINE PLAN
All 11 Descriptors are relevant. A detailed table is presented in the Plan outlining the relationship between all the policies and the 11 GES Descriptors.
SCOTTISH NATIONAL MARINE PLAN
The 11 descriptors of Good Environmental Status have been adopted as strategic objectives in the Scottish Plan.
SHETLAND ISLANDS MARINE SPATIAL PLAN

The Shetland Plan has adopted the strategic objectives of the 11 Descriptors set out in the MSFD.

SOUND OF MULL MARINE SPATIAL PLAN

No 1. Biodiversity is maintained. No. 7. Permanent alteration of hydrological conditions does not adversely affect the ecosystem. The Plan recognizes the threat to water quality from pollution and the issue of marine litter.

5	How is SEA integrated in the MSP-process?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The SA has been undertaken throughout the development of the marine plans. The SA includes a number of interim assessments, where draft versions of the Plan are assessed and recommendations can be incorporated into subsequent versions. An early version of the East Plan was subject to appraisal, and subsequent appraisals occurred in September and November 2012 and then again in January and March, 2014. The East Plan has therefore evolved in response to the SA, with recommendations made in the SA being incorporated into subsequent drafts of the East Plan.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The South Plan SA has been integrated at multiple stages of the South Plan development. The SA includes a number of interim assessments, where draft versions of the Plan are assessed and recommendations can be incorporated into subsequent versions.

WALES NATIONAL MARINE PLAN

The marine plan preparation process included an iterative process of the sustainability appraisal. The SA illustrates this process through a number of steps covering evidence gathering, policy development, plan implementation and review, supported by ongoing stakeholder engagement and an iterative process of impact assessment. The cross-cutting policies and sector policies stipulated in the Welsh Plan were informed by the SA on whether and the extent to which, the Welsh Plan would support or detract from the achievement of achieving the set objectives. A clear framework has been developed to illustrate the sustainability appraisal process and linkages with the marine plan preparation. Comments on the Initial Draft SA Report were received and were taken into account in subsequent revisions to the Welsh Plan.

SCOTTISH NATIONAL MARINE PLAN

The existing environmental problems identified in the SEA which are relevant to the plan, in particular, those relating to any areas of a particular environmental importance is taken into account during the Plan's preparation.

SHETLAND ISLANDS MARINE SPATIAL PLAN

The SEA is to a large extent integrated in the MSP process. A review of the previous MSP (3rd Ed) concluded that a full SEA would be necessary. The draft MSP was then assessed against the SEA objectives and the potential implications of development on the marine environment. As a result, the SEA contains details on mitigation, environmental enhancement and monitoring of the Shetland Plan.

SOUND OF MULL MARINE SPATIAL PLAN

The relationship between the SEA process and the Sound of Mull Plan is considered. The development of both documents have been informed by and comply with a range of international, European Union, national and regional treaties and legal instruments.

6   Which linkages between the planning process and the SEA are present?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The SA scoping phase was undertaken alongside the evidence gathering stage of the marine plan, producing a report on 'Evidence and Emerging Issues'. The SA was undertaken alongside the options generation, preferred options/early draft plan, and draft plan phases (see SA Fig 1-1) and the SA Report has therefore 'informed the consideration of Options (alternatives)'. There has been consultation with key stakeholders in the SA process.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The evidence gathering phase of the Plan has outlined the appropriate scope of the SA. The Options Generation stage of the Plan was accompanied by an SA of options, and similarly the preferred options, draft plans and adopted plans were accompanied by SAs of those stages. The SA statement then includes all those relevant assessment stages.

WALES NATIONAL MARINE PLAN

The process and the development of both the Sustainability Appraisal and the development of the Welsh Plan has been iterative. The iterative approach has sought to predict and evaluate the likely significant effects of Plan proposals and alternatives, proposing measures to avoid, minimise or mitigate any adverse effects and maximise positive effects thereby enhancing the sustainability performance of the Plan. Linkages are evident during all five stages of the process from the Scoping Stage through to the preparation of both the SA Report and the Welsh Plan. Both documents have undergone various consultative processes which have been well documented in the form of various publications. Following independent examination (if required), the Welsh Government will issue a Post Adoption Statement as soon as reasonably practicable after the adoption of the Welsh Plan. During the period of the Welsh Plan, the Welsh Government will monitor its implementation and any significant social, economic and environmental effects.

SCOTTISH NATIONAL MARINE PLAN

An interim SA report was published for public comment alongside a pre-consultation Scottish Plan, with comments shaping production of the SA Report and Scottish Plan. Views of the public and Consultation

Authorities (Scottish Natural Heritage, Scottish Environment Protection Agency and Historic Scotland) were sought on the SA Report, following which an addendum to the SA was produced, setting out the results of the review of modifications to the Scottish Plan.

SHETLAND ISLANDS MARINE SPATIAL PLAN

The consultation process for the SEA and the Shetland Plan (4th Ed.) were undertaken in parallel. The SEA provides information on how the Plan was amended to take into account any issues raised by statutory consultees during the scoping stage, and the SEA statement produced for the adopted Plan sets out how the Shetland Plan took into account the comments received following the consultation period on the SEA.

The assessment process considered topics relevant to the nature of the Shetland Plan and SEA topics not thought to be affected by the Shetland Plan were 'scoped out' of the report, whilst those where environmental impacts were considered likely, were 'scoped in' to the assessment. This decision was agreed by competent authorities during the scoping stage. 'Comprehensive and extensive' environmental baseline data on Shetland's marine environment was collated and published in the form of maps in the Shetland Plan Atlas. The data was reviewed, checked and updated during the preparation of the Shetland and it was noted that the SEA intended to build on this information and for it to be updated to reflect the availability of new data sources and analysis.

SOUND OF MULL MARINE SPATIAL PLAN

The environmental baseline of the SEA to describe the current environmental situation contained data from the Sound of Mull Plan, where appropriate. The assessment process considered topics relevant to the nature of the Sound of Mull Plan.

| 7 | **Which are the ecologically important areas, which may be affected by MSP?** |

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The East Plan area contains 11% of England's Special Areas of Conservation and 29% of Special Protection Areas. There are numerous Sites of Special Scientific Interest, Ramsar sites and coastal natural protected landscapes onshore (e.g. Norfolk and Suffolk Broads). The East Plan area is also considered to be important for supporting fish stocks, containing high intensity spawning areas for plaice (56% of marine plan area), sand eels, whiting, cod, and sole, as well as high intensity nursery grounds for cod.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The South Plan area contains nine UNESCO 'world heritage sites' (e.g. the Jurassic coast), and over 60 marine protected areas.

WALES NATIONAL MARINE PLAN

The Welsh Plan could have effects on habitats or species in respect of which certain sites have been identified as of Community importance (hereafter referred to as European designated nature conservation sites). These sites include Special Areas of Conservation (SACs) designated under the Habitats Directive (92/43/EEC) and Special Protection Areas (SPAs) designated under the Birds Directive (2009/147/EC). Ramsar sites and possible/proposed SPAs and candidate SACs. In accordance with the Habitats

Regulations, there is a need to consider whether the Welsh Plan is likely to have a significant effect on any European designated nature conservation site, a process known as Habitats Regulations Assessment (HRA). At this stage it is too early to determine the effects.

SCOTTISH NATIONAL MARINE PLAN

The Scottish Plan refers to ecologically sensitive areas, as defined in a report published in 2006 entitled, "Establishment of Marine Environmental High Risk Areas (MEHRAs). These are areas identified at risk from shipping. These areas include valuable habitats with high biodiversity such as Natura 2000 sites and other MPAs.

SHETLAND ISLANDS MARINE SPATIAL PLAN

Salt marsh and sand dunes are significant coastal habitats. The salt marshes are usually inundated by seawater and serve as nursery and feeding habitats for a wide diversity of species.

SOUND OF MULL MARINE SPATIAL PLAN

The Sound of Mull Plan covers a wider range of Natural and Historic sites, including designated sites (e.g. SPAs, SACs, SSIs, Areas of Great Landscape Value/Special Landscape Areas.

8	What is known on the coherence of the MPA network?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The recommended Marine Conservation Zones (MCZs) proposed to government (in 2012) were designed to make up an ecologically coherent network by fulfilling a set of ecological design principles, following those proposed by OSPAR. However, the MCZ designation is not yet complete and following a decision not to designate some of the proposed MCZs (e.g. reference areas designed to have high protection measures), the coherence of the network is likely to have been impacted. In addition, management measures will not be established for MCZs until designation, meaning that the levels of protection afforded to the sites is likely to be insufficient.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The MPA network has not been finalised, and therefore its coherence cannot be comprehensively assessed at the time of the South Plan or SA. However, South Plan policies support the objectives of the MPA network and the avoidance, minimisation or mitigation of impacts on the network coherence, the ability to adapt to climate change, and proposals that could prevent the inclusion of MPA features of importance before coherence has been assessed.

WALES NATIONAL MARINE PLAN

There are currently 132 Marine Protected Areas (MPAs) in Welsh inshore waters. Wales' network of MPAs consists of European Marine Sites (Special Areas of Conservation (SACs) and Special Protection Areas

(SPAs)), intertidal Sites of Special Scientific Interest, marine elements of Ramsar Sites, Marine Nature Reserves and Marine Conservation Zones (MCZs). The MCZ project was specifically designed to fill gaps in the existing MPA network in order to deliver an ecologically coherent network, according to UK and OSPAR principles. Policy ENV/02 seeks to protect and ensure consistent management of MPAs (as well as terrestrial designated sites) by avoiding damage to the MPAs and ensuring proposals are compatible with MPA management measures. With specific regard to European sites, the supporting text to the policy makes clear that a proposal "*can only proceed after the public authority has determined that the proposal will not adversely affect the site alone or in combination with other plans or projects. Approval may include appropriate mitigation measures to ensure the integrity of the designated site is secured as a result of the proposal. However, a public authority can approve proposals which will adversely affect the integrity of a European Marine Site if it is satisfied that: a) there are no alternative solutions to the objective of the proposal, and b) there are imperative reasons of overriding public interest (IROPI). In such cases compensatory measures must be secured to ensure the overall coherence of the network is maintained.*"

SCOTTISH NATIONAL MARINE PLAN

A network of well managed marine protected areas is being established to meet national objectives and help deliver an ecologically coherent network. The network will comprise of newly designated MPAs (Nature Conservation MPAs) as well as Natura Sites and SSSIs and Ramsar sites. These sites, together with other protected areas will make a significant contribution to the enhancement of the overall marine areas.

SHETLAND ISLANDS MARINE SPATIAL PLAN

Yes. There are currently Special Protection Areas and Special Areas of Conservation designated under European Law (Natura 2000 sites). The Shetland Plan will monitor the classification or designation of further SPAs and SACs. Various monitoring data is recorded in these areas. There are at least 78 designated nationally important sites -Sites of Special Scientific Interest (SSSI) included in the Shetland Plan. There are two nature conservation MPAs, and one Ramsar site.

SOUND OF MULL MARINE SPATIAL PLAN

The Sound of Mull Plan recognises the numerous designated sites within the Plan area, notably European nature conservation sites (SPAs and SACs) as well as UK specific sites (e.g. SSSIs). However, these are all terrestrial in nature and there are no references in the Sound of Mull Plan to the network of MPAs.

9	Which are the actual and potential threats on the marine ecosystems?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Climate change: rising global air and sea temperatures and associated sea-level rise has implications for all receptors considered in the marine ecology chapter, for instance the loss of intertidal habitat through coastal squeeze. More direct changes include a change in the plankton growing season and the distribution of certain fish species which may also be prey species for other animals such as seals. Ocean acidification, through the uptake of CO_2 from the atmosphere, is predicted to have negative impacts on calcifying organisms, which will resonate at higher trophic levels. Habitat loss and disturbance: fishing impacts include

the potential depletion of commercial fish stocks, impacts on benthic habitats and bycatch of non-target fish species, impacts on seabirds, marine reptiles and cetaceans. Habitat damage resulting from the harvesting of shellfish (such as scallop dredging) can also cause changes to marine ecosystems. On a smaller scale, direct impacts on benthic habitats arise from aggregate extraction, wind farm installation and other offshore subsea installation. Marine litter: ingestion of or entanglement in marine litter by fish, mammals, reptiles and birds can result in mortality. Marine noise: anthropogenic activities in the East Plan area which generates marine noise include shipping, oil and gas exploration and production and wind farm installation (presently largely reliant on pile driving). Marine mammals are of principal concern, though fish and cephalopods may also be subject to disturbance by noise. Pollution: estuarine fish species are still subject to pressure from inputs of pollutants and coastal developments, though a number of initiatives are helping to improve the physical and chemical quality of rivers and estuaries. Non-native species: the spread of non-native species may be accentuated by climate change (above). National and international initiatives to limit the transport of invasive species include the GloBallast Partnership Programme and the Invasive Non-native Species Strategy for Great Britain.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Actual threats are not assessed because the proposals will need to be considered on a case by case basis. However, potential threats are identified in the SA. The results of the Options Assessment found no major/significant negative or positive effects and all options were found to have a minor positive effect on the marine ecology areas. Similarly the Plan assessment found no major or significant negative or positive effects on the marine ecology aspects, but one uncertain effect on the seabed habitat/benthos due to uncertainty around whether developmental policies (oil and gas; aquaculture; infrastructure) had higher priority than other activities. For the Water Environment theme, options (1 & 3) did have major/significant positive effects due to strong policies aiming to improve estuarine water quality and turbidity and removal of marine litter. The Plan Assessment found one major/significant positive effect on marine litter due to strong policies but uncertainty on pollution and water quality, also around the uncertainty as to the prioritisation of specific types of development over other activities in the plan policy wording.

WALES NATIONAL MARINE PLAN

Potential threats have been assessed as part of the Sustainability Appraisal. The results of an assessment have identified the potential threats as actual threats will be considered on a case by case basis. The Marine environment around Wales has suffered significant habitat loss, particularly saltmarshes and sub tidal native oyster beds. Policies ENV/01 to ENV/06 supporting the restoration and enhancement of marine ecosystems have been developed to help minimize adverse effects. The ecological threats of invasive non-native species area a specific concern for Welsh habitats. Their effects have been assessed and consequently specific policies have been created to help control the spread of invasive species. Under ENV/03 proposals should include biosecurity measures to reduce the risk of introducing and spreading invasive no-native species.

SCOTTISH NATIONAL MARINE PLAN

Actual threats include: commercial fishing, invasive species, marine litter, dredging; marine transport; aquaculture; and recreation. Potential threats include: offshore renewables and climate change through sea temperatures, acidification, and changes to rainfall patterns.

SHETLAND ISLANDS MARINE SPATIAL PLAN

Invasive and non-native species pose a potential threat in the light of climate change. The introduction by human activities of non-indigenous species to coastal and marine waters should be minimized or avoided. The effects of introduced species on the host environment can include competition with native species for food and space, habitat alterative, changes in water quality and the transmission of disease or parasites. This is stimulated in Policy INNS1: reducing the spread of invasive and non-native species.

The loss of geodiversity, as a consequence of factors such as unsustainable development, changing land use or climate change present real threats to biodiversity. Shetland is one of the 54 Geoparks in the European Geopark Network. Geoparks play an important role in ensuring that the natural environment continues to provide important ecosystem services. As such Policy HER: Safeguarding Marine Geodiversity is designed to help protected geodiversity from the potential adverse threats caused by development and stipulates that "Development will only be permitted where appropriate measures are taken to protect and/or enhance important marine geological and geomorphological resources and sites, including those of educations or research value."

The SA evaluates and summarizes the environmental issues likely to be affected by the Plan according to each SEA topic and presents a range of potential threats to biodiversity caused by development include physical disturbance (e.g. marine litter), pollution and other chemical changes (e.g. pesticides).

SOUND OF MULL MARINE SPATIAL PLAN

Actual threats have been assessed looking at their potential sources of impact. Biodiversity, Fauna and Flora: the loss of biodiversity potentially resulting from physical disturbance, pollution events and shellfish harvesting, the introduction of non-native and/or species, overfishing and the disturbance/destruction of habitats and species potentially through visitor pressure and activities. Water: pollution events may cause a reduction in water quality resulting in biodiversity loss, amenity loss and impacts on marine based industries, diffuse pollution could increase nutrient loading from aquaculture leading to eutrophication's and HAB's and marine litter could damage habitats and species. Climate effects: increased likelihood of storm events, flooding and sea level rise may cause coastal erosion and flooding, and the siting of marine renewables are likely to lead to biodiversity loss. All mentioned threats are covered by the objectives of the Plan.

10	How are "reasonable" alternatives included in planning?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Alternatives that take into account the objectives and the geographical scope of the Plan were identified by plan makers subsequent to the identification of Plan objectives in May/June 2012. MMO selected options by developing a list of key issues in consultation with stakeholders. A list of 60 key issues was refined to 13, of which two were selected as options for the SA because they were the only two options that could be

expressed spatially. Different approaches to the development of wind and aggregates were used as starting points for the Plan Options process, with four Plan Options developed (Options A-D). Plan Options A and B looked at different approaches to the development of offshore wind and Options C and D used different approaches to the development of the aggregates industry. Spatial analysis was undertaken to help illustrate the different implications of the Plan Options; these illustrations were used to help understand how the different Options may impact upon other activities (their implications). Spatial analysis was undertaken to help illustrate the different implications of the Plan Options. Each key issue was assessed for how the initial Options may differentially affect it.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Three alternatives - called Options - are created in the course of the SA by considering different applications of policies in the South Plan, those being: *prescriptive* (selecting policies to achieve certainty for issues that are particularly important); *flexible* (looking to find the middle ground across objectives mainly through medium-strength policies); and *balanced* (selecting the maximum number of high-strength policies). Options were developed through stakeholder engagement. For each SA topic, each of the three Options were assessed with regard to the positive or negative impacts they would be expected to have, certainty levels for predicted outcomes were provided, and enhancement and/or mitigation measures are suggested. These Options appear to be carefully considered. These assessments were then discussed at stakeholder workshops where preferred Options were chosen for each of the objectives in the South Plan.

WALES NATIONAL MARINE PLAN

An assessment of reasonable alternatives to the Welsh Plan has been identified in the SA process, namely i) no Welsh Plan ii) a Welsh Plan that prioritises specific outcomes ahead of others iii) Welsh Plan incorporating a generic sector hierarchy iv) A quantitative, target-led Welsh Plan v) High level strategic Welsh Plan. The "High level strategic Welsh Plan" has been identified as reasonable and has been taken forward for appraisal as part of the SA. This alternative would provide a lower level of spatial specificity relative to the Plan, yet would still provide sector-specific policy.

SCOTTISH NATIONAL MARINE PLAN

Alternative approaches were considered in the preparation of the Scottish Plan. These included: i) "do-nothing" scenario; ii) use of a high level strategic plan (i.e. more policy-based) or a high level spatial plan (i.e. identifying proposals in specific areas); and iii) the use of alternative priorities such as an economically-focused plan or an environmentally-focused plan. Workshops were held with the Consultation Authorities and key stakeholders to discuss alternative priorities. It was concluded that the 'middle ground' between a predominantly economic and a predominantly environmental focus would ensure the necessary protection of the environment to ensure sustainable economic growth.

SHETLAND ISLANDS MARINE SPATIAL PLAN

The requirement by law is to consider appropriate alternatives to the Shetland Plan. These include: i) "do-nothing" scenario i.e. continue under the current Shetland Plan (3rd ed); ii) likely impact of development without any plan; and iii) The preferred option -adoption of the Final Shetland Plan (4th Ed.).

SOUND OF MULL MARINE SPATIAL PLAN
A reasonable alternative to full implementation of the Sound of Mull Plan was no change/maintenance of the status quo. Thus, a detailed assessment of the 'status quo' Sound of Mull Plan is provided. Much of the information contained in the Plan is available through other sectors which actively represent the 'status quo' or environmental baseline. For example, information on current legislation and regulatory frameworks and to some extent spatial information. Documentation is available through local authority plans and policies. However, this information may not contain the detail that is required for the Sound of Mull Plan.

11	Are different planning solutions presented?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS
Where significant negative or uncertain effects were identified, the SA outlines mitigation measures identified. Given the East Plan is not intended to address site-specific details and does not have a clear spatial dimension, planning solutions are not presented *per se* but mitigation measures are considered at a strategic level and subsequently suggestions for strengthening or changing policy wording are made.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS
Where significant negative or uncertain effects were identified, the SA outlines mitigation measures identified. Given the South Plan is not intended to address site-specific details and does not have a clear spatial dimension, planning solutions are not presented *per se* but mitigation measures are considered at a strategic level and subsequently suggestions for strengthening or changing policy wording are made.

WALES NATIONAL MARINE PLAN
Planning solutions are not presented *per se* but mitigation measures are considered where negative or uncertain effects were identified. For example, development of the aquaculture sector has been assessed as having cumulative mixed positive and negative effects in respect to the SA topics such as improvements in the provision of locally sourced seafood as well as negative effects on climate change and air quality. However, future proposals would need to be considered at the project stage.

SCOTTISH NATIONAL MARINE PLAN
The Scottish Plan primarily sets out policy considerations (environmental, social and economic) for sustainable development of Scotland's marine resources, rather than focusing on specific proposals. Therefore planning solutions are not presented *per se* but when evaluating the sector-specific objectives and policies, measures are suggested to mitigate against negative or uncertain effects. The SA also provides some guidance on preferred locations for different types of development, with a focus on offshore wind and marine renewables.

SHETLAND ISLANDS MARINE SPATIAL PLAN

Given that the Shetland Plan does not include any specific actions or measurable activities, planning solutions are not presented *per se* but mitigation measures are considered per SEA topic and suggestions for policy revisions or alternatives are made.

SOUND OF MULL MARINE SPATIAL PLAN

An Assessment of Alternatives was proposed as part of the report, outlining 'No change/status quo' and 'Partial Implementation' as alternatives to the 'Full implementation of the Plan'. The maintenance of the status quo will be considered as it was found that there is good co-operation between the various industries and stakeholder groups operating within the Sound of Mull. However, with coastal and marine areas coming under increasing pressure, with attendant conflicts of interest, this may not always be the case.

12	**Is it possible to identify strategic choices in planning?**

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Implications (+ve, -ve or no effect) were concluded for each option and for each SA topic. The SA found that various options would have implications for either sectors or SA topics (e.g. environmental issues). Knock-on effects for other sectors could be identified but the specific implications remained uncertain. The MMO selected the preferred approach by using the SA options appraisal for internal analysis as to which option met Plan objectives best and addressed national and local policy. The preferred option was selected because of its ability to address issues more fully than other options, and represented a wider cross section of sectors, including key shipping and fishing sectors. Some positive economic aspects of one of the options were included.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Implications of the different options are made clear in the SA, but these are considered at a strategic level, as project proposals will be assessed at the consenting stage. The SA highlights where there may be conflict between policies, or uncertainty in effects.

WALES NATIONAL MARINE PLAN

Yes. During the SA process cumulative negative effects have been identified across several SA topics, reflecting both sensitivity of the marine environment to change and the likely direct and indirect adverse effects of new development or activity supported by the sector policies. As a result, strategic resource areas (SRAs) have been mapped highlighting the overlap where multiple activities are concentrated.

SCOTTISH NATIONAL MARINE PLAN

The Scottish Plan strongly emphasises the requirement for sustainable development and use. The SA evaluates separately the social, economic and environmental impacts of each sectoral-specific policy and objective, noting potential trade-offs between different sectors, which locations are likely to be most suitable for certain activities and distinguishing between short-term and long-term costs and benefits. This should facilitate strategic decision-making.

SHETLAND ISLANDS MARINE SPATIAL PLAN

Strategic choices in planning could not be identified, but the implications of each of the three potential alternative scenarios [to the current Shetland Plan] were outlined. The focus of the SEA is to assess the main objectives and policies as set out in the Shetland Plan and the report evaluates the impacts of each policy against the SEA topics, noting the nature of the impact (scale, duration, etc.). This may facilitate strategic decision-making.

SOUND OF MULL MARINE SPATIAL PLAN

In addition to the 'no change/Status Quo' alternative, 'Partial Implementation' was considered in the scoping process but an assessment was not carried due to the evaluation that it would have been unlikely to have resulted in a different assessment result as all the sectoral and sub-area policies are firmly linked to the two central policies SOM G1 (Communities) and SOM G2 (Development and Activity).

| 13 | How is the "zero alternative" defined and used in the assessment? |

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

A 'baseline-led' appraisal considers how marine planning under the marine plan would be different from under a 'business as usual' scenario (without the plan but under current policy). These 'baseline conditions' are assessed for each of the SA topics.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

A 'baseline-led' appraisal considers how marine planning under the marine plan would be different from under a 'business as usual' scenario (without the plan but under current policy). These 'baseline conditions' are assessed for each of the SA topics.

WALES NATIONAL MARINE PLAN

Zero alternatives in this assessment is considered as the alternative of 'no Welsh Plan based on a 'Hierarchy of Alternatives'. Under this alternative, a marine plan for Welsh waters would not be prepared and adopted by the Welsh Government. Proposals for the development and use of the marine area would therefore be considered in the context of the existing policy and legislative framework governing the inshore and offshore regions of Wales. Existing decision-making bodies, such as the Welsh Government, local authorities, the relevant Secretary of State (for nationally significant infrastructure projects), The Crown Estate and Natural Resources Wales would continue to exercise their functions.

SCOTTISH NATIONAL MARINE PLAN

'Do nothing' was considered as one of the alternatives to the Scottish Plan. The SA concluded that this option would result in a lack of direct benefits for the economy, communities, population and human health, and less integration between environmental and economic considerations.

SHETLAND ISLANDS MARINE SPATIAL PLAN
A "do-nothing" scenario in the Shetland Plan considers the likely impact of continuing under the current Shetland Plan (3rd Ed.), instead of adopting the final (4th Ed.) The Shetland Plan incorporates the recommendations of the SEA process and carried out further consultation with key stakeholders. The SEA cautioned that this could result in the provision of misleading information and incorrect and incomplete data sets, leading to additional timely and expensive delays in the planning process.
SOUND OF MULL MARINE SPATIAL PLAN
The term Zero-alternative in the Sound of Mull Plan refers to the 'status quo' or a 'do nothing' continuation of the environmental baseline. An assessment of how the status quo option would deliver the SEA objectives found that existing institutional arrangements and policies would either have a positive effect (biodiversity, flora and fauna; water; historic and cultural heritage, landscape and seascape objectives) or a neutral effect (population and human health; climate; material assets objectives).

14	Which are the significant environmental effects of the plan?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS
Significant effects have been identified based upon the notification used for the SA (see Table 2-4). Only those effects noted as either ++ or -- are considered as 'significant'. Air and Climate = no significant effects, although the Plan is likely to have a positive effect on the development of offshore renewable energy and therefore achievement of carbon reduction targets. Marine Ecology - there are no significant effects noted in the SA. However, sector specific policies that safeguard area for activities present the potential for activity displacement (e.g. fishing), but the extent to which displacement could generate irreversible effects on marine ecology cannot be defined with any certainty. In many cases, 'the draft plans policies reflect existing policy level protection of water quality and sites and species of conservation interest' but plans 'have the potential to enhance present protection measures through ensuring that cumulative effects and good design are taken account of or encouraged.' Geology/geomorphology and coastal processes - no significant impacts noted in the SA, primarily because the plans 'largely confirm or reinforce existing policy measures, though in some circumstances provide for safeguards or considerations which could assist in protecting geological or geomorphological interests'. Landscape and Seascape - no significant effects noted in the SA as the East Plan reinforces existing policy. Water environment - no significant effects noted in the SA.
SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS
The options assessment and the assessment of the South Plan found no major/significant negative or positive or uncertain effects on the marine ecology sub-topics, with the exception of the uncertain effect on the seabed habitat/benthos, on pollution and water quality, and on coastal and marine assets in the Plan as a result of lack of clarity regarding the policies supporting certain types of development. These findings could be surprising, given that the options are designed to be markedly different from one another in their application of policies. However, some of the assessment comments suggest that the moderate (neutral or positive rather than significantly positive or negative) effect conclusions are driven by the fact that even high-

strength policies are considered to contain mitigation measures sufficient to moderate any significant negative impacts (e.g. 'the effects of infrastructure development through wind and tidal energy projects, port development, cable landings and pipelines pose a potential threat and should be considered. The effect of this would be neutral as the relevant policy includes safeguards'). It could be argued that the uncertainty in these policies makes it extremely difficult to form clear conclusions in relation to potential outcomes, and that this leads to assessments resulting in moderate responses.

In the case of seabed habitat/benthos, the uncertain effect is due to a 'lack of clarity regarding the polices supporting certain types of development, [which] could be deemed to have higher priority that other Plan activities or environmental sensitivities due to the way the policies are phrased'. This conclusion supports our previous assertion that the lack of obvious prioritisation between policies leads to considerably uncertainty with regard to predicted outcomes of the plan. Given the assessment framework used in the SA, this situation flags as an uncertainty, rather than a potentially negative impact, which would be more precautionary. As a result, the Plan response is to keep the policy wording as it is (and therefore the uncertainty) stating that 'the strength of the policies may offer some degree of priority over other activities but as many of the environmental and social policies are also worded strongly (i.e. are musts) they must also be adhered to.'

WALES NATIONAL MARINE PLAN

Significant effects have been identified based upon the notification used for the SA. Only those effects noted as either ++ or −are considered as significant. In general, the Welsh Plan is considered likely to have minimal negative effect on the environmental SA criteria and in many cases the effects of the draft policy on the SA criteria are uncertain at this stage. Where negative effects were likely to have a minimal impact, safeguards have been put in place.

SCOTTISH NATIONAL MARINE PLAN

The SA undertook a high-level assessment of the sector-specific objectives and policies in the Scottish Plan. It categorised environmental effects into five categories (working against SA objectives; neutral/no change; mixed effects; promoting SA objectives; uncertain), recorded in a series of tables. None of the policies or objectives were found to work against the SA objectives; sectors with some mixed effects on the environment included aquaculture and oil and gas. When taken together, the cross-cutting general policies and the sectoral policies and objectives were found to recognise and address potential effects on biodiversity, water, air, seascape/landscape, climate and marine sediments, and were anticipated to prevent adverse effects on the environment.

SHETLAND ISLANDS MARINE SPATIAL PLAN

It was considered that the Shetland Plan would result in positive overall environmental benefits and would ensure that the environment was a key consideration in decision making for marine development in Shetland. The SEA undertook an assessment of the Shetland Plan against each SEA topic and objective. The overall significance of impacts has been determined from a combination of three factors: type of impact, likely magnitude of impacts and the sensitivity of the receptor. A moderate positive impact was concluded for most of the SEA topics (biodiversity and nature conservation; geology and soils; water; climate factors; landscape and seascape) and a significant positive impact for the SEA topic of material assets, as the Shetland Plan

policies aim to secure and promote existing and new economic development without adverse impacts, guide proposals away from areas vulnerable to the adverse impacts of development, ensure that marine development is carried out in the most sustainable manner, and protect the marine environment through the sustainable management of marine waste. These overall findings seem to be based heavily on the presumed success of safeguarding mechanisms within policies. For example, the 'moderate positive impact' assessment notes for biodiversity and nature conservation acknowledge that certain marine developments will have negative impacts on marine habitats and species, but consider that the Shetland Plan policy safeguards used to minimise these potential impacts will be sufficient to produce a net positive impact. While safeguards are clearly and carefully included in the Shetland Plan policies, there are also allowances for proposals resulting in negative impacts under certain circumstances. It would have been useful, therefore, to assess options that considered the results where proposals causing negative impacts would be accepted under these circumstances.

SOUND OF MULL MARINE SPATIAL PLAN

The Plan is expected to have positive impacts across the Sound of Mull. Effects on Biodiversity, Flora and Fauna: the Plan provides a comprehensive guide to the natural and historic environment. Landscape and seascape sensitivities around development activities. Population and Human Health: the Plan promotes sustainable business development and provides opportunities for community employment. Water: Recognizes threats to water quality from pollution and marine litter. Climate Change related issues such as flooding and coastal erosion are included in the Plan. Tourism may affect climate change which could increase greenhouse gas emissions. There are two areas that could be expanded upon in the Plan: guidance on activities that can have adverse effects on 'wider ecosystem function' and the need for a sensitivity matrix for the historic and landscape/seascape interests.

15	Which are the cumulative impacts?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The East Plan SA notes some cumulative impacts:

- cumulative impacts affecting seabed habitat loss and physical change
- changes to water quality and resulting effects on wildlife and people, specifically from hazardous substances
- changes to hydrographical conditions required to meet MSFD and WFD
- air quality, including effects on adjacent coastal communities (current and potential future shipping traffic effects on Air Quality Management Areas)
- introduction of non-indigenous species in general and ability to meet MSFD requirements
- noise requirements under MSFD but also potential impact on sensitive species from potential new development combined with current activities
- litter in relation to MSFD requirements.

However, the SA specifically highlights the significant drawbacks in the general approach taken: '*The large majority of the policies in the Plan are generic or criteria-based policies without a clear spatial dimension. It is therefore difficult to assess the extent to which the implementation of these policies might conflict with other*

existing economic, social or environmental policies as this will substantially be determined by the spatial locations where the marine policies are given effect.'

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

'The SA of the South Plan considers the effects of the South Plan as a whole against each SA issue rather than individual policies assessed and therefore it is considered that this approach picks up the total (or cumulative effect) of the South Plan as far as it is possible to do so for a plan that is not spatially detailed.'

The result of the cumulative effects analysis is that the significance of cumulative effects will depend upon the nature of the proposals, and the habitat/community sensitivities. Without having clear spatial dimensions to the Plan, it is very challenging to assess what the cumulative effects might be, nor to predict how the marine plan policies will affect the implementation of marine activities compared to the situation without them. Ultimately, it is considered that the EIA process and monitoring of plan implementation will be the methods through which consideration of effects and cumulative effects will be considered. The SA concludes that it is not predicted that policies will generate adverse effects as they 'reflect the existing policy and legislation.'

WALES NATIONAL MARINE PLAN

The appraisal of cumulative effects demonstrates that the Welsh Plan policies are, in particular, likely to deliver **significant benefits** in respect of: climate change (SA Criteria 6); resources (SA Criteria 10); tourism and recreation (SA Criteria 9); the economy (SA Criteria 11); well-being (SA Criteria 12); and governance (SA Criteria 14), as evidenced by the large number of policies that are expected to generate significant positive effects on these SA criteria.

However, the **cumulative negative effects** have been identified across several of the SA criteria and particularly those relating to the built and natural environment, including: biodiversity (SA Criteria 1); water (SA Criteria 2); the physical environment (SA Criteria 3); air quality (SA Criteria 4); landscape and seascape (SA Criteria 5); climate change (SA Criteria 6); heritage (SA Criteria 7); and resources (SA Criteria 10). This reflects both the sensitivity of the marine environment to change and the likely direct and indirect adverse environmental effects of new development or activity supported by the sector policies. The range of adverse effects are broad and include, for example:

- disturbance to, or loss of, habitats and species;
- reduced water quality due to the mobilisation of sediment or pollution;
- changes in bathymetry/seabed topography;
- impacts on landscape and seascape character;
- disturbance to, or loss of, heritage assets;
- increased emissions to air and energy use; and
- resource use and waste generation

SCOTTISH NATIONAL MARINE PLAN

Given that the focus of the Scottish Plan is on policy, rather than proposals, it was reported that the cumulative environmental effects of spatial strategies would be assessed during preparation of the relevant plans. Instead, the assessment of cumulative effects focused on the combined effects of the Scottish Plan

and the Scottish Planning Policy (SPP), which together provide the overarching marine and terrestrial planning policy framework. Both policies emphasise the importance of sustainable economic growth and sustainable development. It was concluded that the cumulative effects of these policy frameworks was largely positive or neutral and that economic growth was supported, with the cross-cutting and sector-specific policies working to avoid or reduce the potential adverse effects of development on coastal and marine communities and the environment.

SHETLAND ISLANDS MARINE SPATIAL PLAN

The SEA acknowledges that 'due to the nature of the Shetland Plan, it does not in itself produce measurable impacts, but is a governance tool and source of guidance and information.' Based on the overall outcomes from the SEA, it concludes that the majority of the policies will have a positive impact on the marine environment, and only the 'material assets' topic area (covering all sectors relating to marine industry and development) has the potential for negative cumulative impacts. However, the SEA notes that the Shetland Plan ensures that 'any potential minor negative environmental impacts are minimised through adequate mitigation measures' through individual criteria-based policies and caveats. The SEA stated that any development that would result in "a significant adverse effect, either individually or cumulatively, on the marine environment" would not be permitted, and all developments must comply with every policy, which will ensure that any minor negative impacts are sustainably controlled and managed.

The potential for the oil and gas industry to cause 'significant negative impacts' was acknowledged, but the SEA stated that the Shetland Plan has several policies seeking to minimise the potential adverse impacts from exploration and extraction within 12nm of the Shetland coast and manage any overall negative climatic impacts resulting from development.

SOUND OF MULL MARINE SPATIAL PLAN

The Sound of Mull Plan represents a holistic approach to management of this marine and coastal area. The cumulative impacts such as increased tourism could put designated, protected and sensitive interests at risk. Impact of climate related issues on existing infrastructure which is vital for communities. Other possible climate related impacts may come from an increase in greenhouse gas emissions. Increased boat traffic (shipping and recreational boat use). Fishing activities may also have significant cumulative impacts on the industry. However, there are also positive impacts, in terms of applying the Sound of Mull Plan using a holistic approach means that communities and populations will benefit from development opportunities.

16	**Does the plan support the achievement and/ or contribute to maintaining GES and other environmental targets?** *Captured in* WWF Checklist Q1 *and* Baltic SCOPE Checklist Toolkit Q1
17	**Which are the impacts on relevant ecosystem services?**

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Ecosystem services are not mentioned explicitly. However, the SA considers Air and Climate, marine ecology and cultural heritage within its topics. Cultural heritage - there are both positive and negative impacts noted

in the SA from the plan policies. Since offshore wind development and aggregates extraction may increase slightly, this may result in greater effects on heritage assets, although 'strong new policy would help to mitigate or avoid this.'

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

There is no specific assessment of how the Plan affects ecosystem service provision, but ecosystem services are included within the Plan under its objectives, and impacts on these objectives are considered in the SA. The South Plan includes policies that protect feeding grounds and essential habitats for fisheries, as well as reducing the spread of non-indigenous species. Impacts on fisheries are therefore significantly positive. However, there was considerable uncertainty surrounding the effects on marine cultural heritage assets, as policies are not clear about which assets are covered (newly discovered and non-designated are mentioned, but other classes are not). Impacts on habitat provision and on water purification services are uncertain given the policy wording surrounding developments that may have an impact on the seabed and benthos and therefore the pollution, water quality and seabed objectives. There is also uncertainty on how the South Plan will affect statutory and non-statutory landscape designations, and therefore recreational/aesthetic ecosystem services.

WALES NATIONAL MARINE PLAN

The assessment details the impacts on relevant ecosystem services. For example, Policy FIS_01 seeks to support and enhance sustainable fishing activities, the development of evidence to improve understanding of the opportunities for the sector and the identification of SRAs. In the context of the Welsh Plan, the marine fisheries sector comprises all socio-economic activities relating to the capture of wild marine organisms and the subsequent handling and processing of catches. Fisheries can have a range of impacts on marine ecosystems. In particular, the removal of target species at inappropriate levels can harm the ability of fish populations to reproduce and stocks to recover and may in-turn can have wider impacts on the food-chain. These impacts, if not properly managed, can affect the future productivity of the resource for future generations by undermining ecosystem resilience. Fishing activities can also result in the removal and discarding of non-target fish and cause detrimental physical impacts on habitats from fishing gear.[3] Marine mammals may also be caught accidentally. Where these impacts affect designated sites in particular, effects could be significant and in this regard Natural Resources Wales is working with the Welsh Government on an Assessing Welsh Fisheries Activities Project to evaluate the impacts of fishing on features of MPAs in Wales. However, Policy FIS_01 places specific emphasis on the promotion of sustainable fishing activities which is expected to help ensure that fish stocks and breeding grounds are protected to allow for growth in fish numbers and over-exploitation of stock managed.

SCOTTISH NATIONAL MARINE PLAN

The Scottish Plan emphasises the importance of safeguarding ecosystem services, noting in particular the high economic value of provisioning and regulating services to Scotland. The SA does not mention ecosystem services explicitly, but water and air quality, climatic factors, cultural heritage,

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[3] Food and Agricultural Organisation of the United Nations (2003) *Fisheries Impact on the Ecosystem.* Available from http://www.fao.org/docrep/006/y4773e/y4773e05.htm [Accessed August 2016].

landscape/seascape and coastal processes are included within the environmental features on which the Scottish Plan policies and objectives are assessed.

SHETLAND ISLANDS MARINE SPATIAL PLAN

Ecosystem services are not mentioned explicitly. However, the SEA considers biodiversity, soils and geology, coastal processes and landscapes/seascapes, water, climatic factors and cultural heritage within its topics. Impacts on the first five have been considered previously in environmental effects [Qu. 14]. Potential threats/ pressures to cultural/historic heritage caused by development have been noted, including the issue of marine litter and interference with hydrological processes such as pH, salinity and temperature. However, it is reported that there is likely to be a moderate positive impact on cultural heritage due to the introduction of new policies which protect historic MPAs.

SOUND OF MULL MARINE SPATIAL PLAN

Ecosystem services are not mentioned explicitly but a description of the environmental context within which the Sound of Mull Plan operates is provided. This includes considerations of Water, Climate, Material Assets, and Historic and Cultural Heritage. For each of these, the potential positive or negative impacts of related environmental, social and economic issues are noted, recognised by the Plan and covered by the objectives of the Plan.

18	Who participated in the assessment and what is their opinion on the results?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The following groups were involved in the SA consultation process: Norfolk County Council; Wildlife and Countryside Link; Norfolk Coastal Partnership; Carbon Capture and Storage Association; Kings Lynn and West Norfolk Borough Council; North Yorkshire County Council; Wash and North Norfolk Coast European Marine Sit; Suffolk Coast & Heaths Area of Outstanding Natural Beauty (AONB); Suffolk County Council; Scottish Power Renewables; Waveney District Council; Suffolk Coastal District Council; Marine Conservation Society; Royal Society for the Protection of Birds (RSPB); The Wildlife Trusts; Department for Energy and Climate Change; Chamber of Shipping; Joint Nature Conservation Committee (JNCC); Rijkswaterstaat (The Netherlands); Environment Agency; RWE Npower Renewables Ltd; National Trust; Natural England; Renewable Energy Association; The Crown Estate; Seabed Users and Developers Group; Hull City Council.

An SA Advisory Group was established to provide advice and feedback on the SA process. A number of further reports and studies were suggested by stakeholders and where significant these were reflected in the final report. In order to keep the length of the report to a minimum, a number of reports were mentioned in the revised version as points of further reference. Some respondents felt that a number of supplementary plans and strategies should be considered as part of the policy context. These were considered and referenced. A number of sustainability issues were raised and relevant ones were included in the revised report.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The SA review of the South Plan was produced by an independent consultancy and results were shared in stakeholder workshops. Results were then provided - as recommendations for improvement of the South

Plan - to MMO and the comments were incorporated into the final draft of the plans. The SA team provides comments on how the review results have been incorporated into the final draft. These comments document the extent to which the review results have been considered and incorporated as well as what additional work could be done to improve the Plan.

WALES NATIONAL MARINE PLAN

From the assessment it is unclear who participated. The assessment would benefit from listing the groups who were involved in the SA consultation process.

SCOTTISH NATIONAL MARINE PLAN

The SA was carried out by the Scottish Government's Environmental Assessment Team, on behalf of Marine Scotland. Views of the public and the Consultation Authorities (Scottish Natural Heritage, Scottish Environment Protection Agency and Historic Scotland) were sought. Results of the review of modifications to the Scottish Plan are provided in an addendum to the SA.

SHETLAND ISLANDS MARINE SPATIAL PLAN

An SEA Scoping Report was submitted for a five week (statutory) consultation period and comments received from the Consultation Authorities (CAs) were reviewed by the Shetland Plan team and addressed in the subsequent SEA. A summary of the responses received from CAs (Scottish Natural Heritage (SNH), Scottish Environment Protection Agency (SEPA) and Historic Scotland) in relation to the Scoping Report and the response by the Shetland Plan team are included in the SEA (Appendix I).

The Environmental Report (undertaken as part of the SEA for the Shetland Plan) was produced by Shetland Islands Council (Coastal Zone Management Services). [The post-adoption statement notes that] the views of the SEPA, SNH and Historic Scotland, with regard to the scope and level of detail appropriate for the SEA Environmental Report, were taken into account when undertaking the SEA. The publication of the Report was followed by a 12-week consultation period with the Statutory Consultees (Scottish Ministers, SNH, SEPA and Historic Scotland) and public consultation. The following groups provided comments: SNH, SEPA and Historic Scotland. The post-adoption statement provides a summary of the comments received from the Consultation Authorities, and summarises how those comments have been taken into account in the finalised Shetland Plan.

SOUND OF MULL MARINE SPATIAL PLAN

The Sound of Mull Plan has been built by the stakeholders, users and regulators of the area. This has resulted in a Plan that is focussed on the needs of the local community in terms of development opportunities.

| 19 | **Have ESPOO-consultations been carried out?** |

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Espoo Convention requires EIAs to extend across borders when a planned activity may cause significant adverse transboundary impacts alongside the SEA Directive. Although 'the SA report was subject to a 3-month, formal public consultation alongside the EoE marine plans' it is not evident whether Espoo consultations were carried out. The Plan suggests that this is a consideration for the implementation phase, where proposals might fulfil the criteria of the Espoo Convention.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

As noted previously under the cumulative effects question, it is challenging for the South Plan to predict the effects on adjacent state territories, since there is no clear spatial dimension and the Plan is at the strategic level. Therefore, the Plan states that 'In terms of effects on adjacent state territories due to activities within the South Plan areas, these are likely to be less than those within UK waters. Given the existing range of control mechanisms it is not anticipated that potential transboundary effects would be significant.' It is not clear if Espoo consultations have been carried out, but this would presumably not occur unless a proposal was considered to have an effect/s on adjacent state territories.

WALES NATIONAL MARINE PLAN

As the Welsh marine planning area shares borders with three other marine planning areas within the UK (South-West English, North-West English and Northern Ireland), and to one outside the UK (Ireland), it is reasonable to assume that in the case of planning decisions that are likely to affect adjacent or adjoining marine planning areas of a neighbouring administration, or affect in any way the functions for which another marine plan authority is responsible, all reasonable steps should be taken to encourage coherence of Plan policies. This is to ensure consistency and compatibility in decision making[4]. Any differences in approach should be with the intention of delivering intended outcomes and should be aware of, and look to avoid, unintended outcomes.

SCOTTISH NATIONAL MARINE PLAN

As the Scottish Plan is set at the strategic level with no clear spatial dimension, it is difficult to predict the effects on adjacent territories. The SA does not mention whether ESPOO consultations have been carried out, but it is presumably not applicable at this stage.

SHETLAND ISLANDS MARINE SPATIAL PLAN

Although the SEA was subject to a 12-week consultation process, it is not evident whether Espoo consultations were carried out and there is no mention of the ESPOO Convention in the report or Plan.

SOUND OF MULL MARINE SPATIAL PLAN

N/A

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[4] Part 3 of the Marine Works (Environmental Impact Assessment) Regulations 2007 (2007 No.1518) require that the appropriate authority should supply details of a project, including a copy of the environmental statement, to any neighbouring state that it considers is significantly affected by the application.

20	Has feedback been given on responses from neighbouring countries?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Following the development of the SA Scoping Report, which covers all Plan areas, various stakeholders, including Irish, Scottish and Welsh Governments responsible for marine planning, were consulted. Their feedback is included in a consultation feedback document. Responses were received from Irish and Scottish Governments. Overall responses revealed broad support for the approach taken but concerns were highlighted about the level of information provided, and the level of regional information. As a result, the MMO and SA consultants revised the report in response to the comments, clarifying concerns about the process for SA in relation to the planning process, determined the level of local and regional information to be included, addressed accuracy and omissions in the report.

The East Plan was subject to a public consultation, but it is not clear if this included neighbouring countries.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

Following the development of the SA Scoping Report, which covers all Plan areas, various stakeholders, including Irish, Scottish and Welsh Governments responsible for marine planning, were consulted. Their feedback is included in a consultation feedback document. Responses were received from Irish and Scottish Governments. Overall responses revealed broad support for the approach taken but concerns were highlighted about the level of information provided, and the level of regional information. As a result, the MMO and SA consultants revised the report in response to the comments, clarifying concerns about the process for SA in relation to the planning process, determined the level of local and regional information to be included, addressed accuracy and omissions in the report.

The South Plan was subject to a public consultation, but it is not clear if this included neighbouring countries.

WALES NATIONAL MARINE PLAN

Comments on the Initial Draft SA Report were received from (inter alia) Natural Resources Wales, the Marine Management Organisation, Wales Environment Link, Joint Nature Conservation Committee and the Department for Business, Energy & Industrial Strategy. Alongside revisions to the Welsh Plan made to reflect the initial SA and further engagement, the comments received have been taken into account in preparing the SA Report that will be consulted on alongside the Welsh Plan.

SCOTTISH NATIONAL MARINE PLAN

The Scottish Plan and Sustainability Appraisal Report were subject to public consultation, but it was not noted whether neighbouring countries had been consulted.

SHETLAND ISLANDS MARINE SPATIAL PLAN

The Shetland Plan was subject to a 12-week public consultation, but it was not noted whether neighbouring countries had been consulted.

SOUND OF MULL MARINE SPATIAL PLAN
N/A

21	How are environmental impacts minimized or prevented?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The SA examines how the Plan affects each SA topic, identifies the potential impacts and proposes mitigation measures, which are primarily at the strategic level (i.e. recommendations to change the focus or content of relevant policies). For example, the wording of Policy CC2 Climate Change inferred that mitigation included putting in place offsetting mechanisms rather than minimising emissions and the recommended change in the SEA was incorporated in the East Plan.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The SA notes that because the South Plan is at a regional scale and does not have a clear spatial dimension, there is considerable uncertainty in predicting the effects of activities and therefore the SA predictions and proposed mitigation measures are primarily at a strategic level. In the South Plan, impacts on the marine ecology (specifically the seabed habitats/benthos) are uncertain, due to a 'lack of clarity regarding the polices supporting certain types of development [which] could have higher priority than other Plan activities or environmental sensitivities due to the way policies are phrased.' Mitigation measures identified are to create a stronger link between policy wording and supporting text. However, this recommendation was not followed, as the Plan makers argued that Plans should be *used as a whole, which includes policies across all aspects of sustainable development. Proposals would still have to comply with existing legislation such as EIA and therefore additional negative effects caused by the policies in question would be unlikely. The strength of some of the policies may offer some degree of priority over other activities but as many of the environmental and social policies are also worded strongly (i.e. are musts) they must also be adhered to.'* Sadly, therefore, the environmental effect of the Plan on marine ecology remains uncertain.

WALES NATIONAL MARINE PLAN

Identifying effective mitigation and enhancement measures is a fundamental part of the SA. A mitigation hierarchy has been followed in undertaking the SA of the Welsh Plan. The mitigation hierarchy is based on the principle that it is preferable to prevent the generation of an impact rather than counteract its effects. It thus suggests that mitigation measures higher up the hierarchy should be considered in preference to those further down the list.

SCOTTISH NATIONAL MARINE PLAN

Avoidance or reduction of adverse effects has been built into the Scottish Plan, through inclusion of the cross-cutting policies of a wide-ranging nature (sustainable economic growth, sustainable development, factors for consideration in decision-making – social, community, economic, environmental – as well as requirements for early engagement). These set an overarching framework that applies to all planning and decision-making activities in the marine environment, and their wide-ranging nature means they will act as

balancing measures across the whole policy framework. For each of the sectoral policies and objectives, the SA identifies the potential impacts and proposes some mitigation measures.

SHETLAND ISLANDS MARINE SPATIAL PLAN

Avoidance or reduction of adverse effects have been built into the Shetland Plan through two main tiers of mitigation which have been considered as part of the SEA process: modifications to the Shetland Plan, and general mitigation and best practice. Modification of the Shetland Plan minimises and/or prevents the impacts of the Shetland Plan by making changes to components of the Plan (e.g. policies). This has been addressed through the development of the new (Fourth) edition of the Shetland Plan. General mitigation and best practice provides more specific mitigation actions recommended during the implementation of the Plan. Mitigation measures include consultation with Scottish Natural Heritage (SNH) and/or Marine Scotland on all proposals, raised awareness, support of marine renewable energy resources, and new policies that provide specific protection to geology, soils, water quality and important landscapes, and highlight the importance of early engagement with local stakeholders.

The SEA noted that "a monitoring regime or framework will enable the Council to identify any unforeseen adverse effects at an early stage; and to undertake appropriate remedial action" and stated that the indicators selected would not only monitor change that resulted from implementing the Plan, but also take account of changes resulting from other external factors. SEA indicators listed included the conservation status of proposed MPAs, the condition of coastal geological SSSIs, the number of water bodies achieving "Good Ecological Status", and the number of applications for marine renewable energy developments or developments with potential impacts on seascape or landscape designations. Under each SEA topic, external monitoring is also proposed as an additional mitigation measure.

In accordance with the EC Habitats Directive, the Shetland Plan has also undergone a Habitats Regulations Appraisal (HRA) to ascertain that the Plan will not have a significant effect on any European Protected Sites (Natura 2000 network).

SOUND OF MULL MARINE SPATIAL PLAN

Several mitigation measures have been suggested under the Sound of Mull Plan. Further data is needed on the impacts on biodiversity flora and fauna. Code of conduct has been established so that the public are aware of sensitivities of natural history sites. Climate change mitigation measures include spatial information of areas of risk from coastal flooding is made available. Descriptions of water and relevant sensitivities are accounted for. Appropriate actions/recommendations are devised that consider the impact of climate related issues on existing coastal and marine infrastructure.

22	Are the SEA Directive requirements considered?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The SA process and subsequent reports incorporate the requirements of the EU SEA Directive. Published Government guidance on SEA has been followed in developing the approach to this SA in order to ensure compliance with the SEA Directive. How the SA Report meets the SEA Directive requirements is outlined clearly in the SA (Table 1-1).

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS
The SA process and subsequent report incorporates the requirements of the EU SEA Directive'. Published Government guidance on SEA has been followed in developing the approach to this SA in order to ensure compliance with the SEA Directive. How the SA Report meets the SEA Directive requirements is outlined in the SA (Table 1.1.).
WALES NATIONAL MARINE PLAN
Yes. The range of potential environmental and socio-economic effects under consideration has been informed primarily by the SEA Directive and implementing regulations. In particular, the SA considers the combined sustainability effects of the policies of the Welsh Plan both alone and in-combination with other plans and programmes.
SCOTTISH NATIONAL MARINE PLAN
The SA report incorporates the requirements of the SEA Directive in terms of considering the potential social, economic and environmental effects of the Plan.
SHETLAND ISLANDS MARINE SPATIAL PLAN
The Shetland Plan states that it should consider how it can best inform on effective SEA using MSP. Not much detail is provided on how the SEA-directives requirements are considered.
SOUND OF MULL MARINE SPATIAL PLAN
The Sound of Mull Plan is in accordance with the SEA Directive and the Environmental Assessment Act (2005). The SEA represents the assessment of environmental performance of the Sound of Mull Plan, including cumulative effects.

23	How will the environmental impacts of the plan be monitored and audited?

EAST ENGLAND INSHORE AND OFFSHORE MARINE PLANS
The East Plan is not very spatially specific and the exact types, locations or quantities of development that will be granted consent or a licence are still subject to developer activity and market forces. For this reason, a wide range of potential sustainability effects are possible and the likelihood of such effects occurring will depend upon how the policy presented in the Plan is used and applied. For this reason, and that the East Plan includes a great deal of re-affirmation of existing policy, the monitoring for the East Plan will focus upon key trends within the marine environment generally. The monitoring process will be able to identify whether there are improvements in conditions and trends, although it will not necessarily be possible to attribute this to the East Plan specifically. The monitoring process should be focused upon the significant sustainability effects that are predicted through the SA (both positive and negative). Effects that should be monitored are those:

- that are likely to breach international or national legislation, guidelines or standards; |

- That could potentially result in irreversible damage, with the aim being to identify such trends before the long-term damage is caused; Where there is uncertainty linked to the prediction and, therefore, monitoring is needed to determine whether the prediction was correct and if further mitigation may be needed in the future.
- The outline monitoring framework is based around the SA topics and includes the following elements:
- The potentially significant effect that may need to be monitored
- A potential monitoring indicator
- - The potential data source and frequency of monitoring.

SOUTH ENGLAND INSHORE AND OFFSHORE MARINE PLANS

The South Plan include a comprehensive monitoring programme, tracking achievement of objectives and success of policy implementation. The baseline environmental, economic and social conditions of the Plan area will be monitored, as well as the significant and unforeseen effects of the Plan. The SA also contained recommendations for monitoring.

WALES NATIONAL MARINE PLAN

The SA provides a number of potential indicators that could be used for monitoring the sustainability effects of the Welsh Plan's implementation. Proposed arrangements have been made to develop a monitoring plan for the Welsh Plan which will be supported by evidence provided by the State of Natural Resources Report produced by Natural Resources Wales.

SCOTTISH NATIONAL MARINE PLAN

Proposals for monitoring will further be addressed in the Post-Adoption Statement. Measures will be developed and put in place to monitor the environmental effects as well as unanticipated effects arising from the Plan.

SHETLAND ISLANDS MARINE SPATIAL PLAN

A monitoring framework has been developed and considers indicators and monitoring targets. A formal review will be conducted within 5 years of the Shetland Plan being adopted. This will determine how the Shetland Plan is being implemented and will monitor and appraise the environmental effects of the implementation. The use of indicators to measure how the environmental baseline will involve baseline information on the current condition of the Shetland's marine environment.

SOUND OF MULL MARINE SPATIAL PLAN

Several monitoring recommendations have been made. A method of feedback is required in order to provide a way to assess performance. A method that feeds back the results is also considered. Measures to monitor the view of stakeholders is planned. Monitoring key species targets where possible will ensure that implementation does not adversely affect biodiversity. Relevant authorities such as SEPA, SNH, Historic Scotland and FSAS are responsible for monitoring several parameters.