



Advice Paper 13-12
November 2013

**PLANNING SCOTLAND'S SEAS – SCOTLAND'S NATIONAL MARINE PLAN:
a response to the Scottish Government's consultation**

Summary

- *The draft National Marine Plan (NMP) represents an impressive effort to bring together the varied and complex issues that must be considered for effective, strategic management of Scotland's marine environment. It is a good example of a process of informed policy development, including participation of an appropriate range of interests, expertise and knowledge in its formulation and development.*
- *A key issue which is not adequately considered in the NMP but which will ultimately be crucial to its success is implementation of the Plan. The NMP needs to address more fully how implementation is to be approached and some of the most pressing problems that need to be resolved if implementation is to be effective.*
- *We are concerned that it has not yet been possible to include sufficient detail in the NMP on how the regional and local implementation of the Plan's objectives will operate in practice. In this context, consideration also needs to be given to how the key skills for implementation are going to be procured in the longer-term.*
- *There is a need for a realistic picture of the conflicts between objectives and how these will be resolved. While there is recognition that there will be interaction between objectives, the NMP must acknowledge more clearly that conflicts will arise, particularly when aiming for both maximum economic growth and sustainability. Processes for the resolution of these conflicts will determine the success or otherwise of the NMP. Consideration needs to be given to what mechanisms will be available and how these will operate in practice.*
- *We very much welcome the fact that the draft NMP has been informed by the assessment of the condition of Scotland's seas, based on scientific evidence and data analysis, as presented in Scotland's Marine Atlas. It will be important, therefore, to ensure that there is a commitment to updating the evidence presented in Scotland's Marine Atlas on an on-going basis and ensuring that it is reflected in the implementation of the NMP.*
- *Scotland has a strong marine science community, including leading marine research and teaching facilities. It is crucially important that the development and delivery of the NMP must continue to be underpinned by a broad marine science research base.*

- *The future of Scotland's fishing industry is a key issue for the management of Scotland's marine environment. It is unfortunate that exploitation of fish stocks at Maximum Sustainable Yield (MSY) has become embedded in international fishing agreements. Setting levels of MSY implies a degree of scientific certainty that does not exist. We are strongly of the view that there is a need to fish at appropriate levels that ensure sustainability.*
- *Aquaculture has a fundamental role to play in meeting the key objective of food security. Scotland is a global leader in aquaculture and continues to require a strong research base. We welcome the proposals for the establishment of a Scottish Innovation Centre in aquaculture.*
- *There are a number of energy-related issues that need to be addressed, including the opportunity to review the procedures for the decommissioning of oil and gas infrastructures; and the need to reconcile the development of marine renewables with fair and balanced management of Scotland's seas.*

Introduction

1. The Royal Society of Edinburgh (RSE), Scotland's National Academy, welcomes this opportunity to contribute to the development of the first National Marine Plan (NMP) for Scotland. The RSE has previously engaged with the development of the Marine (Scotland) Act 2010 and it commented on the pre-consultation draft of the NMP in 2011. In preparing this response the RSE has drawn on the expertise within its Fellowship in the areas of marine science, fisheries, aquaculture, renewable energy, the marine and coastal environment. The RSE looks forward to continuing to engage on the development of the NMP and we would be pleased to discuss further any of the comments made in our response with the Scottish Government and Marine Scotland.
2. This response focuses initially on a number of key issues that require to be considered before the NMP is finalised. It then addresses specific chapters and sections where the RSE has more detailed comments to make.
3. The Scottish Government is to be commended on the production of a clear and highly readable document. It represents an impressive effort to bring together the varied and complex issues that must be considered for effective, strategic management of Scotland's marine environment. Its format for consultation and the way it describes and sets out the key issues seem to reflect the consensus position of many years of effort. It is a good example of a process of informed policy development, including participation of an appropriate range of interests, expertise and knowledge in its formulation and development. It provides an appropriate framework for future policy.

Implementation of the National Marine Plan

4. A key issue which is not yet adequately considered in the NMP but which will ultimately be crucial to its success is *implementation* of the Plan. We realise that the NMP is a framework document and cannot be expected to provide the detailed response to every

eventuality that might arise. However, the NMP would be greatly strengthened with the addition of further detail on the way in which decision-making responsibilities will be allocated and undertaken. While we recognise that implementation involves a complex set of issues, the NMP needs to address more fully how implementation is to be approached and some of the most pressing problems that need to be resolved if implementation is to be effective. The RSE highlighted this issue in its response to the pre-consultation in 2011 and it is clear from the current iteration of the NMP that this still needs to be addressed.

5. In this context it is clear that the Scottish Marine Regions and within these, the Marine Planning Partnerships, will have a crucial role in taking forward the objectives of the NMP at the local level. Successful implementation is therefore dependent on there being an effective relationship between the Marine Planning Partnerships and the overarching framework provided by the NMP. However, the Scottish Marine Regions are yet to be formally established and Marine Scotland is considering possible approaches to developing Regional Marine Plans. We are therefore concerned that it has not yet been possible to include sufficient detail in the NMP on how the regional and local implementation of the Plan's objectives will operate in practice.

Recognising and resolving conflicts

6. Linked to this is the need for a realistic picture of the conflicts between objectives and how these will be resolved. While there is recognition that there will be interaction between these objectives, the NMP must acknowledge more clearly that conflicts will arise, particularly when aiming for both maximum economic growth and sustainability. The process of developing the NMP should be an opportunity to take a long-term, strategic approach to identifying both real and potential conflicts and how they will be managed. Processes for the resolution of these conflicts will determine the success or otherwise of the NMP. Consideration needs to be given to what mechanisms will be available and how these will operate in practice. Without an effective framework for making decisions to resolve conflicts, and to identify where there is potential synergy of use, important decisions will be delayed, or reached on an *ad hoc* basis.
7. In this context and with reference to the comments we make in relation to implementation, care must be taken to avoid putting people in a position where they are forced to make decisions they do not have the expertise or experience to take. An important element of this will be an assessment of the skills and capacities for implementation within Scotland. The NMP should include consideration of how the key skills for implementation are going to be procured in the longer-term, especially through connections to the Education sector.

Sustainable use of Scotland's marine resources

8. Within the NMP there is a presumption in favour of development and use of the marine environment provided they are undertaken sustainably. It is important that there be efficient and effective enabling mechanisms to facilitate both the long-term protection and conservation of the marine environment and the responsible use of its resources set within the wider context of sustainability. Sustainability must mean economic, environmental and social sustainability. The management of activities affecting marine biodiversity and the conservation of wildlife are valid development objectives, especially

when long-term costs and benefits are considered. We recognise that there is a potential for an overarching basis for greater optimisation of the common resources in the marine environment. By this we mean an optimisation in terms of the maintenance of environmental health on the one side and human benefit on the other.

Informing the development and implementation of the NMP

9. We very much welcome the fact that the draft NMP has been informed by the assessment of the condition of Scotland's seas, based on scientific evidence and data analysis, as presented in Scotland's Marine Atlas (March 2011). Given the emphasis on the ecosystem approach, which we fully endorse, it is essential that the structure, function and boundaries of these ecosystems – i.e. their physical and biological oceanography – be well understood and their integrity consistently monitored over time. Scottish sea-lochs are a case in point, operating as they do as integrated fjordic ecosystems, a special class of 'estuary', that cannot be broken up into functionally distinct sub-systems such as reefs, shallow bays and inlets, etc. as was the case when sites were selected as Special Areas of Conservation under the UK's interpretation of the Habitats Directive.
10. It will be important, therefore, to ensure that there is a commitment to updating the evidence presented in Scotland's Marine Atlas on an on-going basis and ensuring that it is reflected in the implementation of the NMP.
11. Scotland has a strong marine science community, including leading marine research and teaching facilities. Throughout the NMP we note the references to the need for further information and reliance upon sound science and effective monitoring to inform effective management. This implicitly requires effective marine education and research to supply the knowledge and human capital to service this management. We would have expected to see more prominence given to this within the NMP such that it might have merited a chapter in its own right. It is crucially important that the development and delivery of the NMP is underpinned by a broad marine science research base.
12. It would also seem timely to review the infrastructure for marine science in Scotland, across the whole range of institutions in which it is carried out, to ensure the most effective use of resources. In turn, it will be important to ensure that marine science in Scotland can maintain and, where appropriate, strengthen its current capacity.

Adaptive management

13. Given that there will be instances where scientific uncertainty will inevitably be sufficiently great to preclude any clear conclusions, we welcome in the NMP the application of an 'adaptive management' approach in the decision-making process.

Precautionary principle

14. We note the reference to the application of the precautionary principle under HLMO 21. The emphasis should be on the 'appropriate' application of this principle, rather than its 'consistent' application.

Climate Change

15. The RSE agrees that climate change must be an integral consideration in Scotland's NMP, but the uncertainty in climate models and variability in impacts on different areas

of Scotland's coast must be recognised. The impacts of climate change will be unclear, indirect and long-term. It will, therefore, be difficult to distinguish situations that can be attributed to anthropogenic climate change from those that have a natural cause, e.g. sediment deficiency. It is important to recognise that human activity contributing to climate change is principally beyond the scope of the NMP, with the impact of climate change on the oceans being an end point. Human activity in response to climate change is likely to have a major impact, given the Scottish Government's plans for offshore renewable energy. It is possible that such actions could lead to greater environmental and social impacts than those predicted as a result of sea level rise and the frequency of storms.

16. In its response to the 2011 pre-consultation document the RSE urged caution about attributing problems, such as declining sea-bird populations, to climate change, when there may be other causes, including human activities and competition from other species. We are pleased that this has been reflected in the current draft.

Use of Terminology

17. The document uses a considerable amount of technical terminology, such as 'ecosystem health', 'food webs', 'eutrophication' and 'maximum sustainable yield', much of which is not clearly defined. Care should be taken to ensure that the terms used are clear and can be widely understood. We suggest that the addition of a glossary would strengthen the document. Indeed, the preparation of a glossary would be a very useful exercise as it would ensure that the authors consider the tightness of definitions and appropriateness of the terms used.

Comments of Chapters and Sections

Chapter 4: General Policies

18. *Developments or activities should not result in the complete loss or damage to natural carbon sinks.....* (page 38) is vague (as is "significant harm" in the last sentence of the paragraph) and could include almost complete loss of individual seagrass beds, kelp and saltmarsh. All of these habitats support high biodiversity and effective natural carbon-storage responses to climate change. Reduction in size of habitats lowers biodiversity, connectivity and the value of ecological services provided. We would have preferred to see a commitment to mitigation or enhancement to be part of the response to all cases of loss of such habitat, not simply those where *significant harm cannot be avoided*. Otherwise we risk repeating the problems of piecemeal degradation and habitat fragmentation that have bedevilled management of terrestrial habitats.

Chapter 5: A Guide to Sector Chapters

19. No specific comments.

Chapter 6: Fisheries

20. The future of Scotland's fishing industry is a key issue for the management of Scotland's marine environment. There is a widespread view that for decades the industry has been

controversially managed at all levels. This should be recognised in the text in order to make clear the case for fundamental reform.

21. There is a stated objective to ensure fish stocks are harvested sustainably leading to exploitation of Scotland's commercial fish stocks at Maximum Sustainable Yield (MSY) and with increased long-term stability. There is also an objective to take an evidence-based approach to fisheries management, underpinned by sound science. It is therefore unfortunate that MSY has become embedded in international fishing agreements. Setting levels of MSY implies a degree of scientific certainty that does not exist. The RSE is strongly of the view that there is a need to fish at appropriate levels that ensure sustainability. The Scottish Government should commit to this.
22. At present, for historical, social and political reasons, Scotland's fishing industry is given undue leniency and disproportionate weight in decision-making on the management of Scotland's seas. For example, between 1996 and 2005, the fatal accident rate in the UK fishing industry was 115 times higher than the general UK workforce, and 24 times higher than the construction industry¹. Given the NMP's national vision for clean, healthy, safe, productive and biodiverse seas, the NMP is an ideal opportunity to tackle the fishing industry's poor safety record. The RSE commented on this in its response to the pre-consultation in 2011 and we would have expected this to be addressed in the current draft.
23. We were highly sceptical of the statement made in the pre-consultation document that fishing is a low-carbon activity. We therefore welcome the recognition in the current draft NMP that the fishing sector needs to consider its contribution to climate change and how it can reduce greenhouse gas emissions. We believe research into the carbon footprint of the Scottish fishing industry could usefully inform future developments.
24. We note that reforms to the Common Fisheries Policy have now been agreed. A central objective of the proposed reforms is the progressive elimination of discards in all EU fisheries through the introduction of an obligation to land all catches. The transition from the current arrangements to a fully-fledged ban on discarding will be a complex and difficult challenge for the fishing industry. It will require behavioural and institutional change, not only from industry, but from fisheries managers, control authorities and fisheries scientists. Nevertheless, if implemented appropriately, the discard ban could be the catalyst that brings profound and positive change to the fisheries.
25. We note the statement on page 44 that, *Fisheries management initiatives and the response of the fishing fleet, have resulted in mortality from fishing moving towards (and, in certain cases, reaching) sustainable levels*. However, it should be made clear that in most cases moving to sustainable levels entails decreasing fishing mortality. The statement could therefore be rephrased as follows:
Fisheries management initiatives and the response of the fishing fleet, have resulted in mortality from fishing decreasing towards (and, in certain cases, reaching) sustainable levels. The ultimate aim is to sustain yields by taking a smaller percentage of resultant larger fish stocks.

¹ Roberts SE, Williams JC. Update of mortality for workers in the UK merchant shipping and fishing sectors. Report for the Maritime and Coastguard Agency and the Department for Transport. Southampton: Maritime and Coastguard Agency, 2007.

26. While we believe that scallop dredging does have a major local impact, we question the statement on page 48 that, *Scallop dredging is recognised as having the most significant impact on seabed habitats within Scotland's waters*. We suggest this should be revised, as follows:

Scallop dredging is recognised as locally having the most significant impact on seabed habitats within Scotland's waters.

27. We agree with the statement under the climate change heading on page 53 that, *These changes affect Scottish fishermen and it is important to manage the risks and sustainably exploit new opportunities*. Indeed, we think this is a very important point that could be strengthened, as follows:

There may be unavoidable loss of fishing opportunities for Scottish fishermen as species disappear from our waters but equally new opportunities may arise to which management should be responsive, in order to ensure sustainable exploitation.

Chapter 7: Aquaculture

28. The RSE supports the view that aquaculture has a fundamental role to play in meeting the key objective of food security. With the pressures on wild fish stocks, the unsustainable approach to their exploitation, and growing global demand for fish as a source of high quality protein, the UK, and the world, will become increasingly reliant on aquaculture to meet demand.
29. In Scotland, fin-fish farming (primarily salmon farming) depends on the domestic production of aquafeeds, based in part on imported raw materials. The fishmeal and fish oil industry is international in nature and supplies the entire range of domesticated animals, including farmed fish. The marine component of diets used in Scotland is obtained from such sources. The RSE welcomes the trend towards servicing the increased demand for aquaculture feed while decreasing the level of fishmeal included in feed and substituting it with plant materials. Indeed, with a finite amount of fishmeal available, the IFFO (the International Fishmeal and Fish Oil Organisation) has developed a certification programme to demonstrate the sustainability of its operations. Scotland must encourage sustainable fishing practices elsewhere. It is therefore crucial that efforts to expand Scottish fin-fish farming are achieved by reducing the proportion of fishmeal used still further, and by importing fish meal from certified sustainable industrial fisheries, or from local fishmeal production within the EU under the EU's existing, strict legal controls on persistent organic pollutants (POPs). Scotland has led the way in research and development focused on the substitution of marine ingredients with high-quality terrestrial ingredients, and it should be recognised that the Scottish salmon industry is now on the cusp of being a net fish protein producer.
30. With an increased reliance on aquaculture, the issue of the vulnerability of stocks to disease assumes greater importance. Scotland is a global leader in aquaculture and continues to require a strong research base. In this context, we very much welcome the plans that are being developed for the establishment of an SFC and industry supported Scottish Innovation Centre in aquaculture. This will bring together the various facets of the industry along with the strength of the university research base to address the research, development and innovation needs of the industry.

31. On a point of detail, in relation to Map 10 (page 62): *Guidance on the location of marine fish farms*, the key is incomplete so it is not clear what is meant by the different colours of shading.

Chapter 8: Wild Salmon and Migratory Fish

32. No specific comments.

Chapter 9: Oil & Gas

33. The development of the NMP is an opportunity for Scotland to initiate a debate about the need to decommission all oil and gas infrastructures. The current requirement to remove all redundant steel jacketed infrastructure in line with OSPAR 98/3, was based on information from the 1990s. Developments in marine science, especially ecosystem modelling, provide an opportunity to test the general concern of ecosystem level impacts of man-made structures in the North Sea. This is the focus of a Joint Industry Project entitled INSITE (The Influence Of Man-made Structures In The Ecosystem) which is likely to commence in 2014. A similar Joint Industry Project on underwater sound is in its reporting phase. Therefore, the RSE recommends that it would be timely for the Scottish Government to review the procedures and consider the best course of action for Scotland and its surrounding seas.

Nuclear energy

34. We are surprised at the lack of mention of nuclear energy in the NMP. We recognise the current administration's position on the inclusion of nuclear energy as part of a future energy mix for Scotland, but the reality is that existing nuclear power stations in Scotland are located in coastal areas and must be managed, both in operation and in decommissioning.

Chapter 10: CCS

35. The RSE commented on the development and deployment of Carbon Capture and Storage (CCS) in Scotland in 2009. Extremely large storage reservoirs have been provisionally identified off Scotland's coast, providing a significant business opportunity. But progress has been slow and we agree with the NMP that the key challenge is to create the appropriate financial, regulatory and policy structure to enable the development of CCS projects in Scotland. Propositions to develop CCS at the Peterhead gas plant provide an opportunity to develop operational CCS and test offshore storage reservoirs. Peterhead is one of two preferred bidders in the UK's protracted £1bn CCS Commercialisation Programme Competition.

Chapter 11: Renewables

36. The ongoing development of marine renewable energy should proceed with a full understanding of the interactions between energy-extraction technology and the marine environment, including local uses such as fishing, aquaculture, conservation etc. Scotland's NMP and the regional marine plans will be important in terms of reconciling the development of marine renewables with fair and balanced management of Scotland's seas. This will require developers to fully participate in dialogue with researchers during

developmental projects, to ensure that targets for development are appropriate and the experiences of early development at, for example, the European Marine Energy Centre, are fully incorporated into future research and development.

Chapter 12: Recreation & Tourism

37. The RSE would welcome deeper consideration of the problems of sea traffic and noise related to increased tourism and recreation on mammals and fish.
38. In relation to invasive non-native species, every effort should be made to monitor and eradicate them from recreational boats at the point before they leave harbours and marinas.

Chapter 13: Transport

39. The RSE welcomes the inclusion of marine transport as an area for strategic management within the NMP. However, we would have expected more consideration to have been given to the implications of the potential opening of the Northwest Passage and the Northern Sea Route. The current draft makes only very brief reference to this on page 114. The opening of these shipping routes could mean the arrival of much larger ships in Scottish waters, and a possibility that Scotland would act as a depot where these vessels unload cargo to smaller ships. While this is very much over the horizon, enhanced regulation around issues such as ship-to-ship transfer would be welcome.

Chapter 14: Telecommunications

40. No specific comments.

Chapter 15: Defence

41. We recognise that in order to maintain operational effectiveness the MOD will require continued use of Scotland's seas for a range of defence-related purposes. However, it is important that the MOD adheres to extant codes of conduct, such as those that relate to the management of fishing and military activity. It will be important to ensure that the MOD is kept informed and contributes to discussions relating to the management of Scotland's seas.

Chapter 16: Aggregates

42. No specific comments.

Additional Information and References

Advice Papers are produced on behalf of the RSE Council by an appropriately diverse working group in whose expertise and judgement the Council has confidence. This Advice Paper has been signed off by the General Secretary.

In preparing this Advice Paper we would like to draw attention to the following RSE responses which are relevant to this subject:

- The Royal Society of Edinburgh's response to the Scottish Parliament Rural Affairs, Climate Change and Environment Committee on the *Aquaculture and Fisheries (Scotland) Bill* (November 2012).
- The Royal Society of Edinburgh's response to the Scottish Government's consultation on *The 2020 Challenge for Scotland's Biodiversity* (September 2012)
- The Royal Society of Edinburgh's response to the Scottish Government's pre-consultation on the *National Marine Plan* (June 2011).
- The Royal Society of Edinburgh's letter to the Scottish Parliament's Rural Affairs and Environment Committee on the *Marine (Scotland) Bill* (May 2009).
- The Royal Society of Edinburgh's response to the Scottish Government on *Sustainable Seas for all: proposals for the Scottish Marine Bill* (October 2008).
- The Royal Society of Edinburgh's response to the Department for Environment, Food and Rural Affairs on the *UK's Draft Marine Bill* (June 2008).
- The Royal Society of Edinburgh Inquiry Report on the *Future of the Scottish Fishing Industry* (March 2004).

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Responses are published on the RSE website (www.royalsoced.org.uk).

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