



Marine Management Organisation

MMO Evidence Strategy

2015-2020

Part 1





Marine
Management
Organisation

MMO Evidence Strategy: 2015-2020 Part 1

© Marine Management Organisation 2015

You may use and re-use the information featured on this website (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. Visit www.nationalarchives.gov.uk/doc/open-government-licence/ to view the licence or write to:

Information Policy Team
The National Archives
Kew
London
TW9 4DU
Email: psi@nationalarchives.gsi.gov.uk

Information about this publication and further copies are available from:

Marine Management Organisation
Lancaster House
Hampshire Court
Newcastle upon Tyne
NE4 7YH

Tel: 0300 123 1032
Email: info@marinemanagement.org.uk
Website: www.gov.uk/mmo

If referencing this document, please cite it as: MMO Evidence Strategy: 2015-2020

Foreword by John Tuckett, Chief Executive Officer

The MMO has been in operation for 5 years. In that time we have learnt a lot about marine management and how we can work most effectively with our partners in UK Government as well as our stakeholders and customers. Since our previous Strategic Evidence Plan was published in March 2011, considerable progress has been made in the provision of evidence across all functions of the MMO. This has included collaborating with Defra, other MMO sponsors such as DECC, DfT and DCLG, and key partners such as the Crown Estate and Marine Scotland to get the evidence we need.

The MMO contributes to the delivery of integrated marine management (IMM) in England. IMM is a process that brings together policy makers, decision makers and stakeholders within a framework that facilitates the integration of their interests and responsibilities. The objective is to establish sustainable levels of economic and social activity in our marine area while protecting the environment. IMM is essential to the ecosystem-based approach and requires integration across different sectors; across the land sea interface; between different governmental bodies; and most importantly amongst different disciplines such as marine science, economics, social science and engineering.

It is essential that the decisions of the MMO can be objectively justified. To do this we must have robust decision making processes that use the best available evidence and allow for any uncertainty in that evidence. We know that all the stakeholders we interact with are interested in the evidence underpinning our decision making. This strategy does not simply set out the areas where we still require evidence, and the questions that we need answering to fulfil our delivery remit. It also sets out why our delivery functions are in place, and the large amount of evidence underpinning those functions that is already in place. We are then able to articulate our future needs within the context of the large amount of technical delivery we already undertake. Most importantly we are able to set out the questions we need answering in a thematic approach that provides greater coherence to our strategic direction with regards to evidence.

We have responded to the direction set by Defra in their Evidence Strategy published in 2014. This document sets out the current landscape within which the MMO is operating and our current evidence requirements. We will use this document not only to feed into Defra Evidence Action Plans, but also to give the marine science community a real insight into the evidence requirements of the MMO to foster much closer future collaboration. Part 2 of our evidence strategy will be published in Autumn 2015 and, following discussion with the marine science community, will set out the routes to delivery for the requirements identified here. I hope that this document provides an insight into what the MMO does; why we do it and how we plan to use evidence to help us deliver our objectives.

Contents

1	Introduction	1
2	The Defra Evidence Strategy	3
3	What the MMO does	5
3.1	Marine planning.....	5
3.2	Marine licensing	5
3.3	Wildlife licensing.....	6
3.4	Marine protected area management	6
3.5	Marine emergencies.....	6
3.6	Fisheries management.....	7
3.7	European grants.....	7
4	Types of evidence	8
4.1	Statutory evidence	8
4.2	Applied evidence.....	8
4.3	Strategic evidence.....	9
5	Use of evidence by MMO.....	10
5.1	Marine planning.....	10
5.2	Marine licensing	11
5.3	Wildlife licensing.....	12
5.4	Marine protected area management	12
5.5	Marine emergencies.....	13
5.6	Fisheries management.....	13
5.7	European grants.....	14
6	MMO evidence themes	15
6.1	Theme 1: Describing the marine area	15
6.2	Theme 2: Interactions in the marine area.....	19
6.3	Theme 3: Integrated management	24
7	Meeting evidence needs	29
7.1	Quality Assurance	29
7.2	Continual technical development	30
7.3	Horizon scanning	30
7.4	Delivery of evidence priorities	30

1 Introduction

The Marine Management Organisation (MMO) is a non-departmental public body that is responsible for the management of England's marine area. This is a complex and demanding technical delivery role on behalf of the UK government, the success of which relies on sound decision making based upon robust evidence. The MMO has a general objective to contribute to the achievement of sustainable development, and this is reflected in the fact that the MMO has 4 sponsor departments: the Department for Food, Environment and Rural Affairs (Defra); the Department for Energy and Climate Change (DECC); the Department for Transport (DfT); and the Department for Communities and Local Government (DCLG). Of these, Defra is MMO's lead sponsor.

Evidence of all forms is crucial to the success of the organisation, be it environmental, social or economic assessments, scientific advice, analysis of planning and management measures, marine monitoring or the use of geographic information systems and the data that underpins them. All MMO's management decisions have within them a technical assessment of the best available evidence. To ensure it makes effective management decisions, the MMO must maintain a level of technical capability within its own staff alongside a clear strategic approach to ensuring any evidence needs are met both now and in the future.

This document sets out Part 1 of the MMO's Evidence Strategy for 2015 to 2020. It follows on from the first MMO Strategic Evidence Plan for 2011 to 2015 and the Social Research Strategy published in 2013. This Evidence Strategy reflects MMO's current delivery remit, recent developments in the relevant evidence base, Defra's revised Evidence Strategy and an increased public sector focus on efficient delivery. Part 2 of this strategy will be published in Autumn 2015 and, following discussion with the marine science community, will set out more detail on specific requirements and the routes for their delivery. This will be updated annually to ensure evidence prioritisation is a dynamic process and allow for flexibility as new requirements arise.

Taking a strategic view of evidence allows efficient prioritisation of requirements and enables better collaborative working. The MMO will engage in horizon scanning in order to reflect emerging scientific knowledge or developments in relevant policies which may be relevant to marine management. The outcomes of such scanning may result in revision of this evidence strategy and the priorities in the underlying evidence work programme.

Within this strategy, science and evidence within the MMO falls into 3 themes:

1. Describing the marine environment
2. Interactions in the marine environment
3. Integrated marine management

At a time where budgets are tight, but delivery expectation is high, the MMO must remain focussed on its delivery priorities, the robustness of its decision making and its critical capabilities. By taking a strategic approach to evidence requirements, the MMO can ensure limited budgets are focussed where the need is greatest to achieve delivery priorities, taking account of impact and critical capabilities.

The MMO relies on a number of organisations to produce evidence important for marine management for example the Centre for Environmental, Fisheries and Aquaculture Science (Cefas) the Environment Agency (EA), Natural England (NE), the Joint Nature Conservation Committee (JNCC), The Crown Estate, the Maritime and Coastguard Agency (MCA), the Office of National Statistics, Historic England and the UK Hydrographic Office and British Geological Survey via a Defra contract.

The MMO will use this Evidence Strategy as a framework for internal evidence prioritisation and effective contribution to the development of Defra evidence needs as well as an external guide to stakeholders interested in the sustainable management of England's marine area.

2 The Defra Evidence Strategy

In June 2014 Defra published its Evidence Strategy¹. This was the first evidence strategy to cover the whole of Defra (of which the MMO is a part), setting out how evidence will help to deliver advice and support to policy and operations.

The Defra Evidence Strategy is designed to encourage science and innovation with impact by ensuring there is a focus on building generic capabilities, harnessing research talent in the UK and stimulating others in the research community to share in delivering new evidence that can be used in policy making. The evidence for Defra's policies and operations needs to be acquired more efficiently, which calls for Defra to adopt new ways of working building on existing good practice.

Defra are seeking to maximise the value from evidence by focusing effort on key priorities, managing and making better use of knowledge already held and ensuring best value from shared resources and expertise. This will require changes in the way Defra commission, collect and use evidence with greater participation from, and collaboration with, external partners and providers of evidence.

This document defines MMO's evidence requirements based on its specific delivery priorities whilst acknowledging that these needs must be aligned within the wider Defra process. This enables the MMO to have a framework within which it can deliver the specific operational requirements needed to support delivery whilst also contributing to the alignment and coordination of Defra's Evidence Strategy.

Central to Defra's Evidence Strategy is the production of a series of Evidence Action Plans including the Marine Evidence Action Plan. These plans will ensure Defra's evidence activities inform, and are driven by, policy and operational needs, enabling greater strategic oversight of the Defra's evidence activities and prioritisation in line with business planning processes. They will also allow Defra to adopt an outcome-led commissioning approach to influence resources available from evidence funders and providers beyond the department as well as making sure the best use is made of Defra's £200 million investment and its specialists.

The Evidence Action Plans will provide:

- assessment of the Defra's evidence needs and shared priorities
- plan co-designed with funding partners for fulfilment of these needs by the Defra, other funders and academia
- mechanisms for communicating evidence needs to academia and others, and encouraging their uptake of relevant evidence activities
- means for taking strategic decisions to commission evidence and oversee the quality and delivery of programmes

The information in this document has formed the basis of MMO's contribution to the Marine Evidence Action Plan Part A. It should be acknowledged that the focus within

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/318610/evidence-strategy-defra.pdf

Defra's evidence priorities may shift to support policy development, and thus MMO's evidence priorities to support policy delivery may similarly change. This is naturally reflected in how evidence needs are brigaded to support policy development and operational delivery.

3 What the MMO does

Set out below is a list of MMO's delivery functions and the role they fulfil in integrated marine management.

It should be noted that marine management is only effective if the system of management is complied with. By employing a proportionate yet effective system of compliance and enforcement across all its delivery functions, the MMO can reassure regulated activities that they are operating within a fair system where the same rules are applied consistently.

3.1 Marine planning

Marine planning is one of the most important policy initiatives for the management of our seas in a lifetime. It sits at the heart of both the UK Marine Policy Statement and the EU Integrated Maritime Policy and as such touches on many different interests. Through the Marine and Coastal Access Act (MCAA), the Defra Secretary of State is the marine planning authority for England but has delegated many of their functions to MMO.

Marine activities that can generate economic and social benefits, including fishing, oil and gas, renewable energy and recreation, are competing for marine space in an environment that needs protection for the wealth of species and coastal communities that live there. Marine planning was introduced as a response to the increasing busyness of UK seas and the need to ensure that increasing levels of development are sustainable. Plans will balance the different needs of the environment, society and the marine economy to provide stakeholders with certainty when planning their own activities. Integrating planning systems across the land and sea interface will ensure that opportunities such as regeneration of coastal communities can be realised.

In 2014 the Secretary of State adopted the first marine plans for England in the [East Inshore and Offshore Areas](#). The MMO is currently in the process of developing marine plans for the South Inshore and Offshore Plan Areas and has a requirement to develop plans for the remaining 7 marine plan areas by 2021. Once plans are adopted, they must be implemented, monitored, reviewed and amended.

3.2 Marine licensing

Marine licensing facilitates the sustainable use of the UK marine area so that marine industries can be permitted whilst minimising their negative effects on the environment and human health as well as preventing interference with other legitimate uses of the sea. The licensing regime ensures the likely impacts of proposed activities are understood before they take place, and they are mitigated in the decision making process. While marine planning considers these impacts strategically across a wider area, the marine licensing regime considers the detailed impacts of specific projects.

The MMO has delegated powers to license activities in the marine area under section 65 of MCAA and to advise on developments considered as Nationally Significant Infrastructure Projects (NSIPs) under the Planning Act. Where applicable this may require compliance with the Environmental Impact Assessment Directive, the Habitats and Birds Directives, the Water Framework Directive and in future under the Marine Strategy Framework Directive.

3.3 Wildlife licensing and enforcement

The MMO is responsible for issuing wildlife licences for activities that that would affect a UK or European protected marine species and the enforcement of wildlife legislation in the English and offshore Welsh marine area. Legislation includes the consent of wildlife licences under sections 9 and 10 of MCAA, the Conservation of Seals Act (1970), the Wildlife and Countryside Act (1981), the Conservation of Habitats and Species Regulations (2010) and the Offshore Marine Conservation Regulations (2007). The legislation exists to protect marine species and habitats from offences related to intentional taking, injuring or killing, or disturbing certain listed species, and intentional damage to habitats that support those species.

3.4 Marine protected area management

The UK has some of the richest marine ecosystems in the world, with over 8,000 species recorded in our seas. These species are vital to the health of our marine ecosystems, yet are under threat from the effects of anthropogenic activity. It is therefore vital that these ecosystems are protected for the future.

Marine protected areas are a key measure to protect rare, threatened, valuable and representative habitats throughout our seas. Marine protected areas include marine Special Areas of Conservation (SACs) and marine Special Protection Areas (SPAs), collectively known as European marine sites designated under Habitats and Wild Birds Directives respectively, and Marine Conservation Zones (MCZs) designated under MCAA. Defra are responsible for the designation of marine protected areas. Statutory nature conservation bodies such as Natural England and JNCC are responsible for advising on designation and management, and undertaking condition monitoring of marine protected areas.

The MMO, along with other authorities, has specific responsibilities for the management of marine protected areas in English waters. This includes specific consideration of marine protected areas when assessing marine licence applications, and powers to make byelaws to control activities, which do not require marine licences, that may affect marine protected areas (section 129 of MCAA). The MMO also has powers to enforce general offences of damaging marine conservation zones under section 140 of MCAA. In addition, the MMO works with stakeholders to develop voluntary measures to ensure protection of the marine protected areas.

3.5 Marine emergencies

The MMO administers the UK approval scheme for oil spill treatment products, maintains a Marine Pollution Contingency Plan and acts as a consultee for other contingency plans. The MMO are also responsible for approving the specific use of

oil spill treatment products during a marine emergency and can enforce the Environmental Damage Regulations (2009) for damage to protected marine species and habitats in English waters.

3.6 Fisheries management

Fisheries management is driven by the Common Fisheries Policy (CFP) and since its creation an increasing number of issues affecting the fishing industry have been identified. These include instances of overfishing, fleet overcapacity, low economic resilience, a decline in the volume of fish caught, environmental damage and more recently the discarding of fish. Such issues threaten the ability of future generations to continue to enjoy the fishing resource and highlight the need for a programme of management measures to ensure stocks are harvested sustainably. Such measures protect the interests of the industry, consumers, the wider environment and society in general.

The MMO is responsible for implementing measures in UK waters to meet the challenges of sustainable fisheries management. Such measures include the management of quota and fishing effort, surveillance of fishing activity and subsequent submission of data to the European Commission (EC) (in accordance with the EU Data Collection Framework). As part of the fisheries management measures, the MMO are also responsible for the licensing of fishing vessels in England and for granting scientific dispensation for extraction of fish in English waters. Fisheries management aims to extract finite fisheries resources in a sustainable way that ensures fisheries, which are a major component of the marine area, are harvested within safe biological limits. Recent revisions to CFP have resulted in the need for additional implementation duties, such as control measures for the new landing obligation, also known as a discard ban.

3.7 European grants

In order to help meet the requirements of the revised CFP, the MMO is responsible for issuing grants in England under the European Fisheries Fund (EFF) and will be responsible for issuing grants under its successor the European and Maritime Fisheries Fund (EMFF). The EMFF scheme is currently under development and due to open in autumn 2015. The MMO also have a remit for the coordination of the UK control and governance for both schemes.

4 Types of evidence

The MMO has specific management needs to support the delivery functions described above, each requiring specific evidence, skills and capabilities. The MMO considers many different types of evidence including:

- evidence provided by applicants to support MMO's decision making
- baseline information on the marine area to inform decision making
- expert advice provided by scientists on evidence upon which the MMO is making a decision
- evidence provided by stakeholders (e.g. other government, industry and academic organisations and the broader public) to support marine planning and management including fisheries
- monitoring data for sectors managed by MMO
- discrete research to inform the strategic development of MMO's delivery functions or to provide in depth advice on a particular topic

As mentioned previously, this document defines MMO's evidence requirements based on its specific delivery priorities whilst aligning with the Defra Evidence Strategy. The Defra Evidence Strategy seeks to balance 'statutory', 'applied' and 'strategic' evidence needs.

4.1 Statutory evidence

Statutory evidence mainly consists of monitoring, surveillance, assessment and reporting requirements driven by domestic and EU legislation. Within MMO, statutory evidence that the organisation must produce includes examples such as reporting to the EU on fishing activity, providing emergency response assessment and advice in response to marine emergencies and providing Habitats Regulations Assessments (HRAs) and Sustainability Appraisals (SAs) to demonstrate the compliance of marine plans. Such statutory evidence may also be re-tasked to provide a secondary function, for example the use of such fishing data to develop byelaws or marine plan policies (applied evidence).

Recent MMO examples of statutory evidence include the [Sustainability Appraisal of the East Inshore and East Offshore Marine Plans](#) and [South Marine Plans Habitats Regulations Assessment: Pre-Screening Review Report](#).

4.2 Applied evidence

Applied evidence is that closely tied to the delivery of policy and operations and requirements will evolve over time in response to emerging issues. Applied evidence is the category of greatest importance to supporting delivery of marine management MMO. Such evidence directly helps the MMO to deliver on current responsibilities and is prioritised based on impact. An example of applied evidence is information used by licensing case officers in order to make a consent decision which may include but is not limited to: information supplied directly from applicants; evidence secured by the MMO itself; advice from primary advisors such as NE, JNCC, EA or MCA; and expert scientific advice from Cefas where required.

Applied evidence could also be information used during development and future revisions of marine plans. Such evidence would be particularly focussed on understanding the marine plan area, those issues that a marine plan might usefully address and the outcomes of marine plan policies.

Recent MMO examples of applied evidence include the seascape assessment for the South marine plan areas ([MMO1037](#)) and a project to address the method and data to monitor the social outcomes of marine plans ([MMO1061](#)). Another example is evidence on the distribution, abundance and breeding patterns of a fish stock provided by Cefas fisheries scientists to inform the MMO fisheries management decisions.

4.3 Strategic evidence

Strategic evidence is that which helps in responding to current and future long-term challenges and critical issues facing policy development and delivery. Strategic needs for the MMO may include work to review and develop management processes.

Recent MMO examples of strategic evidence include a review associated with post-consent monitoring of licence conditions of offshore wind farms ([MMO1031](#)) and the development of a framework approach for addressing cumulative effects ([MMO1055](#)).

5 Use of evidence by MMO

All evidence produced or obtained by the MMO must support delivery of MMO functions. The use of evidence by each function and the types of evidence required is described within this section.

5.1 Marine planning

Evidence required by the MMO to support the development of marine plans is often very different to that required by other MMO functions. Marine plans must consider an integrated view of English waters incorporating evidence on the current and likely future extent of all marine activities and their potential impacts on, and interactions with, the surroundings. This includes social, economic and environmental aspects of this information. Evidence is therefore required at the spatial and temporal scale of the marine plans to allow marine planners to develop and implement appropriate policies within the plans covering topics such as climate change, biodiversity, specific marine industries and coastal communities. Marine plans must also consider evidence on other plans and relevant policies.

Evidence supporting marine plan development on the environment, society and to some extent the economy informs decision making at an organisational level which should ideally seek to facilitate shared use of space for people and resources. This follows the requirements of the UK Marine Policy Statement and reflects a desire to ensure sustainable development of the marine area; balancing the different needs of the marine economy of marine plan areas. To fulfil this, methods and processes used to consider evidence must take an integrated approach to environmental, social and economic information. Stakeholder/public opinion is vital to inform the best and most appropriate policies for each area. Stakeholders supply valuable information such as qualitative evidence on the area and draft plans or quantitative data that could directly support plan policy development.

There are a number of important assessments required during plan development and these include an Impact Assessment (IA) as well as statutory requirements to undertake a SA and HRA on the marine plans. These assessments require significant evidence on the plan area, its inhabitants and users, and the surrounding environment.

The MMO collates a substantial quantity and range of evidence to support plan development and this evidence must have been collected and recorded using suitable, robust methods. This evidence covers baseline information about activities and the marine area as well as how these interact leading to impacts and pressures that should be understood and managed. Given the scale of the marine plans, the MMO must also effectively integrate information using the most appropriate current assessment approaches to produce consistent evidence on the scale of plan areas. Much of the information used is produced elsewhere and requires synthesis as well as further analysis and/or interpretation before it can be used to support the development of marine plans.

In addition to plan development, the MMO also uses evidence, including the development of appropriate methods, to support plan implementation, monitoring and evaluation.

5.2 Marine licensing

Marine licence applications are supported by case specific evidence that allows the MMO to determine whether the proposed activity meets requirements under legislation fulfilling high level policy objectives. Much of the evidence to support an application is provided by the licence applicant and the MMO must ensure it is appropriate and robust in order to assess it against legislative and policy requirements. Information is also provided by trade bodies, research institutes or other government organisations acting in an advisory capacity to the MMO. The MMO holds information on the location and distribution of activities and the surrounding marine area. The MMO are supported in the evaluation and assessment of submitted assessment by scientific experts at Cefas and through primary advisors such as NE and Historic England amongst others.

Given the broad nature of the MMO licensing remit, evidence used in licensing decision making covers all activities and environmental receptors as well as some aspects of social and economic interactions and impacts. Reliable, quantitative evidence relevant to the activity, including its location and timing, and the surrounding activities and environment, including the likely impact of the activity on these, is important.

Expert judgement based on an understanding of likely impacts, interactions and methods to assess these is applied by the MMO to evaluate conclusions drawn in licence applications with regards the likely impacts of proposed activities. This requires up to date information on impacts, pressures and sensitivities as well as current approaches to the assessment of impacts and interactions.

Effective and transparent decision making benefits from agreed sources of information and methodologies to assess activities and their impacts (environmental, social and economic as required by legislation). The evidence to support licence decision making generally needs to be location, activity and receptor specific; however information produced at a more generic level with sufficient confidence can make case specific evidence needs more targeted and thus reduce the burden of evidence on applicants. Information required from licence applicants post-consent may also be used to feedback into marine management to support more consistent decision making and create more effective and adaptive management approaches.

Appropriate interpretation of the requirements of policy and legislation is essential to ensure the regulatory approach is fit for purpose. The MMO works closely with Defra to ensure practical implementation of policy and legislation at the marine management level align with the high level interpretation of requirements. As a regulator, the MMO seeks to facilitate sustainable development of the marine area. Evidence required from applicants and an evaluation of the information provided must therefore follow a proportionate and risk-based approach to decision making. Continual development of processes and approaches to deliver this is underpinned by evidence and the MMO works closely with scientific advisors, statutory bodies

and Defra to gather this evidence and ensure these as well as being effective, these approaches are transparent, proportionate and consistent.

5.3 Wildlife licensing and enforcement

As with marine licensing, wildlife licence applications and enforcement activities are supported by case specific evidence that allows the MMO to determine whether the proposed activity meets requirements under legislation fulfilling high level policy objectives. Much of the evidence to support an application is provided by the licence applicant and the MMO must ensure it is appropriate and robust in order to assess it against legislative and policy requirements. Additional evidence may also be provided by NE and JNCC as they are the statutory consultees for all wildlife licence applications received.

Much of the gathering, analysis and assessment of evidence within this function is very similar to that outlined above for marine licensing.

5.4 Marine protected area management

In instances where MPAs may be affected by a marine licence application, specific consideration of the risk posed to achieving the site conservation objectives is required. An example of this is where HRAs are required to demonstrate consideration of potential impacts to European marine sites. As with marine licencing in general, much of the evidence to support these assessments will be provided by the applicants.

In the development of byelaws for activities not requiring a marine licence, activity and impact information is generally produced, evaluated and held by MMO, often in collaboration with other government organisations and industry. Management of MPAs requires evidence on specific habitats and individual species (features) of conservation importance. This includes information on the location and sensitivity of features which the MMO receives from other statutory advisers such as NE and JNCC. Effective management also requires knowledge of the activities which may exert significant pressures and thus require active management as well as an understanding of the nature and extent of potential impacts.

Although the evidence required is species and activity specific, it may be informed by more generic information on likely impacts and sensitivities if sufficient confidence exists away from site specific conditions. However, robust information on fishing and other activity distribution is not easy to collate at an appropriate scale and management measures for protected sites often necessarily exclude activities as a group. Where specific information on the potential impacts of a sub-set of activities demonstrates a reduced risk to the feature or a risk that can be managed through alternative means, management measures can be adjusted.

Social and economic evidence also supports MPA management. For example, any proposed MMO byelaw requires an IA which is subject to formal consultation by UK and, where other Member States vessels are affected, European stakeholders. This multi-faceted evaluation requires significant evidence and standard methods. Social and economic evidence for fisheries is currently obtained from information collated

and analysed by MMO. In some circumstances, the MMO can request information from other Member States on foreign landings of fish.

The specific management approach taken by the MMO for MPAs is driven by legislative requirements and underpinned by the analysis of the evidence. The MMO will monitor the compliance of any management measure put in place, and on-going (ecological and physical) monitoring of MPAs is by statutory nature conservation bodies.

5.5 Marine emergencies

In the event of an oil (or chemical) spill, the MMO may be asked to consent use of chemical dispersant which the MMO is committed to providing an answer to within one hour. In order to make a decision, evidence is required to determine that use of a dispersant is appropriate and will not result in further adverse effects on the environment. The decision is undertaken following the National Contingency Plan and the MMO Contingency Plan and it may also be informed by port or other local contingency plans.

The decision relies on evidence on spill clean-up products in addition to information on the specific spill location. The former is provided in advance of the emergency through a chemical testing scheme administered by MMO. Evidence on the spill location includes distribution and sensitivities of the local area (activities and habitats and organisms). The majority of this evidence is provided by NE and Cefas as technical advice during the emergency response process.

5.6 Fisheries management

Fisheries management evidence is required to enable the MMO to satisfy the current CFP. This evidence is used by the MMO and the EC to ensure the UK, and European, fishing resources are harvested within safe biological limits, sustaining the marine economy and using sound science responsibly.

Evidence to support fisheries management by the MMO is primarily data collected by the MMO coastal teams and other Fisheries Administrations which are analysed by the MMO statistics team. This information is used for managing licences, quotas, catches, effort and various local fishing practices. The MMO gathers and analyses detailed information on fish landings, vessel activity and catches for the reporting of quota and effort uptake, as well as illegal, unreported and unregulated fishing, to the EC. The information is an essential resource for decision making throughout MMO, in particular in Marine Planning, Coastal Operations and Marine Compliance. The data are also used to support Defra policy making and in the production of a number of key Government economic indicators. The MMO provides regular statistical reports to a number of international bodies with management responsibility for vulnerable fisheries. Data are also used by CEFAS in assessing the health of fish stocks. The MMO ensures that information is publically available in useful formats such as maps and statistical reports wherever possible. Datasets are also available on line for users to interrogate.

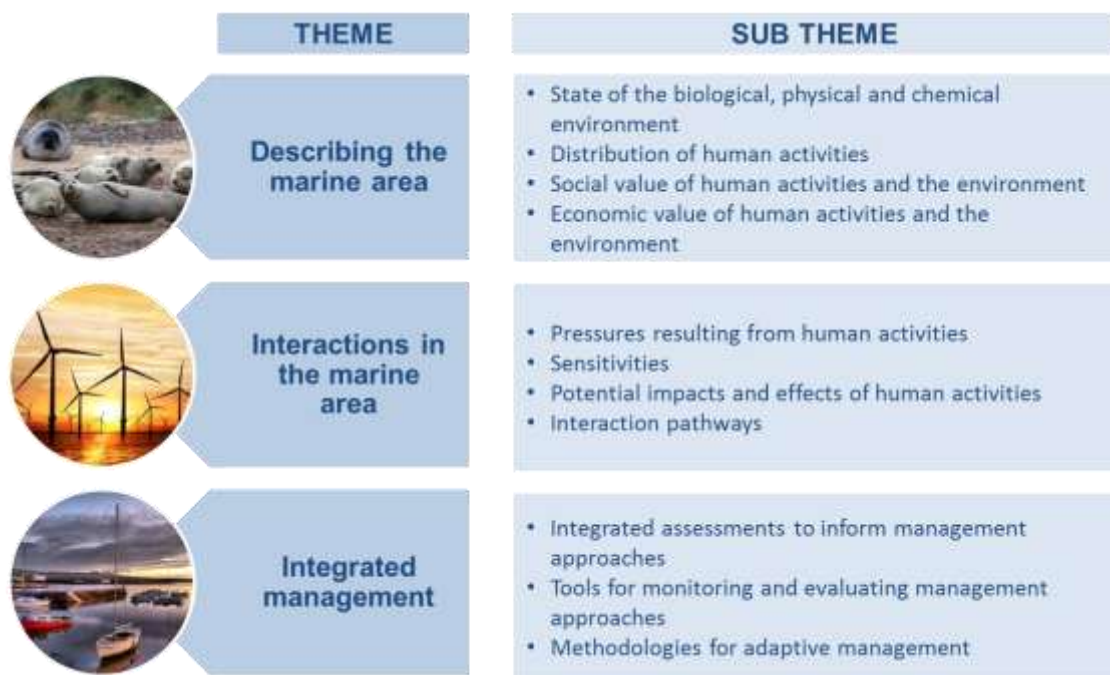
The MMO works with the industry to pilot the use of gear to provide evidence for the landing obligation and improve the specificity of catches to ensure that catches are more targeted and avoid collecting non target species. This evidence can be used to improve enforcement activities. Another source of evidence is evaluation of the success rates of different compliance methods which can influence enforcement and information that can reduce the burden of regulation. Enforcement of fishery regulations is managed through risk-based and outcome focused compliance.

5.7 European grants

When administering EFF to support the fisheries sector and promote sustainable fisheries, the MMO uses technical expertise to assess applications and report against the wider programme. EMFF, the successor to EFF and due to begin in autumn 2015, has a greater focus on measures which can support the management and protection of the marine environment. For project applications, the supporting evidence is largely provided by the applicant and the MMO must verify this information. Where projects funded by EFF (and in the future EMFF) produce evidence, this can be used to augment the evidence base for marine policy and management.

6 MMO evidence themes

This section outlines the three themes within which the MMO evidence requirements fall. Evidence is required under each theme to support all MMO functions although each has different requirements in terms of the specific information, including spatial and temporal scale required, as well as the most appropriate approaches to meet this need. Further detail, including where needs are already met and where there is potential for external collaboration, is provided in the MMO Evidence Work Programme.



6.1 Theme 1: Describing the marine area

Evidence under this theme describes the current and future state of the marine area. It provides an understanding of the baseline distribution and nature of all human activities and the state of the biological, physical, chemical, social and economic environment both now and predicted for the future. This information is needed to support marine management through all MMO functions.

The MMO currently receives information from a number of sources including statutory bodies and other government organisations, scientific advisors, industry, trade bodies and the wider public. However, further information is required and improvements to existing information can be made.

At a broad level, marine management through all MMO functions require evidence, and agreed methods for delivering and evaluating it, on:

- human activities (distribution and nature) both now and predicted for the future
- state of the marine area (biological, physical and chemical) both now and predicted for the future
- social baseline and value of human activities and the environment both now and predicted for the future
- economic baseline and value of human activities and the environment both now and predicted for the future

6.1.1 State of the biological, physical and chemical environment

It is necessary for marine managers to have an understanding of the current baseline and potential future state of the environment in order to achieve sustainable development. Knowledge of the biological environment and the physical and chemical conditions required to maintain that biology underpins this evidence sub-theme and is used by all MMO functions. It allows marine managers to identify environmental conditions and potential resources of value which may drive the distribution of human activities. It also allows consideration of changes to the baseline environment which may occur as a result of potential impacts of those activities thus facilitating effective integrated management of the marine area.

Marine plan development and monitoring requires an understanding of the baseline environment and potential future changes and trends (including climate change as a baseline driver). This includes the distribution and state of all habitats and species including protected features, air and water quality, seascape and coastal processes. Similar information is required for validation of information submitted in support of marine licence applications, albeit at a more local scale and at timescales of relevance to the specific case. Evidence under this sub-theme to support MPA management is more focused on environmental information relevant to the specific protected feature (protected area or species protected in its own right). Evidence is thus concentrated on the current state and distribution of that protected feature and physical and chemical conditions which may affect management measures in place for that feature. Similarly, evidence to support fisheries management concentrates on fish and shellfish stock distribution information. A detailed understanding of hydrographic conditions may be required during a marine emergency to determine the environmental fate of spills.

Evidence is currently obtained from a number of different sources including:

- Distribution and state of protected species and habitats – statutory advisors such as Natural England and JNCC, Defra, and the IFCAs as well as academic and research institutions (e.g. SMRU and Marlin) and NGOs such as the Wildlife Trusts, the National Trust, RSPB.
- Distribution and state of non-protected habitats – UK Seemap and Defra.
- Distribution and state of non-protected species – the IFCAs, Cefas and MMO (fish and fisheries), BTO, RSPB and JNCC (seabirds), WEBS, SMRU (mammals).
- Water quality – Environment Agency (WFD water quality data) and the IFCAs (shellfish contaminant data).
- Hydrography – Cefas, local engagement and UKHO.

- Local knowledge – MMO coastal offices, public consultation, Environment Agency and local authorities (shoreline management plans).
- Where there is uncertainty, further evidence may be obtained from independent third parties.

6.1.2 Distribution of human activities

This theme requires consideration of a number of factors including the nature of the different activities, the social, economic, and policy drivers which influence them, and the space, resources and environmental conditions required. Human activities include: defence and national security; energy production and infrastructure development; ports and shipping; marine aggregates; marine dredging and disposal; telecommunications cabling; fisheries; aquaculture; surface water management and waste water treatment; tourism; and recreation. Information under this sub-theme provides baseline information to feed into considerations of social, economic and environmental costs and benefits of human activities and effectively manage these activities to allow sustainable exploitation of the marine area.

Integrated information on all human activities is required to inform marine plan development, implementation and monitoring. Marine licensing also requires an understanding of the distribution of all licensable activities. Validation of evidence supporting marine licence applications also requires in-depth knowledge of the activity in question and other activities in the surrounding area. Evidence under this sub-theme for MPA management and wildlife licensing is required across all sectors, although there is a current specific focus on fisheries and recreation as interactions of other activities with MPAs are effectively controlled through marine licensing. Information on all sectors is required for use in byelaw assessments to provide an understanding of the requirement for, and the likely impact of, byelaws as well as marine emergencies consenting. The former includes both current and potential future information on sector distribution and can help provide a strategic view to help monitor potential future risks to the MPAs. Detailed information on fishing activities is required to support fishing enforcement and coastal operations. MMO produce fishing activity distribution data and may benefit from others using this in their research where related to supporting marine management.

MMO hold information on the distribution of all known activities. Further evidence is obtained from a number of different sources including:

- Industry sectors – DECC, DfT, The Crown Estate, industry stakeholders, and trade bodies.
- Fisheries, shellfisheries and aquaculture – MMO (e.g. VMS and local coastal offices), Cefas, Royal Navy, IFCAs, fishing industry and other member states.
- Security and defence – Ministry of Defence
- Tourism and recreation – local MMO and Natural England offices, local authorities, national governing bodies (e.g. RYA), and other stakeholders (e.g. local partnerships, forums, wildlife trusts and members of the public)
- Historic features – Historic England, designated site managers
- Local knowledge – local MMO offices, local Natural England and Environment Agency offices, local authorities, public consultation
- Where there is uncertainty, further evidence may be obtained from independent third parties.

6.1.3 Social value of human activities and the environment

This sub-theme is about describing the baseline social value of the marine area and features and builds on the previous sub-theme. This may include consideration of public values and social asset valuation, social well-being, the social vulnerability of coastal communities and wider society, and social and behavioural characteristics of marine area users including tourists and recreational users. An understanding of the social costs and benefits of human activities and the environment and its associated resources allows comparisons of the 'use' versus 'non-use' value of the marine area to inform marine management. Information from this sub-theme will also inform evaluation of management issues integrating social, economic and environmental costs and benefits to facilitate effective sustainable development.

Information on the social values of the marine area and features importantly informs marine plan development, implementation and monitoring. This requires consideration of the broad social value of the area as well as assessment of the social value of human activities (e.g. employment), seascapes, health and wellbeing, social cohesion, and local history and traditional communities. Plans aim to incorporate consideration of the value of services provided by the ecosystem. Baseline social information also informs the sustainability appraisal and impact assessment required for each marine plan. An understanding of the social value of marine activities and baseline social information for the marine area also informs validation of information supporting marine licences. This information is driven by the Marine Policy Statement and is highly site specific but includes information on transport, landscape/seascape, historic environment, amenity and recreation, tourism, carbon footprints and navigation. Information on the social value of fisheries and recreational activities informs development of byelaws for MPA management. This may include the social value of UK and non-UK fleet landings and baseline social information which allows assessment of the burden of management measures (section 2.3). Fisheries management may require some consideration of the costs and benefits of effort allocations for communities, ports and fishermen.

Evidence is currently obtained from a number of different sources:

- Social baseline data – Office of National Statistics, local authorities, industry representatives, government departments and non-governmental organisations
- Validation of regional and local social information - advice from statutory bodies including Historic England, the Maritime Coastguard Agency and Trinity House and consultation with local councils, stakeholders (including IFCAs) and through public consultation.
- Fisheries social information – MMO, EU groups (STECF), Seafish.
- Where there is uncertainty, further evidence may be obtained from independent third parties.

6.1.4 Economic value of human activities and the environment

Integrated marine management requires balanced consideration of the economic, social and environmental value of the marine area to facilitate sustainable development. This sub-theme is about describing the baseline economic value of the marine area and features. This may include the economic value of human activities

(e.g. gross value added or employment) and of the environment through monetisation of ecosystem services. Information from this sub-theme will allow a comparison of the 'use' versus 'non-use' value of the marine area to be made which inform marine management.

Baseline economic information informs the sustainability appraisal and impact assessment required for each marine plan. It also supports marine plan development, implementation and allows effective monitoring and evaluation to establish the success of marine plan objectives. An understanding of the economic value of marine sectors and baseline economic information for the marine area also informs validation of information supporting marine licences. Information on the economic value of fisheries and recreational activities informs development of byelaws for MPA management. This may include the economic value of UK and non-UK fleet landings and baseline economic information which allows assessment of the burden of management measures (section 2.3). Fisheries management may require some consideration of the costs and benefits of effort allocations for communities, ports and fishermen.

Evidence is currently obtained from a number of different sources:

- Economic baseline data – Office of National Statistics, local authorities, industry representatives, government departments and non-governmental organisations
- Validation of regional and local economic information - advice from statutory bodies including Historic England, the Maritime Coastguard Agency and Trinity House and consultation with local councils, stakeholders (including IFCA) and through public consultation.
- Fisheries economic information – MMO, EU groups (STECF), Seafish.
- Where there is uncertainty, further evidence may be obtained from independent third parties.

6.2 Theme 2: Interactions in the marine area

Marine management requires a thorough understanding of the overall effect of the interaction of human activities on the state of the marine area. To facilitate sustainable development, this should be a balanced and integrated evaluation incorporating the interlinked biological, physical, chemical, social and economic aspects of these interactions. Effective evaluation of interactions can only be undertaken if there is sufficient baseline information as described under Theme 1.

At a broad level, marine management through all MMO functions require evidence, and agreed methods for delivering and evaluating it, on:

- pressures resulting from human activities
- sensitivities
- impacts and effects
- interaction pathways

6.2.1 Pressures resulting from human activities

This sub-theme relates to the type and strength of pressures exerted by human marine activities on the natural, social and economic environment. Impacts on receptors only occur where there is a pressure above a certain threshold and a receptor is sensitive to that pressure. Marine management therefore requires an understanding of the pressures that may be exerted on features within the marine area. This covers an understanding of the nature and extent of pressure resulting from human activities as well as the level of pressures likely to result within the marine area. Information under this sub-theme alongside information produced under Theme 1 allows marine managers to understand where risks to the marine area may be and feeds into consideration of management measures to mitigate potential impacts where appropriate to facilitate sustainable development.

Information on pressures is required for all MMO functions. A clear understanding of the type, nature and extent of pressures from different human activities supports marine plan development enabling use of the environment within safe thresholds. If pressures can be spatially described across the plan areas this allows development of more specific policies. A broad understanding of pressures is also required to support marine licence decisions and is a fundamental part of the risk assessment process. Similarly wildlife licensing also requires an understanding of the likely pressures that might result from proposed activities. Evidence related to the type and extent of pressures from fisheries and recreational activities is of particular importance to MPA management and benefits from specific information at the location and scale of relevance to the protected site or species. The type and extent of fishing pressures as well as frequency and intensity, using vessel and fleet data to evaluate the level of pressure, and informs fisheries management measures.

Evidence under this sub-theme is currently obtained from a number of different sources:

- General pressures information – Natural England, JNCC
- Fishing pressures (type/extent/frequency/intensity) – MMO, SNCBs (NE), Cefas, industry, academic work
- Recreation pressures (type/extent) – Natural England, local MPA partnerships, expert judgement
- Pressure assessment methods – Cefas, academic work
- Where there is uncertainty, further evidence may be obtained from independent third parties.

6.2.2 Sensitivities

This sub-theme concerns the capacity of marine and coastal receptors to be affected as a result of an external pressure. Impacts on receptors only occur where there is a pressure above a certain threshold and a receptor sensitive to that pressure. This sub-theme therefore requires an understanding of the sensitivity of different marine species and habitats and the sensitivity of social features and economic factors. Examples may include evidence on the sensitivity of robust, mobile species versus non-mobile delicate species to damage from bottom trawling; or the sensitivity of a small coastal community dependent on tourism to industrial development versus a large industrial community where this is already in place. Consideration of the

sensitivity of features incorporates information describing the thresholds at which potential pressures lead to an impact.

Information under this sub-theme, taken alongside information produced under Theme 1, allows marine managers to understand which aspects of the marine area are most at risk from specific pressures and feeds into consideration of management measures to mitigate potential impact. A clear understanding of the thresholds at which features may be at risk is a valuable tool to allow sustainable development through effective regulation.

Information on sensitivities informs all MMO functions. Information considering features of relevance to plan areas allows trade-off analyses to be made to inform marine plan development which then informs the best approach to provide protection to vulnerable features. This requires an understanding of the sensitivities of all features of relevance to the plan area and their spatial spread. Similarly, knowledge of the sensitivity of all features supports marine licence decision making. Although licences are site-specific, MMO requires the ability to review supporting information for all licences across English waters. A similar understanding for the sensitivity of environmental features is required during marine emergencies to inform decision making with regards the use of oil spill treatment products to reduce the risk of damage to the features. Effective MPA management requires a more specific understanding of the sensitivity of the protected environmental features, sites and networks but also requires information on the broader social and economic sensitivities of the area to inform qualitative and quantitative impact assessment for management measures. The fisheries management function of the MMO uses information on fish population sensitivities to inform decisions regarding real-time closures.

Evidence under this sub-theme is currently obtained from a number of different sources:

- Fish population sensitivities – MMO and fishing industry, Cefas, academia
- Protected species – SNCBs, Marlin, Marine Scotland, NRW/WG, NE (broad sensitivities), NGOs
- Non-protected species – Marlin, EA, devolved administrations, academic work, NGOs
- Social sensitivities – Qualitative expert judgement validated by stakeholders
- Where there is uncertainty, further evidence may be obtained from independent third parties.

6.2.3 Potential impacts and effects of human activities

Impacts on receptors only occur where there is a pressure above a certain threshold and a receptor sensitive to that pressure. Where there is a significant impact on a receptor, this may lead to an effect on the marine area. This sub-theme incorporates information produced under the two previous sub-themes and considers the nature, likelihood and extent of the impacts of activities on the marine area. This includes social, economic and environmental impacts. Ideally, an integrated understanding of these impacts is required to inform marine management through appropriate mitigation to protect the marine area (Theme 3).

Impacts information used in marine plan development and implementation helps to ensure the marine plans facilitate the use of the marine area within safe thresholds. It requires an understanding of potential impacts of all human activities on the marine area, and activities and features within that area, allowing evaluation of those impacts at a geographical and temporal scale relevant to the marine plans. Marine licensing requires validation of impact assessments focussed more strongly on environmental impacts with some social and economic impacts. A broad understanding of all environmental impacts is required to allow validation of case specific information and ensure appropriate mitigation is applied. Positive social and economic impacts are only evaluated (assessment of public benefit) where cases fall under certain legislation (under the Habitats Directive 'Imperative Reasons of Overriding Public Interest' and under the MCAA where cases may significantly impact MCZs). Specific information on the potential impacts of fishing and recreational activities on features of conservation interest in addition to an understanding of potential impacts of management measures on those activities informs MPA management. Fisheries management requires not only an understanding of the impact of fishing on fish stocks, but also of the impact of external activities on the location and distribution of fishing fleets (e.g. impacts that may lead to displacement).

Evidence under this sub-theme is currently obtained from a number of different sources:

- MMO
- Cefas – general environmental impacts
- SNCBs and primary advisors – impacts on protected features including environmental (e.g. Natural England and JNCC) and social (e.g. Historic England).
- Devolved administrations – general environmental impacts
- Government departments – e.g. Environment Agency (impacts on migratory fish)
- Non-governmental authorities
- Academic work
- Harbour masters – vessel movement impacts
- Where there is uncertainty, further evidence may be obtained from independent third parties.

6.2.4 Interaction pathways

This sub-theme provides an understanding of the interactions between different human activities and between multiple human activities and the marine area. It requires a sound understanding of sensitivities, pressures and impacts, and needs evidence from Theme 1 in order to undertake assessments to establish likely interactions within the marine area.

Evidence under this sub-theme allows marine managers to identify where placement of activities may lead to higher risks to environmental and social features and economic factors. It includes consideration of the environmental, social and economic cumulative effects of multiple activities within a single area on receptors, consideration of in-combination effects of multiple stressors on protected environmental features and consideration of the compatibility of activities (i.e. the

likely interactions between marine sectors and the likelihood of negative impacts such as displacement). This sub-theme does not include integrated assessments comparing economic, social and environmental impacts nor does it include approaches to manage and mitigate these impacts; these evidence uses are discussed under Theme 3.

The evaluation of interactions within the marine plan area is driven by the Marine Policy requirement for consideration of cumulative effects, facilitation of co-existence and legal requirements to undertake assessment of potential in-combination effects of marine plan policies. Consideration of cumulative effects within marine plan development and implementation can be highly complex encapsulating all marine sectors and a broad range of marine receptors within the marine plan area. Facilitation of co-existence requires a sound understanding of the compatibility of marine sectors in terms of sharing spatial footprints and/or existing in close proximity. This in turn necessitates an understanding of the likely social, economic and environmental costs of co-existence versus displacement.

Interactions between sectors are considered within marine licensing in terms of compatibility of the proposed activity with existing activities within the area. If activities are not compatible, a licence may not be granted or sufficient compensation may be required which should be underpinned by an evaluation of the likely cost to the affected existing activity. Consideration of cumulative effects or in-combination effects within marine licensing is required under a number of pieces of legislation including the EIA Directive, MCAA (MCZs) and the Habitats Directive, and focusses on interactions of multiple activities within environmental receptors. This requires an understanding of likely interactions as well as knowledge of the location of other activities and potentially sensitive receptors which is discussed under Evidence Theme 1. Importantly within marine licensing, evaluation of interactions allows decision making to incorporate consideration of environmental carrying capacities allowing more effective management or multiple activities to proceed.

In-combination assessments are undertaken to support MPA management. Evidence on compatibility and thus likely displacement of fishing and recreational activities from protected features not only supports management but also informs MMO's informal input to the MPA designation process. Consideration of displacement effects incorporates an evaluation of the likely social and economic impact of cumulative displacement. In-combination effects assessment is also required for MPA management to establish likely impacts of all fishing gears to inform the appropriate assessment required under the Habitats Regulations Assessment process.

Sources of information:

- MMO expert judgement
- Cefas
- SNCBs
- Other government bodies
- Academic work
- Industry
- Public consultation

- Where there is uncertainty, further evidence may be obtained from independent third parties.

6.3 Theme 3: Integrated management

The MMO contributes to the delivery of integrated marine management in England. Integrated marine management is a process that brings together all those involved in the development, management and use of our marine area within a framework that facilitates the integration of their interests and responsibilities. The objective is to establish sustainable levels of economic and social activity in our marine area while protecting the environment. Integrated marine management is essential to the ecosystem-based approach and requires an integrated approach across different sectors; across the land sea interface; between different governmental bodies; and most importantly amongst different disciplines.

Integrated management requires using evidence that describes the marine area and the interactions of interest for decision making and applying methods to understand complex information within a management framework. Evidence under this theme describes what is required to underpin such a framework for integrated marine management. Whilst the two previous themes are about understanding the marine system and what drives change in a regime in the absence of management, this theme is about integrating that information into a management function and understanding the role the MMO can play in driving change.

The type of evidence required for integrated management includes interpreting how to practically implement policy and legislation, developing and improving management measures, and evaluating management practices to allow for continual improvement. This evidence requires agreed approaches that can describe and assess the complexities and the dynamic and changing nature of the marine area and its uses. The resulting evidence often produces sets of options that account for trade-offs and various policy and societal choices. Development of this evidence can involve many policy and decision makers as well as significant stakeholder input.

Combining evidence from a variety of sources underpins a comprehensive, coherent and consistent system of integrated management. It ensures that evidence is used to support all MMO functions and deliver decisions that best achieve marine policy and fulfil legislative requirements. Integrating evidence gives an important overview that prevents the MMO delivering in isolation and promotes sustainable use and conservation of marine resources. This makes best use of financial and human resources by using evidence for many outcomes and sharing common goals. Integrating evidence provides us with a better ability to manage conservation of a complex environment while continuing to benefit from and develop use of its goods and services.

Currently the MMO uses best practice, experienced staff and external advice as well as evidence from beyond English waters to achieve integrated management. In broad terms, the MMO requires:

- integrated assessments to inform management approaches
- tools for monitoring and evaluating management approaches

- methodologies for adaptive management

6.3.1 Integrated assessments to inform management approaches

Management of multiple activities and uses is required for the MMO to carry out all its delivery functions. There is an overarching need for integrated assessments to underpin the marine plans that the MMO are developing.

National policy objectives direct us towards integrated marine assessments. For example achieving sustainable development, good environmental status and using an ecosystem approach all require multi-layered and integrated assessments rather than case by case decision making. The benefits of this approach are laid out in the government's Marine Policy Statement as well as 'Our Seas; a shared resource'. An added benefit to this integration is that duplication of effort can be reduced by gathering information once but using it many times. However, by their nature integrated assessments can be complicated to carry out and not all the necessary information has been produced or is currently accessible to input to them. There are also significant challenges in finding ways to incorporate the world leading fundamental research going on in our research centres with the operational demands of delivering marine management on the ground.

Integrated assessments require various types of environmental, social and economic information as well as agreed methods and in some cases specific expertise. There is much ongoing work to develop data, methods and expertise to carry out these assessments both within the MMO and the wider marine community. The MMO can benefit from this work as well as contributing to the field with their expertise and by outlining their specific requirements for management purposes.

The MMO has carried out some integrated assessments that they wish to improve on and incorporate into regular management activities., These include analyses of fisheries information for fisheries management, plan development and nature conservation, strategic assessments of cumulative effects and co-existence for marine planning and marine licensing and, impact assessments and sustainability appraisals for all MMO delivery functions. Work to date has identified that these assessments would benefit from more and improved data as well as increased practical application and testing. In addition there are some assessments that the MMO is not able to carry out such as impact of displacement of activities over time, ecosystem service assessments and implementing a full ecosystem approach, due to the lack of data and in some cases challenges in incorporating fundamental science such as ecosystem modelling into the geospatial analytical tools used for marine management. These assessments could be applied to all functions at various scales to answer a number of management questions. There are also integrated assessments that are carried out by others that the MMO could utilise for management such as for the Marine Strategy Framework Directive and marine protected areas.

Evidence required for the assessments is obtained from a number of different sources including:

- Environmental information - Statutory Nature Conservation Advisors and Environment Agency

- Policy objectives, methods, environmental, social and economic information - Government departments
- Fisheries, licensing, conservation and planning information - MMO
- Fisheries and ecosystem information - Cefas
- Social and economic information - Office of National Statistics
- Local policy objectives, social, economic, environmental and regulatory information - Local Authorities
- Specific expertise in environment, social and economic aspects - Non-government organisations
- Sector specific information - Industry
- Values - Members and representatives of the public and special interest groups
- Methods and expertise - Academics and specialists e.g. consultants

6.3.2 Tools for monitoring and evaluating management approaches

To ensure that management is having the desired effect it is necessary to monitor and evaluate management actions and approaches. This allows us to track from policy objectives to delivery and then feedback into improvements. There is also a requirement to use evaluation techniques to predict the outcomes of potential actions prior to them being implemented. This increases transparency and makes management and any changes required to that management easily identifiable, communicable and feasible. All MMO functions can use monitoring and evaluation tools to learn about the impact of their management for the environment, society and the economy and in achieving national policy objectives.

Some monitoring and evaluation approaches have been used for a while such as the monitoring and reporting of fisheries to the European Commission however, more recent MMO functions such as developing and implementing marine plans require exploring and agreeing the appropriate tools for monitoring and evaluating. In addition due to the MCAA directed changes made to the licensing system and the requirement to designate and manage additional MPAs better tools are required.

There are a number of gaps in evidence relating to tools for monitoring and evaluation for individual MMO management functions and these also require integration across MMO functions to ensure that management is effective as a whole. Post consent monitoring of licensing is carried out for some industries such as the marine aggregates and offshore renewable energy sectors however, further work could streamline the reporting process and improve how the information is used for all sectors to inform and change management. MMO is working toward incorporating licensing monitoring information into the planning system to ensure that the two operations achieve integration by feeding into each other. Equally the planning function will benefit from appropriate tools for evaluation especially. Evaluation of management approaches for MPAs is also important given the large amount of new management measures to be put in place which cover a range of issues that apply to a number of designated sites. In order to achieve sustainable fisheries monitoring and evaluation tools are required. This work will involve close collaboration with Defra and Cefas.

MMO use mainly existing evidence for monitoring and evaluating management approaches and further evidence is obtained from a number of different sources:

- Condition assessments - Statutory Nature Conservation Advisors and Environment Agency
- Policy objectives, monitoring information and evaluation methods and expertise - Government departments
- Existing management approaches, new tools, outcomes for assessment - MMO
- Fisheries information - Cefas
- Social and economic information - Office of National Statistics
- Monitoring and evaluation information - Local Authorities
- Non-government organisations
- Sector specific information - Industry
- Values and information - Members and representatives of the public and special interest groups
- Methods and expertise - Academics and specialists e.g. consultants

6.3.3 Methodologies for adaptive management

It is necessary to adapt management to changes over time and once the responses of the marine system to different policies and interventions are observed.. This ensures that management acts effectively, can be both reactive and proactive and is appropriate for changes that occur either naturally or when induced by human activities. Marine planning, licensing, conservation management, fisheries management all would benefit from improved methodologies for more effective adaptive management. The MMO can use the experience gained of implementing an adaptive management system to become leaders in marine system science.

To be effective, adaptive management requires data, analyses, processes, feedback systems and managers to work systematically and in a timely manner. In many cases adaptive marine management is not being achieved because one or more aspects of the process are not in place due to lack of information, technology or methodologies. Data requirements are covered elsewhere in this document but are reliant on various sources as well as MMO information. MMO engages in testing and specifying new technology for various aspects of its management currently, for example in transferring to the fisheries electronic logbooks, implementing the landing obligation (discards) and inshore vessel monitoring system (iVMS) systems. Other functions use monitoring data to provide feedback for adaptive management such as in licensing, MPA management and planning.

There are a number of evidence requirements related to implementing effective adaptive management. MMO intends to work on incorporating adaptive management into its activities to ensure that it is a flexible and agile regulator. Testing of approaches including technological and softer methods for practical adaptive management within MPAs and for activities, mobile species and wildlife management is required. It would also be beneficial to improve the adaptive management system for licensing operations. MMO requires further evidence on aspects of climate change adaptation and mitigation to improve marine plan policies. In addition to improve and review marine plans over time the impact of marine plans

must be monitored effectively including a feedback system to ensure the new information is incorporated in a timely and effective manner.

MMO hold some information and guide some processes for adaptive management and further evidence is obtained from a number of different sources:

- Thresholds of impact and acceptable limits - Statutory Nature Conservation Advisors and Environment Agency
- Fisheries policy and research - Government departments
- Current management, feedback, adaptive requirements - MMO
- Fisheries research - Cefas
- Up to date social and economic statistics - Office of National Statistics
- Regulatory and management outcomes - Local Authorities
- Updated information on management effects - Non-government organisations
- Sector specific monitoring - Industry
- Feedback and values - Members and representatives of the public and special interest groups
- Methods, thresholds and feedback - Academics and specialists e.g. consultants

7 Meeting evidence needs

7.1 Quality Assurance

The MMO places great importance on the quality of evidence used in its decision-making, and is committed to the highest possible standard of quality assurance including working to nationally and internationally recognised standards. The MMO Evidence Quality Assurance Policy² identifies that implementing a consistent approach to evidence quality is essential to ensure organisational decisions, guidance, advice and published material are based on accurate, robust and defensible evidence.

The MMO accepts its duty to ensure, as far as is reasonably practicable, the accuracy and completeness of all evidence involved in the full range of the organisation's activities. The MMO also recognises its responsibilities regarding the management of data within the requirements of relevant legislation and guidelines in the UK, such as the Data Assurance Guidelines, government data handling procedures³, the UK Statistics Authority Code of Practice for Official Statistics and the Government Chief Scientific Adviser's guidelines on the use of scientific and engineering advice in policy making⁴.

The MMO has developed a process for evidence quality assurance⁵. This process assesses whether the evidence is fit for purpose and allows the MMO to demonstrate that any limitations have been considered in decision making. The QA process enables the person using the evidence to assess its suitability and robustness, and provide an auditable document that demonstrates the assessment process. Once quality assured, all [MMO evidence reports](#) are made available via gov.uk, along with the MMO's [Master Data Register](#) which contains a list of all spatial data products used for decision-making.

It is the responsibility of the MMO Chief Scientific Advisor to provide assurance to the MMO Board and Executive on both the use of science in evidence based decision making and the integrity of scientific evidence coming into MMO. This is done by periodic audits of both process quality and compliance.

The MMO is working towards certification of ISO standards 9001 and 14001. Currently, the marine licensing, marine planning, evidence, knowledge and information management, and corporate services functions of the MMO have achieved both of these standards. It is anticipated that coastal operations, fisheries management and fisheries statistics will achieve certification by 2017.

²<http://webarchive.nationalarchives.gov.uk/20140108121958/http://www.marinemanagement.org.uk/evidence/documents/qa-policy.pdf>

³ www.gov.uk/government/publications/data-handling-procedures-in-government

⁴https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/293037/10-669-gcsa-guidelines-scientific-engineering-advice-policy-making.pdf

⁵<http://webarchive.nationalarchives.gov.uk/20140108121958/http://www.marinemanagement.org.uk/evidence/documents/qa-evidenceprocess.pdf>

7.2 Continual technical development

The MMO is a technical organisation focused on the management of our marine area. The MMO uses evidence in an applied way to meet the challenging demands of delivery responsibilities. In order to meet these responsibilities the MMO needs robust evidence, but also skilled practitioners who understand the quality of the evidence that is available and whether or not it is sufficient. The internal expertise of the MMO is embedded both within the delivery teams and the specialist support teams within the organisation that provide technical advice, data processing, statistical analysis, knowledge management and an intelligent customer function to deliver external evidence commissions. The MMO is committed to ensuring continual technical development of its staff to ensure evidence is being used correctly in the support of decision making

7.3 Horizon scanning

In preparing this document, the MMO has looked at short, medium and long term requirements, which has necessitated some horizon scanning to look for gaps in evidence provision that are likely to occur in the future. This document will be reviewed annually alongside the work programme that sits underneath this strategy to ensure that the strategic priorities remain relevant and deliverable. This will necessitate horizon scanning and external collaboration to ensure the MMO remains up to date with emerging issues that may impact marine management.

7.4 Delivery of evidence priorities

Due to the nature, size and scale of the marine area, there are considerable challenges around marine evidence and it is vital for the MMO to work closely with a variety of other organisations to deliver evidence priorities in the most effective way.

There are a number of organisations across Defra with similar delivery priorities with which the MMO currently works with as 'One Business' to ensure efficiencies can be met and resilience is increased. The MMO is also committed to collaborating with other sponsor departments, research councils such as the Natural Environment Research Council and Economic and Social Research Council, and other public, private and non-governmental organisations who are working towards similar strategic outcomes.

Alongside this, the MMO, as the leader in the practical application of marine science to underpin management in England, will continue to engage with science providers and the research community to ensure that they understand the operational delivery and requirements for the future of the MMO so that they can increase the impact of their research. The MMO is committed to actively engaging with others to retain an awareness of new sources of evidence and approaches to evaluating that evidence to ensure marine management is supported by best available evidence.

Working collaboratively across Defra, UK government, non-governmental organisations and the UK marine science community not only ensures that efficiencies are met through economies of scale, it also involves as many experts as

possible, resulting in the highest possible quality of evidence to support marine management.

Collaborative working is a critical priority for the MMO and will continue to be achieved in three ways

- aligning marine evidence needs within Defra, allowing identification of which body is best placed to deliver each new piece of evidence to ensure cost efficiencies
- improving the connection between evidence (including academic research), policy and delivery
- making the most of skills and capabilities both within the MMO and beyond

Anyone interested in working with the MMO to meet any of the requirements outlined in this document is encouraged to contact the MMO Evidence Team (evidence@marinemanagement.org.uk).