



1. Requirement overview:

Requirements	To further implement natural capital and ecosystem services methodologies for ecosystem approaches to marine planning and management.
Requirement detail	<p>Ecosystem services are benefit flows to humans from natural ecosystems. Natural capital is the stock of natural ecosystems from which these benefits flow. Mismanagement of natural capital assets or unsustainable use of a service ultimately has negative impacts on benefits obtained.</p> <p>Pathways linking natural capital assets to goods and services that benefit humans are complex and linked requiring ecosystem level consideration. To implement natural capital and ecosystem services approaches requires understanding of</p> <ul style="list-style-type: none"> • the range of economic and social benefits provided by the natural assets and their associated ecosystem services • the way in which these benefits depend upon the various assets and services • the state/condition and location of natural assets in relation to the benefits derived from them <p>Opportunities for investing in other types of natural capital that are not currently present should also be explored.</p> <p>Understanding the benefits obtained from natural capital; the assets that underpin them; and how investment, intervention or management might affect these benefits, is needed for long-term planning.</p>
MMO use	<p>Marine Planning:</p> <p>Evidence will facilitate integrated assessment within marine plans and ongoing implementation of natural capital and ecosystem services within the ecosystem approach for the planning process. Recognition of derived benefits and their origins and flows can inform trade-off decisions and clarify paths to delivery of plan objectives.</p>

External interest	Natural England, Environment Agency, Joint Nature Conservation Committee (JNCC), Centre for Environment, Fisheries and Aquaculture Science (Cefas).,
Delivery target	Q4 2018 to influence the current tranche of marine plan development. Q4 2020 to feeding into ongoing marine plan review.

2. Aims and objectives

Aim:

To improve understanding of how natural capital and ecosystem services methodologies and outputs could underpin ecosystem approaches to marine planning including direction and decision making during plan development.

Objectives:

Objectives to deliver this requirement include improving the understanding of

- the range of economic and social benefits provided by the natural assets and their associated ecosystem services
- the way in which these benefits depend upon the various assets and services
- the state/condition and location of natural assets in relation to the benefits derived from them
- opportunities for investing in other types of natural capital that are not currently present should also be explored
- where and how such knowledge could be incorporated into marine planning
- how to develop or operationalise assessment, ecosystems services trade-off and evaluation methods for decision making

3. Existing evidence

MMO	MMO1048 explored how marine plans could take an ecosystem-based approach to managing competing demands on the marine environment. It recommended developing knowledge of marine ecosystem services and how these will change in response to marine management, particularly marine planning.
Academic	Marine Ecosystems Research Programme (MERP) (2015 to 2020) jointly funded by Natural Environment Research Council and Defra to integrate existing and new data and models and ecosystem services within a common framework for improved understanding of the UK marine ecosystem. Addressing Valuation of Energy and Nature Together (ADVENT) (2015 to 2025) is a UK Energy Research Centre Grand Challenge project exploring

	<p>future UK low carbon energy pathways and quantifying their implications for stocks of natural capital and the provision of ecosystems services.</p> <p>Valuing Ecosystem Services in the Western Channel (VALMER) (2012 to 2015) examined how improved marine ecosystem services assessment could support effective and informed marine management and planning.</p>
Other	<p>Defra funded ME5106 (2013 to 2015) provided valuation of regulating, provisioning and cultural benefits that would arise from targets set under Marine Strategy Framework Directive (MSFD)..</p> <p>JNCC Report 594 “Exploring the components of marine ecosystems critical to ecosystem service generation” (2016) examined the marine ecosystem components and processes that influence potential ecosystem service delivery, identified which components and processes were deemed critical in the delivery process, gathered spatial data regarding ecosystem components and processes, and mapped the potential for ecosystem service delivery in the UK marine environment based on these data.</p> <p>The Natural Capital Committee is an independent advisory committee that provides and publishes advice and guidance to the government on the sustainable use of natural capital.</p>

4. Current activity

In addition to ongoing interaction with large academic projects above like MERP and ADVENT, the MMO will be engaging with South West Partnership for Environment and Economic Prosperity ([SWEEP](#)) (2017 to 2022). SWEEP brings together academics, businesses and policymakers to develop approaches to natural capital-led growth.

The Marine Pioneer projects (2017 to 2022) are co-ordinated by MMO and aim to test the foundation for the delivery of Defra’s 25 Year Environment Plan in the marine environment. Marine Pioneer will design and test new and innovative ways of understanding the value of the natural environment and making it central to decision making.

The MMO is supporting a Natural Environment Research Council industrial CASE studentship entitled “Integrating marine ecosystem services into macroeconomic modelling” with Exeter University and Plymouth Marine Laboratory.

5. Associated evidence requirements

Ref	Title
R014	Loss of fringing habitat and transitional communities from coastal squeeze (loss of services).
R027	The baseline economic environment of the English marine plan areas (informed by valuation of services).
R028	Geographic definition of the economic value of supply chains linked to marine activities (informed by services utilised).

More information on these evidence requirements is available [here](#)

6. Potential delivery route

The MMO will look to partner appropriate organisations of relevance to widen the potential impact of any work undertaken in this area. The MMO will also explore opportunities to influence the research of others to gather evidence that can be applied within a marine management context. Knowledge exchange is required throughout the duration of this requirement and not limited to when delivery is complete.

Partnering

The MMO will continue to work with ongoing academic and government projects such as MERP, ADVENT and SWEEP, and the Marine Pioneer Projects.

Influencing the research of others

In the course of interactions with academics and Defra group organisations we will discuss and outline the requirement for ecosystem services to make marine management decisions so that awareness is high among researchers and practitioners.

This is a large requirement and the MMO will work to influence the wider research agenda working with research councils and the wider Defra family.

See table 1 for timescales.

7. Contact

For more information or to add further research to the existing evidence list please email evidence@marinemanagement.org.uk

Table 1: Delivery timescales 2017 to 2020

Delivery Route	2017				2018				2019				2020			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Partnering																
Influencing the research of others																