



Marine
Management
Organisation

Review of Marine Planning Evaluations (MMO1332)



...ambitious for our seas and coasts



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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

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Acronyms

HLMO	High Level Marine Objective
MCAA	Marine and Coastal Access Act 2009
MCMS	Marine Case Management System
M&E	Monitoring and Evaluation
MMO	Marine Management Organisation
NENWSESW	North East, North West, South East, and South West
ONS	Office for National Statistics
25YEP	The 25 Year Environment Plan 'A Green Future: Our 25 Year Plan to Improve the Environment'

Glossary of terms

Adaptive management: A flexible, iterative approach to policy-making that uses evaluation findings to inform ongoing adjustments and improvements.

Contextual factors: External influences (e.g., climate change, socioeconomic conditions) that may affect policy outcomes, considered in the evaluation process.

Contribution Analysis: An evaluation approach that assesses the contribution of policies to observed outcomes, even in complex systems with multiple influencing factors.

Logic model: A visual representation of how a policy or programme is expected to lead to desired outcomes, outlining inputs, activities, outputs, and impacts.

Marine plan vision: The overarching long-term goal of a marine plan, describing the desired future state of the marine environment and coastal communities.

Ocean literacy: Marine citizenship, ocean connectedness, and public perceptions research. Key elements of ocean literacy are marine citizenship, knowledge, awareness, communication, behaviour, attitudes, activism, emotional connection, access and experience, adaptive capacity, and trust and transparency (see McKinley et al., 2023)

Outcome indicators: Metrics used to measure the effects of policies, tracking progress towards achieving marine plan objectives.

SMART: Specific, Measurable, Achievable, Relevant, and Time-bound, providing a clear framework for policy design and evaluation.

Stakeholder Engagement: The process of involving diverse groups of interested parties (e.g., local communities, industries, researchers) in policy design, monitoring, and evaluation.

Theory of Change (ToC): A detailed explanation of how and why a policy or programme of activities is expected to achieve its intended results, including underlying assumptions and causal pathways.

Executive summary

This project was to support the Marine Management Organisations (MMO) Marine Planning Team to review and improve the approach to monitoring and evaluation (M&E) of marine plans and marine plan policies, which will be updated to support marine planning going forwards. Recognising the need to move beyond monitoring, to monitoring, evaluation and learning; to better assess the effect and effectiveness of marine plan policies in achieving marine plan objectives and broader government goals.

The current Approach to Monitoring (2020) shows strengths, such as the use of logic models and a robust set of indicators, but lacks an evaluation framework, making it difficult to attribute observable outcomes to policy effects, or account for complex system interactions. Therefore, this report outlines a revised approach, incorporating evaluation objectives and evaluation questions. This report also introduces systems thinking and a contribution analysis framework to provide a more comprehensive understanding of policy contributions, while also taking into account external and contextual factors affecting observable outcomes.

1. Introduction

Marine plans and the role of monitoring and evaluation

Marine plans and associated policies serve as tools for managing marine activities and balancing competing demands on marine space. A marine plan also provides guidance on where specific activities should be permitted or avoided. Pursuant to Section 58(1) of the Marine and Coastal Access Act 2009 (MCAA)¹ public authorities making authorisation or enforcement decisions must act in accordance with the marine plan, with regard being given to the marine policy documents for any non-authorisation or enforcement decisions affecting the UK marine area. The appropriate marine policy documents are the Marine Policy Statement (2011),² which provides the Higher-level Marine Objectives (HLMOs), and the adopted marine plans with associated objectives and policies.

The requirements for the Marine Management Organisation (MMO) to monitor and periodically report on marine plans is set out in MCAA under Section 54 'duty to keep relevant matters under review' and Section 61 'monitoring of, and periodic reporting on, implementation'. Monitoring and evaluation (M&E) of the effects and effectiveness of marine plan policies is an important part of how marine plans can be reported on, improved upon and adapted over time. Also, to understand the marine plans policies contribution towards the marine plan vision and objectives, the HLMOs, and other government commitments such as 'A Green Future: Our 25 Year Plan to Improve the Environment' (Defra, 2018) (25YEP), all set within changing contextual factors, such as climate change and socio-political changes.

Project aims

The aim of this project was to review the current approach to M&E of marine plans to suggest, where practicable, methodological improvements to the evaluation aspect of the framework, to be able to better understand the effects and effectiveness of marine plan policies. This project:

- Reviewed specific documents associated with marine planning M&E (documents described in Section 1.2, Table 1. Key sources used in review), considering the strengths and weaknesses in how monitoring evidence is currently used to evaluate marine plans and marine plan policies;
- 1) Developed an approach to undertake structured evaluation of marine plan policy effects and their effectiveness in securing plan objectives, and wider government policy.

1.1 Introduction to this report

This report is structured into seven sections. The first two sections (sections 2 and 3) explain the current approach to the M&E of marine plans and policies, and the strengths and weakness of this approach. The following three sections (sections 4, 5, and 6) present a revised approach to M&E of marine plans and policies, which builds on the established strengths and addresses recognised limitations. Lastly, the

¹ [Marine and Coastal Access Act 2009](#)

² [UK marine policy statement - GOV.UK](#)

report concludes with next steps to be taken to progress from the current approach to the revised approach (section 7). The report is structured as follows:

Section 1: Introduction

Sets the context for the report, explaining the MMO's legal duty to monitor marine plans under MCAA and highlights the documents reviewed in this project.

Section 2: Characterisation of the Current Monitoring and Evaluation

The current approach is reviewed and characterised. This section establishes the baseline for the rest of the report.

Section 3: Strengths and Weaknesses of the Current Monitoring and Evaluation

A critical assessment reveals strengths in structured monitoring and periodic reporting, but weaknesses in evaluation, inconsistent data, and limited system-level understanding. These insights directly inform recommendations for the revised framework.

Section 4: Revised 'Approach to Monitoring and Evaluation' Framework

This section introduces a systems-based evaluation framework including evaluation objectives and questions. The evaluation approach - a contribution analysis, is presented in detail.

Section 5: Key Considerations for Retrospective Application vs New Plan Development

The framework's flexibility is explored, with tailored pathways for both existing and future marine plans.

Section 6: Testing the Approach

The framework is tested through a case study of South Marine Plan Objective 12 (Space for Nature). The case study demonstrates the framework's value in structuring evaluations with evaluation questions and building a context-based contribution analysis.

Section 7: Conclusion and Next Steps

The final section synthesises findings, emphasises the framework's potential, and outlines clear next steps for MMO to pilot, refine, and scale.

1.2 Key sources reviewed

To inform the analysis, the project team reviewed a number of documents and reports which are presented in Table 1. Throughout this report, legislative documents are provided in the footnotes, and the academic literature is referenced, where relevant, in text.

Table 1. Key sources used in review.

Title and date	Short description
MMO1061 Method and data to monitor the social outcomes of marine plans (2014)	Commissioned research that identifies indicators that are relevant to monitor the social outcomes of marine plans and ascertain data requirements
MMO1087 Review of the Marine Planning Monitoring and Evaluation Framework and Development of Baselines (2016)	Review of the marine planning M&E framework to assess whether it is fit for purpose and could be utilised for subsequent marine plans, and recommendations for improvements.
MMO1151 Review of marine plan monitoring indicators and their associated logic chains: review of logic models (2018)	Review of the MMO's logic model(s) and proposed indicators for the draft South Marine Plan, and a review of the indicator gaps for the draft South Marine Plan and East Marine Plan.
South Marine Plan Approach to Monitoring (2018) "South Approach"	This document sets out the South Marine Plan monitoring approach adopted by MMO. It defines why and how plans need to be monitored, and introduces the logic chain. • This document has been superseded by the NENWSESW Approach, however, it was reviewed in this project to inform understanding of the monitoring approach when utilising marine plan-level objectives and HLMOs.
North East, North West, South East and South West Marine Plans Approach to Monitoring (2020) "NENWSESW Approach"	This document defines the same monitoring approach for the NE, NW, SE and SW Marine Plans. Detailed application of the monitoring approach is realised at the plan level, and the plan level logic model is expanded to include a nested policy logic model. • Adopted for all plans including the South and East, reviewed to inform understanding of the latest M&E approach and the nested logic model.
North East, North West, South East and South West Marine Plans Approach to Monitoring Annex of Indicators (2023)	It describes the logic of how the NE, NW, SE and SW Marine Plans and the underpinning marine planning process are expected to have real-world benefits and defines the indicators to monitor progress towards achieving those benefits. • Reviewed to understand current indicators.
Underpinning Information South Marine Plan Three-Year Report (2024)	This document sets out the detailed monitoring evidence that supports the development of the South Marine Plan Three-Year Report. It highlights progress towards

	each marine plan objective through presenting the data and outcomes of each indicator, relevant to each policy, under each objective. • Reviewed to inform understanding of M&E and pathway to reporting on plan-level objectives and HLMOs.
Three-yearly Reports to Defra	These concise documents provide reporting details from MMO on behalf of Defra on the progress of each marine plan.

2. Characterisation of the current approach to monitoring and evaluation of Marine Plans

Alongside development of marine plans, MMO produces 'Approach to Monitoring' documents which set out the way in which the marine plans will be monitored, evaluated, and reported on. The South Marine Plan Approach to Monitoring (2018) (South Approach) was for a single plan that covers the south inshore and offshore marine plan areas. The more recent NENWSESW Approach to Monitoring (2020) (NENWSESW Approach) applies to multiple marine plan areas across England, superseding the South Approach, to apply to all marine plans as the most recent approach.

The South Approach has been included because it monitors against specific plan-level objectives from the South Marine Plan³, as well as HLMO's that apply to all UK marine plans. The HLMOs are the only objectives of the NENWSESW marine plan areas⁴, therefore the NENWSESW Approach to Monitoring Approach does not consider specific, individual plan level objectives. Current thinking is that it is likely that new plans will take the same approach as the South Marine Plan with plan-level objectives as well as HLMOs, as a result, elements from both the South Approach and NENWSESW Approach are included in this characterisation and the ongoing review.

This section presents further detail of the South Approach and the NENWSESW Approach, to characterise the overall framework applied to M&E of marine plans.

2.1 The South and NENWSESW Approach to Monitoring documents

Both the South Approach and NENWSESW Approach documents establish a structured approach to monitoring marine plans through a logic model framework (inputs, activities, outputs, intermediate outcomes, outcomes, and impacts) and provide criteria for selecting process, outcome, and contextual indicators, recognising the importance of establishing baselines for future evaluations. The documents acknowledge the need to adapt the monitoring approach over time as more evidence and tools become available and both documents highlight the importance of engaging stakeholders in developing and applying indicators.

The key concepts and progression from the South Approach to the NENWSESW Approach include:

- The South Approach concentrated on the development of specific indicators for a single region. The NENWSESW Approach evolves to cover multiple

³ [The South Marine plans documents - GOV.UK](#)

⁴ It was decided, with stakeholders, when developing the North East, North West, South East and South West plans that the HLMOs should be used as the objectives for the marine plans, without the need for specific, plan level objectives

marine plans so as to standardise monitoring while accommodating regional variations across plan areas.

- The South Approach and the NENWSESW Approach align with the UK Marine Policy Statement HLMOs. In addition, the NENWSESW Approach sets out how the marine plans align with broader UK government initiatives, such as the 25YEP.
- The South Approach built on the East Marine Plan logic model. The NENWSESW Approach builds on both the East and South framework, as well as experience from monitoring and reporting on the East Marine Plan⁵ and integrates feedback and lessons learned from independent reviews (for example, MMO1151, 2018). As a result, the NENWSESW Approach expands to include nested logic models, with both a plan-level logic model (broad view of marine plan impacts) and a policy-level logic model (specific focus on individual policies). However, the nested policy logic model approach has not been adopted due to difficulties operationalising the approach in practice, and a priority to report on progress towards objectives.
- The South Approach and the NENWSESW Approach includes process, outcome and context indicators, and both monitor progress of policies towards marine plan objectives through outcome indicators (where data is available). Both focus on monitoring individual indicators and use the outcome indicator data to provide assessment of the marine plan policies and objectives in the 'Underpinning Information' document, which compiles process, outcome and context monitoring findings.
- The South Approach monitors independent relationships between marine plan policies and observed outcomes, the NENWSESW Approach further considers the interdependencies between policies and further recognises that plan policy effects are influenced by external factors.
- Neither the South Approach or the NENWSESW Approach provides an evaluation methodology or framework (such as evaluation objectives or evaluation questions, or a method to assess outcome and contextual indicators together), to enable structured M&E of the effect and effectiveness of marine plans and marine plan policies.

⁵ [Marine planning: East Marine Plans three-year progress reports - GOV.UK](#) and [Three-year reports on the South Inshore and South Offshore Marine Plan - GOV.UK](#)

3. Strengths and weaknesses of the current monitoring and evaluation

Building on the insights gained from the characterisation in Section 2 a detailed strengths and weaknesses review was carried out to inform future improvements and revisions of an approach to marine plan M&E.

The focus of this section was to review the strengths and weaknesses in how the current Approach to Monitoring documents dictate M&E of marine plans and the ‘pathway to reporting’ on the effects and effectiveness of marine plan policies. The pathway to reporting includes the Approach to Monitoring documents, and policy outcome indicators⁶ to report on progress towards meeting objectives that are detailed in the Underpinning Information documents, and then compiled in the Three-yearly Reports to Defra.

In this review, to provide examples, the South Approach and a selection⁷ of South Marine Plan objectives (4, 8, and 12), associated policies and indicators, South Underpinning Information, and the South Three-yearly Report (2024) were reviewed.

3.1 Strengths and weaknesses of the Approach to Monitoring

The South Approach uses a logic model framework to monitor marine plans. It aligns with the monitoring and reporting requirements of MCCA, but lacks full compliance with the Magenta Book’s evaluation standards, particularly in defining causal pathways, attribution methods, and adaptive indicators. It highlights the linkages between monitoring indicators to report on policies, plan objectives and HLMOs, and emphasises data quality, baseline assessments, and periodic reporting. However, it does not provide a clear methodology or framework for evaluating the monitoring data, or bring together the outcome indicators with the contextual indicators to assess the different contributions towards observable outcomes in the marine area, or for addressing unintended consequences of one policy on another policy. This is detailed in Table 2.

Table 2. Strengths and weaknesses in the South Approach to Monitoring (2018)⁸

Theme	Strengths	Weaknesses
Logic model approach	• Uses a logic model framework (inputs, activities, outputs, outcomes, and impacts) to monitor policy effects.	• Lacks explicit details on how assumptions behind the logic model will be tested or validated. • Does not explicitly discuss causal

⁶ There are also process indicators, although this was not within scope for this project

⁷ Selected by the Marine Planning team.

⁸ The South Approach used as an example, though the same strengths and weaknesses apply to the NENWSESW Approach also.

Theme	Strengths	Weaknesses
	- Provides clarity and structure for understanding causal relationships in marine plan monitoring. - Aligns with Section 61 of the MCCA and incorporates some principles from the Magenta Book (2020).	- pathways, dependencies, or external influences. - Does not incorporate full Theory of Change evaluation framework as described in the Magenta Book (2020)
Links to Objectives and Indicators	- Tied to South Marine Plan objectives and HLMOs, ensuring alignment with broader policy goals. - Uses process, outcome, and contextual indicators for a holistic monitoring approach.	Does not frame monitoring goals as explicit evaluation questions or articulate clear evaluation objectives.
Data Quality and Baseline Assessments	- Emphasises data quality through assurance measures, data standards, and reliance on trusted sources. - Establishes baseline data (where possible) before plan adoption, aligning with Section 54 requirements.	- Mentions various data sources but does not specify data analysis methods or how findings will be triangulated. - Lacks details on how data quality gaps will be mitigated.
Attribution and External Influences	Recognises that marine plans are not the sole drivers of change and acknowledges attribution challenges.	- No clear strategy to disentangle marine plan impacts from external influences. - Lacks methods to assess attribution, establish counterfactuals, or account for unintended consequences.

Theme	Strengths	Weaknesses
Adaptive Management and Reporting	- References lessons learned from prior marine plans (such as the East Marine Plan) and independent reviews. - Commits to three-yearly reporting cycles as required under Section 61. - Emphasises transparent and accessible reporting to improve future plans.	- Indicators are not explicitly designed to be adaptive or responsive to changing conditions. - No clear outline of how findings will inform adaptive management or future policy decisions.
Stakeholder Engagement and Emerging Issues	Collaboration with public authorities and data owners ensures broad engagement in the monitoring process.	Lacks detail on how it will address emerging challenges such as shifting stakeholder priorities.

3.2 Review questions and answers

Building on the strengths and weaknesses review of the South Approach document, more detailed analysis of the pathway to reporting (Approach to Monitoring, policy outcome indicators, Underpinning Information documents, Three-yearly Reports), was carried out. The pathway was mapped out for the selected objectives (4, 8, and 12) in Table 8 (Table 8) and further unpacked in relation to the monitoring data, evaluation, and attribution of the observed outcomes to the marine plan policies in Table 9 (Table 9). The following seven key review questions were answered, and the strengths and weaknesses of the whole approach was surmised (Section 3.3)

1) How well aligned are the current indicators to the relevant causal links in the Approach to Monitoring logic models?

The current indicators are **fairly aligned** to the relevant causal links in the approach to monitoring. Outcome indicators highlight progress towards policy aims, which are 'intermediate outcomes' on the logic chain, which logically follows that achieving objectives are 'outcomes' in the logic chain. The key weaknesses that inhibit alignment and attribution for specific indicators are limited evidence and data. There are **varying degrees of supporting data and varying confidence levels to**

support some indicators and evidence their alignment to marine plan policy effects⁹

2) How robust are the indicators given the underlying data that informs them and what, if any, data gaps have been identified?

Robustness is highly variable across indicators as some indicators have complete data¹⁰ and others have partial data¹¹. Key weaknesses in robustness (which do not apply to all indicators) include:

- **Outdated data:** For several indicators, the underlying data is not collected frequently enough to be relevant for MMO's three year monitoring period.¹²
- **Small sample sizes:** Indicators that utilise survey responses¹³ have small sample sizes due to low response rates. This is exacerbated in cases where survey responses illicit a high volume of 'don't know' responses.¹⁴
- **Data availability and gaps:** There are existing gaps in the data to support indicator 14 and 15 to be able to comprehensively monitor their effectiveness.¹⁵

3) Are indicators used that can measure the outcome of policy effects as well as the relationship between different policy objectives?

All of the selected indicators are relevant to monitoring the outcome of policy effects. However, often observed outcomes could be attributed to other factors as well. For example, indicator 14 monitors change in spatial extent of habitat and

⁹ For example, indicators 13 and 9 (S-EMP-1 and S-EMP-2 policies) are dependent on the rate of survey response and addressing data gaps with employment statistics.

¹⁰ For example, sub indicator 8.08, that supports policy S-FISH-4-HER and sub indicator 48.05, that supports policy S-BIO-3, has complete data than can be collated from the Marine Case Management System (MCMS).

¹¹ indicator 14 that supports policy S-BIO-1.

¹² For example, indicator 14 that supports policy S-BIO-1 through Natural England's Marine Evidence Base, has data for 7 out of 9 priority habitats and data is not currently collected frequently enough to report within the three-year reporting period.

¹³ For example, 9.01, 9.02, and 9.03 that supports policy S-EMP-1; and 9.27 that supports policy S-BIO-2; and 9.35, 9.36, and 9.37 that supports S-WQ-2.

¹⁴ For example, sub-indicator 9.01 findings showed 69% of responses from 2019 to 2021 and 65% of responses from 2022 to 2023 'don't know' if they have seen an improved consideration of the potential to develop skills related to marine activities as a decision-making factor.

¹⁵ Indicator 14 that supports policy S-BIO-1 through Natural England's Marine Evidence Base, has data for 7 out of 9 priority habitats and data is not currently collected frequently enough to report within the three-year reporting period. S-HER-1 and S-SOC-2. Indicators such as 15 would require gathering data on the impacts of Local Planning Authority consents and Development Consent Orders on heritage assets within the marine plan area to give a full understanding of the effectiveness of the relevant policies.

species; these changes could be influenced by climate change and land practices (including local government policy, agricultural run-off, land-based industries)¹⁶.

To measure the relationship between different policies, indicators are directly related to some objectives and policies and are indirectly related to other objectives and policies. This highlights strong relationships to some policies and weak relationships to other policies, which could show linkages between the policy area¹⁷. However, this is not mapped out to provide insights at the system-level, and there is no reporting on these relationships.

4) Are the selected policies able to be evaluated for their effectiveness at achieving the intended outcomes?

The effectiveness of the selected policies at achieving target outcomes can be evaluated to an extent. The extent of this evaluation is dependent on the availability of suitable baseline and post implementation data. The following key issues were identified:

- **Missing baseline data:** Some indicators have baseline data against which to measure change¹⁸, other indicators do not have explicit baseline data and therefore, attribution of observed effects to the policy is more difficult¹⁹
- **No evaluation objectives or questions:** There is no guidance specifying what the priorities are for the evaluation. As such, a lot of monitoring data is generated, but there is no direction on how to bring the evidence together to respond to the questions and needs of policy makers.

5) Are policy effects able to be categorised and can effectiveness be defined?

Policy effects are categorised, and indicators have success factors. Depending on data availability and observed outcomes, **policy effects are currently categorised** in the Underpinning Information (in relation to progress towards meeting each objective) as: positive, positive progress, increasing, target met, stable trend, neutral, inconclusive, no clear trend, decreasing, negative, insufficient data.

¹⁶ For example, policy S-BIO-1 requests that “proposals that may have significant adverse impacts on natural habitat and species adaptation, migration and connectivity must demonstrate that they will, in order of preference: a) avoid, b) minimise c) mitigate significant adverse impacts”.

¹⁷ For example, indicator 14 and policy S-BIO-1 directly relates to Objective 12: Space for Nature, and indirectly relate to Objective 10: Marine Protected Areas. Another example can be seen in indicator 8.08 and policy S-FISH-4-HER which directly relates to Objective 12, and indirectly relates to Objective 1: Co-existence.

¹⁸ For example indicator 8.08¹⁸, that supports policy S-FISH-4-HER.

¹⁹ For example, there were no baseline findings to compare the extent to which stakeholders perceive skills and employment as a decision-making factor for sub-indicators 9.01, 9.02 and 9.03. This is mainly because questions for these indicators were introduced to surveys in 2019.

6) Do current indicators enable measurement of the contribution of marine plan policies to observable outcomes, compared to other policy delivery processes?

All of the indicators measure change; however, it is difficult to measure the contribution of the marine plan policies to the observed change, this is due to:

- **No counterfactual information to evaluate against** as there is not an exact control situation where the marine plan does not exist.
- **Limited consideration of external and contextual factors:** Limited consideration is given to the possible influence of other factors²⁰. However, activities external to marine planning can make it difficult to determine whether observed changes over time are directly driven by marine plan policies, even with a strong data set. Throughout the documents, including the Approach to Monitoring, the Underpinning Information and the indicator report cards there is strong recognition that marine plans have other influencing factors²¹. However, no indicators are defined for contextual factors alongside outcome indicators e.g. socio-economic conditions to understand their influence on outputs and outcomes²²
- **No method to disaggregate the observable outcomes from other policy delivery processes.** It was not in scope to review the strengths and weaknesses of the contextual monitoring, however, to better understand the contribution of marine plan policies on observable outcomes, compared to other policy delivery processes, evaluation of outcome monitoring alongside context monitoring is likely necessary.
- Indicators that utilise stakeholder surveys and focus groups ask questions relating to perception of change and therefore, these indicators can measure perceived attribution. However, there are **challenges with response rates** that hinder explicit measurement of the contribution of marine plan policies to the outcomes. There are further issues about survey respondents' ability to accurately articulate the extent to which they did something because of a marine plan policy.

7) How well do the findings of the current Approach to Monitoring / Underpinning Information evaluations attribute marine plan policy effects to the achievement of broader plan objectives and HLMOs?

²⁰ For example, the influence of strong external factors such as socio-economic conditions make it difficult to directly attribute measured change in employment numbers to the impact of marine plan policies, for example, S-EMP-2.

²¹ For example, the data for indicator 14, which supports policy S-BIO-1 highlights change in spatial extent – it is stated in the report card that these changes could also be attributed to climate change, land practices including local government policy, agricultural runoff, land-based industries, and changes in surveying or monitoring methods.

²² Indicators for contextual factors e.g., external socio-economic conditions would provide a better understanding how changes in employment figures aligns with indicators 13 and 9.

The findings of the South Approach and Underpinning information shows that there are areas of positive and negative contribution of marine plan policies to the achievement of broader plan objectives and HLMOs²³.

3.3 Strengths and weaknesses of the pathway to reporting

In reviewing the pathway to reporting, from the South Approach to the Three-yearly Report, for the selected objectives and associated policies and indicators, a number of key strengths and weaknesses have been found:

Strengths:

1. The logic models are tied to both the South Marine Plan objectives and HLMOs, ensuring that the monitoring process measures progress toward broader plan goals. The pathway is, in general, structured, showing the connection between objectives, policies, indicators, and Underpinning Information (though, looking across documents that have potentially confusing document titles is necessary and adds to the complexity and potential overwhelm of any staff member that may need to use the information).
2. There is a wide range of policies and indicators that monitor the outcome aspects of the logic chain, ensuring that various aspects of the marine plan are monitored for change in observable outcomes, which can highlight the effect and effectiveness of marine plan policies. In some cases, indicators are combined to be able to more comprehensively monitor the outcome for example, S-WQ-1, which utilises different indicators for different waterbodies, and S-WQ-2 which uses different data for different water bodies as well as stakeholder surveys.
3. Indicator report cards state measures of success and detail why an indicator has been chosen.
4. There are linkages across objectives through direct and indirect policies and associated indicators.

Weaknesses:

1. There are some inconsistencies between the South Marine Plan and the Underpinning Information documents. For example, the number of policies associated with Objective 12 differs between the two documents. There are

²³ In the Three-yearly Report for the South Marine Plan (2024) the S-FISH-4-HER policy is described as contributing to Objective 12: Space for Nature, and the HLMO of achieving a sustainable marine economy by facilitating effective co-existence of marine development with the herring fishery. However, that is the only policy that is specifically reported on in the Three-yearly Report for Objective 12. The S-HER-1 policy was also noted as positively contributing to Objectives 8. However, a lower Heritage at Risk (HAR) in 2020 is likely due to the impacts of the COVID-19 pandemic on marine licensing applications and processing.

potential mistakes in the documents, such as differences in sub-indicator details and relevant policies listed in the Underpinning Information and Indicator Report Card documents, which make it difficult to follow the pathway and evaluate the marine plan and its policies effectively.

2. The pathway focuses more on monitoring than evaluation, which limits the depth of evaluation. There are no evaluation objectives or evaluation questions, as this has not been framed as such by the Approach to Monitoring. While the Indicator Report Cards state targets of success for the individual indicators, this is not supported by additional parameters such as how or when. Additionally, policies are not explicitly brought together to decipher what the combined success would look like for the objective, or plan more broadly.
3. Within the plan areas multiple policies will be taking effect at different scales as the plans are used more, however, it is not clear how this is monitored or evaluated to provide insights at the whole-site or system-level, or what the effects and effectiveness of one policy area means for effects and effectiveness of other policy areas. This could include unintended negative consequence, or shared policy outcomes whereby progress for one policy area might also mean progress for another policy area.
4. There are existing gaps in data, such as incomplete data for some indicators and outdated information for others, with no detail on how or when these data gaps may be filled, which limits the ability to include information in the Three-yearly Reports.
5. There are limited response rates to surveys, which means using the data to monitor or evaluate outcomes is difficult. One reason for this, in addition to the reasons already highlighted in the relevant Indicator Report Card's (for example, stakeholder fatigue due to the number of questions, or feedback on 'leading' questions found in indicator 9), may be the wording of the survey questions which are quite convoluted and difficult to understand what is being asked.
6. The Three-yearly Reports do not follow a similar structure to the presentation of information in the South Marine Plan or the Underpinning Information. Evaluating 'outcome' monitoring in relation to 'context' monitoring could provide a better understanding of marine plan policy effects and effectiveness.

3.4 Recommendations

The review of the Approach to Monitoring and pathway to reporting identifies strengths and weaknesses in its ability to evaluate marine plan policies. The adoption of a logic model aligns with principles from the Magenta Book and MCAA requirements. However, it focuses more on monitoring than evaluation, leading to gaps in understanding policy impacts and broader objectives.

Key strengths include: the alignment of logic models to objectives and HLMOs; the holistic use of various indicator types (process, outcome, and contextual); and a commitment to periodic reporting.

The weaknesses, however, limit the evaluation process. The absence of explicit evaluation questions, counterfactuals, and methods to assess contribution to marine plan policies impairs the depth of analysis. Additionally, issues with data completeness, inconsistencies across supporting documents, and low stakeholder survey response rates further complicate robust policy evaluation.

The pathway to reporting also reveals structural limitations. While some indicators combine data to monitor outcomes more comprehensively, some have known gaps with no planned roadmap to addressing these. Inconsistencies or potential human errors between documentation make it challenging to trace the pathways.

The South Approach is limited by its underdeveloped evaluation framework. While it tracks progress, it struggles to measure the effectiveness of specific policies and their impact on other policy areas. To improve, the approach needs robust and quality data, consistent documentation, and a systems-based, evaluation-focused method.

Therefore, key recommendations for a revised approach included:

- 1. Adopting a more systems-based approach** – consider the combined contribution of a policy on other policies and the wider contextual factors affecting the marine system.
- 2. Adopting a more evaluation-focused framework** – include evaluation objectives and questions that can provide a focus to the approach and help prioritise what needs to be monitored and how the evidence needs to be brought together to provide coherent conclusions on issues of relevance to the 3 yearly reviews.
- 3. Improving document accessibility and consistency** – review all relevant documents for consistency across policies relevant to objectives, indicators relevant to policies, and correct any errors in the coding/numbering of these. Additionally, potentially re-naming documents for logical flow and ease of use – from the Approach to Monitoring and Evaluation²⁴, to the Monitoring and Evaluation Evidence²⁵ to the Three-yearly Reports.
- 4. Bridging gaps in data** – address survey questions and response rates, potentially using more targeted surveys to bridge data gaps or triangulate findings.

²⁴ Currently the Approach to Monitoring

²⁵ Currently the Underpinning Information

4. Revised 'Approach to Monitoring and Evaluation' framework

During the Validation Workshop with MMO it was agreed that the project team would explore options for applying a systems-based approach to the M&E of marine plans and advance the evaluation framework. The revised 'Approach to Monitoring and Evaluation' framework is intended to better guide what to include in M&E of future marine plans and apply retrospectively to current ones. Applying systems thinking to the approach to M&E can provide a more comprehensive consideration of the influence of context and external factors alongside plan policies. It can also provide a wider evidence base and understanding of marine plan effects that can in turn support better decision making.

This section is divided into three sub-sections:

- Section 4.2 discusses systems thinking and the benefits of a systems-based approach to monitoring, evaluating, learning, and adapting.
- Section 4.3 outlines an evaluation framework with reasoning and examples for developing marine plan evaluation objectives and questions.
- Section 4.4 introduces contribution analysis as an evaluation method, helping MMO teams understand the effects and effectiveness of marine plan policies, considering external factors also.

4.1 A systems approach to monitoring and evaluation

Marine systems are complex, comprising social, ecological and economic components that interact dynamically across spatial and temporal scales, exhibiting feedback loops, non-linearity, and emergent properties. Monitoring and evaluating the effect and effectiveness of marine plan policies, therefore, requires understanding of, and working with, the inherent complexity within the system.

Within the marine plan areas, multiple policies will be taking effect at different scales, working towards the achievement of plan objectives, as the plans are utilised to a greater extent over time. Currently, however, these interactions are not monitored or evaluated to provide insights at the system-level. As a result, no mechanisms exist to understand and report on what unintended negative consequences, or synergistic outcomes one or more policy may have on another.

A systems-based approach to M&E allows for identification of leverage points (Meadows, 2015; Abson et al., 2017) that can enable efficiencies across the system and drive meaningful change, potentially in multiple policy areas. Traditional approaches often focus on siloed linear pathways and isolated indicators for individual policies, which, while valuable, fail to capture the full range of effects and the interdependencies within the system.

Understanding the effects and effectiveness of marine plan policies necessitates understanding of how policies contribute to the overarching goal of the system and how policies complement or contradict other policy areas to achieve the marine plan goal. The current marine plans have not been explicitly developed using a systems-based approach, however, for the purpose of monitoring and evaluating at a system-

level, each marine plan has a 'vision' which has been developed between MMO and stakeholders. This provides an overarching goal for the marine plan system, supported by objectives, where each policy within the marine plan contributes to the achievement of the objectives and the plan vision (system goal).

Developing understanding of the system and interactions should be carried out in a participatory way to understand the system from multiple perspectives, and also to share knowledge and learning, as described in Figure 1.

Figure 1. Example of participatory methods to develop systems mapping.

The process of developing a more comprehensive system map can be accomplished using tools such as participatory system mapping, causal loop diagrams, stock-and-flow diagrams, or network maps. This step should ideally be undertaken in participatory way during the marine plan design and development phases or retrospectively in relation to the marine plan area.

Participatory system mapping is a recommended basis for building understanding of the role of marine planning within an evolving policy, environmental and socio-political landscape, together with the changing evidence base and level of understanding of the system in which they operate. Understanding the interactions between policy areas, as well as the roles and responsibilities in delivering them, supports learning regarding the role of marine planning in relation to other policy delivery mechanisms and how to enhance this and support progress towards relevant policy outcomes.

A project undertaken with Defra: "Understanding, improving and implementing Ocean Sustainability vision using participatory system mapping and theory of change" (2024) provides a helpful approach to exploring the marine system and the role of policy delivery within it. Engaging with this process would support understanding the wider role of marine planning (and the MMO) and support future evaluations.

4.2 Evaluation framework

Monitoring and evaluation are distinct but closely inter-related activities. Monitoring is the routine tracking and reporting of priority information about a policy intervention using data and evidence. Evaluation refers to discrete studies that aim to produce an overall evaluative judgement about the significance of a policy intervention, in addition to descriptions and analysis of causal relationships and contextual factors.

Generally, M&E findings are developed and used at different times, with different regularity, necessitating different resource needs and for different purposes (Peersman et al., 2016). Table 3 summarises the ways in which M&E are often defined and practiced, highlighting why both approaches are needed for effective decision making.

The aim of this project was to review the current approach to M&E of marine plans to suggest, where practicable, methodological improvements to the evaluation aspect, to be able to better understand the effects and effectiveness of marine plan policies, therefore, developing the evaluation part of the framework is now the main focus, though inherently monitoring is discussed alongside this.

Table 3. Key characteristics of monitoring and evaluation. Adapted from Peersman et al., (2016)

Key characteristics	Monitoring	Evaluation
Purpose and approach	Routinely collects information, often through standardised performance indicators linked to the objectives of the intervention	Is episodic and investigates particular dimensions of an intervention and observed results, usually, in depth and by using multiple data sources
Understanding causality	Links inputs and activities to results, often limited to outputs but outcomes and/or impacts may also be tracked Does not conduct causal inference or conclude on attribution or contribution to observed outcomes	Tests (elements of) the underlying Theory of Change Assesses specific causal contributions of the intervention to the results, going beyond outputs to include outcomes and/or impacts
Use	Provides results, which can be compared with intended results, often expressed as specific, pre-established targets Tracks unintended results Identifies areas of under-achievement Reports achievements to funders or policy makers (upward accountability) and/or beneficiaries (downward accountability)	Analyses why intended results were or were not achieved Assesses unintended results, both foreseen and unforeseen Provides a judgement about the merit, worth or significance of a policy Provides lessons learned and offers recommendations for intervention improvement and/or resource allocation

Marine plan policies do not operate in isolation, they are part of a wider system of interactions and relationships. Therefore, evaluating the effect and effectiveness of policies cannot follow a simple cause and effect methodology. Rather, evaluation methods that build understanding of the contributions towards the observed outcomes tend to be best suited for the evaluation of complex, multi-faceted programmes (HMT, 2020), such as marine plans.

4.2.1 Evaluation aim and questions

Defining the aim of the marine plan evaluation ensures that it provides a transparent and focused process for assessing and reporting the effects and effectiveness of the marine plan. Moreover, establishing clear evaluation objectives enhances the likelihood that the evaluation will be correctly focused. Pursuant to sections 54 and 61 of MCAA, the focus must include:

- (to determine) the effects of the policies in the marine plan;
- (to determine) the effectiveness of those policies in securing that the objectives for which the marine plan was prepared and adopted are met;
- (to determine) the progress being made towards securing those objectives;
- if an MPS (a marine policy statement²⁶) governs marine planning for the marine plan authority's region (to determine) the progress being made towards securing that the objectives for which the MPS was prepared and adopted are met in that region.

Considering the above statements, two **evaluation objectives** are proposed:

- To determine the contribution of marine plan policies in securing marine plan objectives; and
- To strengthen the understanding of the progress towards meeting marine plan objectives, and therefore the progress towards meeting the vision for each marine plan.

Further participatory work should refine these objectives and establish if there are other areas MMO and stakeholders would like to explore.

Evaluation questions are critical for the M&E of marine plan policies because they provide specific research questions to answer that reflect pertinent issues. The answers to the questions help provide clear, actionable insights to assessing the success of the plan, informing future decisions and communicating and reporting outcomes. They can also highlight confidence in the data evidence and confidence with the evaluation outcome.

The Magenta Book provides examples of key evaluation questions to be considered for an impact evaluation, that focus on the changes caused by an intervention or policy and the measurable achievements towards the evaluation objectives. These are:

- What measurable outcomes, both intended and unintended, occurred?
- How much of these outcomes can be attributed to the intervention?
- Have different groups been impacted in different ways, how and why?
- How has the context influenced outcomes?

²⁶ Section 44 [Marine and Coastal Access Act 2009](#)

- Can the intervention be reproduced?

The evaluation questions should not only ask ‘what are the results?’ but also, ‘how good are the results, what has contributed to the results, and what do they tell us about the intervention?’. The Magenta Book does not prescribe a specific number of evaluation questions, the number and scope should be determined in combination with thinking about the resource needed to collect and analyse the evidence. However, Better Evaluation (2025) suggests 7 +/- 2 key evaluation questions with sub questions if needed.

Considering the above statements, and the evaluation objectives presented, two evaluation questions are proposed:

- How, and to what extent has the plan objective(s) been achieved?
 - To what extent has the objective been met?
 - What are the other factors (contextual and external) that have contributed towards this outcome?
- How is progress towards meeting plan objectives also progressing towards meeting the wider plan vision?

Further participatory work should refine and expand these questions and establish if there are other priority areas MMO and stakeholders would like to explore.

4.3 Contribution analysis

Contribution analysis is a valuable method for understanding the role of interventions, such as policies, in achieving observed outcomes, especially in multifaceted programmes where direct attribution is difficult. Contribution analysis focuses on demonstrating contribution, providing an evidenced line of reasoning rather than definitive proof (HMT, 2020).

The process involves developing a Theory of Change (ToC), assessing evidence against it, refining the theory to account for other factors, discussing alternative explanations and reporting. This iterative approach builds confidence in an intervention’s contribution by exploring immediate and indirect results, identifying influencing factors, and assessing plausibility relative to the intervention size and complexity (Mayne, 2008; Mayne, 2012).

Applying contribution analysis to evaluate marine plans with multiple policies involves assessing how individual policies contribute to desired outcomes in the marine system. Contribution analysis provides a way to navigate the complexities of marine plans by building a plausible, evolving ‘contribution story’, even when long-term impacts take a number of years to manifest. Contribution analysis recognises the complexity of change processes and can account for multiple contributing factors in the defined system, including other public organisations, external influences, and policy interactions.

Contribution analysis can provide detailed insights that aid organisational learning, policy refinement, and informed decision-making. It enhances understanding of a policy's impact within complex systems, helps stakeholders manage uncertainty, and adapt to emerging challenges. Contribution analysis offers a framework for participatory evaluation planning, data analysis, and reporting (Wimbush et al., 2012). Initially using existing data, then addressing gaps in data collection as needed. Stakeholder narratives serve as evidence to refine and test the ToC, and results are triangulated through various methods and sources, with new data prioritised where it adds the most value (HMT, 2020).

However, it should be noted that the reliability of contribution analysis conclusions depends on the availability and quality of data and evidence; data gaps can weaken causal claims. Furthermore, conducting contribution analysis requires initial time and effort to gather and analyse evidence, though less investment may be needed with each progressive review (EU CAP Network, 2025).

Key steps in contribution analysis (that are further detailed in the following sections):

1. **Define the 'contribution to' statement:** Develop understanding of what is being evaluated against (for marine planning this is at two scales; the marine plan vision and the plan objectives).
2. **Develop or revise the Theory of Change:** Map out the intervention's logic, causal links, assumptions, and risks (the current marine plan logic chains can form the basis for this, which can be expanded and developed with stakeholders to further include assumptions).
3. **Gather existing evidence:** Review available data on activities, results, and influencing factors (the data gathered for monitoring indicators forms the basis for this step. Key policy indicators and system leverage points can be established to highlight system dynamics).
4. **Assemble and assess the draft contribution story:** Analyse the strength of causal links, stakeholder perspectives, and gaps in evidence (the detail in the Underpinning Information, as described in relation to each objective, is the basis for this 'story' however, it can be further elaborated in light of the ToC and contextual factors (i.e., context indicators)).
5. **Seek additional evidence:** Collect new data (for example, interviews, case studies) to strengthen weak links and refine the theory (stakeholder surveys could be designed to answer more specific questions relating to validating the 'story').
6. **Revise and strengthen the contribution story:** Use new evidence to build a more credible narrative, revisiting previous steps as needed (to develop understanding of the effect and effectiveness of policies, and report findings. The story can be built upon over time at reporting junctures, thus necessitating less resource investment over time).

The process can be adapted to suit the requirements of the evaluation and has a cyclical nature (Figure 2). It is improbable that the steps will be followed in the exact sequence. For example, while establishing the 'contribution to' statement (Section

4.3.1) is the first step, activities within this step such as evaluation objectives and questions (Section 4.2.1) may iteratively be formed from or alongside the development of the ToC (Section 4.3.2). Additionally, data and evidence will emerge at various stages, and some evidence may not be collected within the constraints of time and resources. It is important to remember that contribution analysis focuses on establishing a reasonable, evidence-based narrative rather than identifying an objective 'truth.'

Therefore, it is crucial to understand and communicate the limitations of the approach and data during reporting cycles. Each step is now detailed further, highlighting where MMO already has the basis for the steps (which is further unpacked in Section 5). Considerations for Retrospective Application vs New Plan Development), and how the steps can be used to understand the effect and effectiveness of policies in contributing towards observable outcomes in the complex marine system.

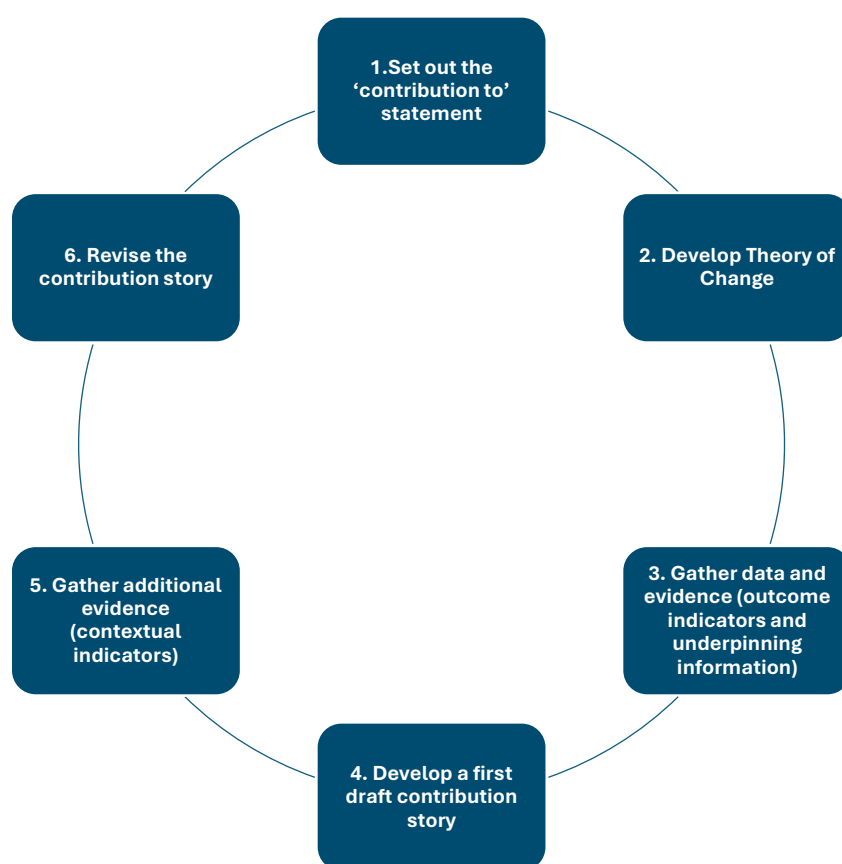


Figure 2. Cyclical nature of the Contribution analysis. Adapted from Mayne (2008).

4.3.1 The 'contribution to' statement

Contribution analysis begins with identifying an outcome (or a set of outcomes). It is recommended that this reflects the marine plan vision and the marine plan objectives, as the vision for the marine plans will be achieved through its objectives

(MMO, 2018). Additionally, regard must be given to wider government policy and international commitments.

From this point, the steps work backwards through the likely contributory factors. Contribution analysis explicitly recognises that change at the level of outcomes and impacts occurs due to a combination of factors, known as a causal package (Mayne, 2012). A policy might contribute to this package but will not be the sole factor producing change.

Undertaking effective monitoring and evaluating of the contribution of policies to desired outcomes (marine plan vision and objectives) is improved when the marine plan objectives are, themselves, written in a clear and measurable manner. For new marine plans, it would be beneficial to review the current objectives to understand to what extent they are 'SMART', and in light of developing new marine plans, work with stakeholders in a participatory way to develop SMARTer marine plan objectives.

Table 4. SMART marine plan objectives, attributes and descriptions.

SMART	Description
Specific	Objectives must be clear about what is being measured and why. Marine plans typically cover multiple policies, which can be broad and complex. Specific objectives avoid vague, unfocused assessments and helps focus resources and efforts on what matters most.
Measurable	Objectives must provide a quantifiable way to track progress and determine if the marine plan's goals are being met through looking at the available data. Without measurable criteria, it is difficult to assess success, demonstrate impact, or make evidence-based decisions.
Achievable	Objectives should be within the realms of possibility considering the available resources, time, and context. This helps avoid setting up unrealistic targets that could lead to disappointment or misguided strategies.
Relevant	Objectives should be underpinned with clear understanding of how achieving it will contribute to overarching policy , so that effectiveness can be measured.
Time-bound	A clear timeframe should be defined within which the objectives should be achieved, ensuring that there is a sense of urgency and accountability.

SMART marine plan objectives provide clear statements to evaluate the monitoring outcomes. Considering the South Marine Plan Objective 12: Space for Nature as an example (further detailed in a contribution analysis case study in Section 6):

Current wording - *To safeguard space for, and improve the quality of, the natural marine environment, including to enable continued provision of ecosystem goods and services, particularly in relation to coastal and seabed habitats, fisheries and cumulative impacts on highly mobile species.*

SMART example - *To increase the quality and extent of space for natural habitat in the marine environment by 10% over the next 6 years, to enhance the provision of ecosystem goods and services, particularly in relation to coastal and seabed habitats, whilst limiting negative effects and promoting positive outcomes on fisheries and highly mobile species.*

This SMART plan objective is specifically describing the improved quality and increased extent of natural habitat to better provide ecosystem goods and services, that is measurable and time-bound. The exact measure and temporal nature of the objectives should be discussed and derived with experts and stakeholder to ensure realistic measures. Where possible, they should also link with wider government initiatives. Creating SMART objectives that are measurable alludes to the learning and adapting nature of the Monitoring and Evaluation Approach. The objective can be evaluated against and revised as necessary.

The example relates to South Marine Plan Objective 12: Space for Nature, but also connects to other objectives like Objective 3, by improving ecosystem goods and services for coastal communities. It supports Objective 4 by increasing opportunities and might aid Objective 7, as enhanced ecosystem services could boost resilience to climate and coastal changes. This would be detailed in new systems-based marine plans. For existing plans, direct and indirect policy assignments to each objective have begun and can be expanded in the supporting narrative within the Underpinning Information (Monitoring and Evaluation Evidence document).

In both retrospective and new plans, the use of **Evaluation Triangles** to represent which policies work across multiple objectives; which policies work towards achievement of objectives and which policies hinder achievement of objectives, could be used in both participatory workshops and in reporting. See Appendix 3 (Appendices) for more information.

4.3.2 Theory of Change

Central to the contribution analysis is a well-defined **Theory of Change (ToC)**, which is an explicit theory of how and why it is thought that a policy or programme of activities lead to outcomes and impacts (Mayne, 2017). A ToC describes how an intervention, such as marine plan and its policies, are supposed to work and can be used to provide a conceptual framework for M&E of marine plans.

A ToC is an expanded and more detailed version of a logic model, which MMO has already developed for marine plans. **Logic models** set out the critical underpinning rationale of how marine plan implementation will achieve its' outcomes (policy aims), and impacts (plan objectives, HLMOs and wider government policy) and are therefore, central to the M&E process. Logic models can be described as the 'results chain' that clearly define the "if that happens then this should occur" relationships between inputs, activities, outputs, outcomes, and impacts. Results chain logic models represent a programme as a linear process with inputs and activities at the

front and long-term outcomes at the end. However, the way in which policies or programmes of work develop in complex systems are rarely linear.

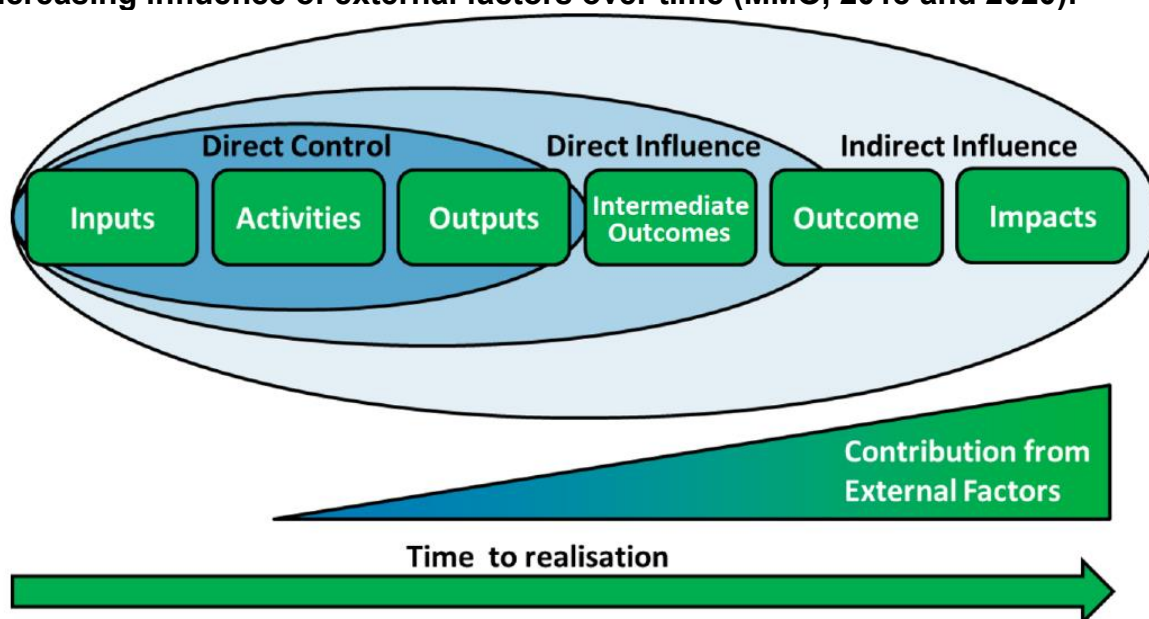
The current logic models have laid the foundation for the inputs necessary to develop marine plan policies and to begin to understand potential impacts. Further developing the logic model towards ToC can be a very useful way to articulate and evaluate the causal links between results, highlight any underlying assumptions²⁷ about how change will and has come about, and the risks to achieving the conditions under which the intervention will work, considering explanations and alternative explanations for outcomes (Mayne, 2017).

There is no single definition or methodology for developing a ToC; it is both a process of engagement to support internal and external learning (inclusion of diverse values and improved ocean literacy), the development of shared understanding, and a product which can be used to support marine plan design (for new plan development), justification, and M&E.

As described in the Approach to Monitoring (MMO, 2018 and 2020) and shown below in Figure 3, the marine plan and the policies contained within them have direct influence on relevant decisions by public authorities, and indirect influence on how proposals are undertaken as a result of those decisions. The potential effects of factors external to the plan/policy increase as the logic chain moves from intermediate outcomes to impacts and therefore, evaluating the effect and effectiveness of marine plans and policies becomes more combined, contributory, and contextual.

²⁷ For example, an assumption might be that there is agency capacity and resources to deliver and enforce policies, or more specifically, that blue economy initiatives will have positive social outcomes. These may not or may not be true, after evaluation. See also, footnote 26 and 27.

Figure 3. The relationship between inputs and impacts in a logic chain and the increasing influence of external factors over time (MMO, 2018 and 2020).



The logic models, which MMO already have, can be expanded and set within the context of the marine system to allow for consideration of how different policies interact with one another and what that means for the observable outcomes and impacts. A systems-based approach to M&E, and advancing the logic models towards a more developed ToC, will work together to create a more dynamic and holistic framework for evaluating policies; accounting for policy interactions, interconnected elements, feedback loops, and emergent properties of the system. Specifically, the following additions would enhance the logic model towards a more systems-based ToC:

- **Inclusion of assumptions and potential risks at each stage** – Particularly from outputs to outcomes and impact phases. Considerations include:
 - How are outputs expected to produce the intended outcomes?
 - What factors influence this process (e.g., resource and capacity changes, changes in government policy or economic shifts)?
 - What conditions must be met for outcomes to be achieved?

Relevance to marine planning: Helps assess uncertainties in plan implementation, ensuring policies are adaptable to, or take consideration of, external influences such as political and economic changes.

- **Mapping and inclusion of non-linear relationships** and inclusion of feedback loops– Recognising that changes in one part of the system may have disproportionate or unexpected effects elsewhere. Considering positive (reinforcing) and negative (balancing) feedback mechanisms that drive or regulate system behaviour.

Relevance to marine planning: Ensures integrated decision-making by identifying trade-offs and synergies across sectors. Helps in understanding long-term plan

effectiveness, such as how marine conservation and restoration measures might enhance fish stocks and therefore support the fishing industry. Or how offshore renewable energy expansion may affect the fishing sector through spatial squeeze.

- **Discussion of emergent properties and outcomes** – Recognising that system interactions can lead to unexpected results that are not predictable from individual components.

Relevance to marine planning: Supports adaptive management by anticipating complex interactions, such as cumulative impacts from multiple marine industries affecting ecosystem health.

- **Developing understanding of multi-scale dynamics** – Considering interactions at different spatial (marine plan level, local, regional, global) and temporal (plan review cycles, short-term, long-term) scales.

Relevance to marine planning: Ensures policies are robust across different geographic and temporal contexts, addressing localised challenges (such as water quality and employment) while aligning with broader strategic goals (such as the Sustainable Development Goals) or challenges (for example biodiversity loss and climate change).

Given the complexity of the system within which marine planning is operating, a nested approach can be helpful to identify causality at different scales. A logic model has been used at the plan level in the South Marine Plan Approach to Monitoring and at the plan and nested policy level within NENWSESW Approach to Monitoring. However, the nested policy logic model approach has not been adopted due to difficulties operationalising the approach in practice, and a priority to report on objectives.

To evaluate the contribution of marine plan policies in achieving objectives and progress towards each plan's vision, **a nested ToC at the objective level is recommended**. This approach considers causal relationships between policies and objectives (this is further built on in the case study Section 6. As noted in Section 4.3.1 this method suits current marine plan objectives but would be enhanced if the objectives were SMART for specific and measurable evaluation. Ideally, the marine plan would have an overarching ToC²⁸, with nested ToCs at the marine plan objective level to develop the conceptual framework working towards meeting marine plan objectives, and ultimately, how meeting these objectives works towards meeting the marine plan vision and broader government policy goals.

4.3.3 Existing evidence

Evidence to validate the ToC is needed in three areas, analysing the data across these three core areas will provide the best evaluation results:

- observed results (outcome indicators);

²⁸ Where objectives are outcomes and impact in broader government policy goals such as the 25YEP (Defra, 2018)

- other influencing factors (contextual indicators); and
- assumptions about the ToC.

Evidence of the occurrence or absence of key results (outputs, and intermediate and final outcomes and impacts) is a first step for analysing the contribution of a policy to those results. Confidence in the data and evidence should also be highlighted, here, a confidence matrix can be useful (e.g. Table 5). Thereafter, evaluating this data and evidence, in light of other influencing/contextual factors, is necessary to work toward the ‘contribution story’ (Section 4.3.4.)

Table 5. Confidence matrix to apply to data and evidence

	Multiple sources confirm similar impacts	More sources confirm than contradict	Multiple sources are contradictory
Robust data source	High	High	Medium
Moderately robust data source	High	Medium	Low
Weak data source	Medium	Low	Low

Data and evidence on results and contextual factors are already collected by MMO and collated in the Underpinning Information documents. When assumptions have been developed as part of the ToC, it will become clear that against some assumptions there will be strong evidence that the statement is reflective of reality in the given context²⁹. However, for some assumptions evidence to support statements may be lacking, this is normal, but should be highlighted³⁰ (here, acknowledge the lack of current direct evidence, build in learning and identify ways to monitor or test the assumption over time, and where possible, additional evidence should be collected Section 4.3.5).

A large amount of data has been collected to support monitoring of marine plans, and many indicators have baseline data. Looking at the available data in a systematic way could answer overarching evaluation questions, enable improved analysis, and better enable reporting on marine plan policy effects and effectiveness.

Currently, indicators act as tools for monitoring how policies impact outcomes (objectives). In a systems-based M&E framework, indicators play a critical role in measuring, understanding, and guiding the performance of policies towards meeting the objectives and the overarching vision or goal for the marine plan area.

²⁹ For example, in the assumptions that there is agency capacity and resources to deliver and enforce policies, it will be known if resource is or is not available in the necessary amount to deliver what was planned.

³⁰ For example, in the assumption that the blue economy will have social benefits, it may be that larger corporations actually yield benefits that could have been more equally distributed, however, it could also be true that the benefits would not have been realised without initial investment.

Exploring how changes in the effect of one policy outcome indicator influence other outcome indicators is essential. For instance, improved biodiversity (an ecological indicator) may enhance tourism revenue (an economic indicator) and community satisfaction (a social indicator). This is fundamental to developing an understanding of how to look at indicators holistically to answer evaluation questions.

MMO has already developed the Indicator Register as an **indicator matrix** to ensure alignment between indicators, policies, and objectives. Coverage (which indicators are suitable for which policies, how can the supporting data be used for different policies) has also been done to an extent on the Indicator Report Cards.

The next step would be to further understand cross-policy interactions, where policies may reinforce or conflict with each other (**positive reinforcing, or negative balancing**), and develop understanding if existing indicators can highlight this. Importantly, this kind of matrix will assist in understanding **leverage points** - places in the system where changes can lead to significant impacts (Meadows, 2015; Abson et al., 2017) and enable efficiencies across the system. These points should be highlighted within the matrix as critical activities or outcomes and can guide interventions and funding. It could also highlight where investing in particular data gathering could assist multiple indicators and therefore, understanding of multiple policy effects and effectiveness.

It was not in scope for this project to develop new indicators, however, if the marine plans themselves move towards more of a systems-based approach, it could be useful to develop some system-level indicators. System-based indicators could be based around key system properties of resilience, connectivity, diversity, and sustainability (Fiksel, 2006; Ungar, 2018). Therein, evaluation objectives and one or two key evaluation questions could be added to the framework.

System-level indicators could:

- Evaluate the resilience³¹ and adaptability of policies within the system.
- Aggregate findings to assess connections between policies and cumulative effects on system-level goals (the marine plan vision).
- Identify gaps in policy coverage, ensure there is enough diversity in policies to understand leverage points or unintended consequences.
- Use network analysis to visualise relationships between indicators and policies to ensure ongoing sustainability.

³¹ Complex social-ecological-economic systems are oft described in terms of resilience (Gunderson and Holling, 2002; Gunderson et al., 2012). It is the ability of system to absorb disturbance or to preserve essential functions and characteristics following disturbance (Lockie, 2016).

4.3.4 The draft contribution story

The draft contribution story represents the initial effort to distil the contribution of each policy to driving change. This can be currently likened to the narrative supporting each objective in the Underpinning Information (Monitoring and Evaluation Evidence document). An additional aspect of this process involves exploring alternative explanations: What other factors, aside from the policies, might have contributed to the observed changes? (Hopkins, 2021), which relates to the influencing/contextual factors.

Understanding the robustness of the contribution story in relation to the initial evaluation questions, and the ‘contribution to’ statement (i.e., the marine plan vision and objectives), will guide the reporting and report write up. Once the draft story has been prepared it can be seen:

- Which links in the results logic chain are strong (i.e., supported by robust evidence and widely accepted)?
- Which links are weak (i.e., lacking evidence or contested by stakeholders)?
- How credible is the story as a whole?
- Does the pattern of results and causal links validate the ToC?
- Do stakeholders, based on the available evidence, agree that the programme has made a significant contribution to the observed outcomes?
- Are key assumptions validated?
- Are the impacts of other influencing factors well understood?

4.3.5 Additional evidence

Following the development of the first draft contribution story, there is a need to test and validate contribution claims and explore alternative explanations. This might include gathering, where possible, further evidence of observed or contested results, validation of assumptions, or insights into contextual and influencing factors. It may be useful to revisit and refine the ToC, possibly disaggregating elements to explore them in more detail.

This stage can be resource-intensive, particularly when rigorously assessing evidence for every step in the ToC—including alternative explanations. Assessment of what is worthwhile to pursue and what is the justification for resourcing more evidence collection will be required. The matrix, as described in Section 4.3.3, may assist with this to understand key leverage points in the system that can enable efficiencies and the greatest understanding of impact. While there is the duty to monitor and report on the marine plans, it is not a requirement to report on every policy at each reporting cycle. Therefore, **efficiencies could be made in the longer term, by establishing which are the key leverage-point-policies that can provide information on effect and effectiveness of marine plans more broadly.**

4.3.6 Revise and strengthen the contribution story

The contribution story is dynamic, changing with each evaluation cycle as new evidence surfaces and external contexts shift. For instance, policy framework changes such as the Environmental Improvement Plan (2023), the Joint Fisheries Statement (2022), and potential future amendments to the UK Marine Strategy introduce new objectives that impact decision-making and marine interventions. To comprehend the effect and effectiveness of marine plan policies, it is crucial to assess their contribution to observable outcomes, along with other influencing and contextual factors. Continuous reflection on the role of marine planning within this evolving system is essential for evaluating the contribution of marine plans.

There is a duty for MMO to report to Defra every three years on the progress of the marine plans – the Three-yearly Reports. By reporting at the three-yearly reviews on the contribution of marine plans policies to observable outcomes in line with other contextual factors, the effect and effectiveness of marine plan policies can be highlighted. Thereafter, revising the contribution story at the three-yearly cycles to incorporate new evidence and evolving contexts, the evaluation remains dynamic, credible, and relevant to decision-makers seeking to understand the sustainability of marine plan policies.

As first described in Section 4.3.3, and further expanded in Appendix 3 (Appendices), Evaluation Triangles could be a way to visually show the progress of marine plans towards meeting marine plan objectives, and could be a useful way to present the information at a marine plan system level. **Further work to revise the Evaluation Triangles so that they are fit for purpose and specific to marine planning requirements is advised.**

5. Key considerations for retrospective application versus new marine plan development

In laying out the evaluation framework and describing a contribution analysis in detail, it becomes clear that MMO carries out many of the required steps already, to a greater or lesser extent. It is also apparent that there are different ways of conceptualising the contribution analysis and the tasks therein, dependent on whether the Approach to Monitoring and Evaluation will be used retrospectively with current plans (i.e., the South Marine Plan and the North East, North West, South East and South West plan areas), or is able to inform development of new marine plans as they are revised and developed (e.g., the East Marine Plan). Therefore, the following Table 6 highlights similarities and fundamental differences, relevant to each stage of the evaluation framework.

Table 6. Key similarities and differences in the current approach, the revised approach for current plans, and new plan development

Contribution Analysis steps	Current Approach	Applying New M&E Framework to Current (retrospective application)	Applying New M&E Framework to New Plans
Evaluation objectives and evaluation questions	None	Develop evaluation objectives and questions based on existing marine plan visions and objectives	Establish evaluation objectives and evaluation questions from the start. This includes developing through stakeholder participation alongside marine plan development, which makes later evaluation more precise and useful
'Contribution to' statement	Marine plan vision but not used as a contribution to statement.	Use the existing marine plan vision and objectives as the 'contribution to' statement. These may need clarification or explanation to align with evaluation objectives	Craft a clear and targeted statement (vision) as part of the planning process. This should be developed with stakeholders to ensure it reflects system-wide aspirations and is suitable for long-term evaluation
Theory of Change	Logic model	Build on existing logic models, but expand to include assumptions, feedback loops, and	Create a comprehensive ToC from the outset, with stakeholder input. Map causal links,

		non-linear relationships. May need to evolve as new evidence emerges	assumptions, risks, and feedback loops early to guide data collection and evaluation design. May need to evolve as new evidence emerges
Existing evidence	Indicator data, presenting in Underpinning Information, provides evidence on results and activities in relation to policies and associate objectives	Existing monitoring data (indicator reports, stakeholder surveys) to fill evidence gaps, though this may be incomplete or inconsistent. Additional effort may be needed to validate assumptions	Design data collection alongside the plan itself, targeting indicators that align directly with SMART plan objectives and evaluation questions. Use participatory methods to identify potential indicator and data coherence and gaps
Draft contribution story	Existing narratives reports on individual indicator findings, supporting each objective and related policy in the Underpinning Information	Build on existing narratives in the Underpinning Information (Monitoring and Evaluation Evidence document), further answer evaluation questions and include contextual insights. Explore alternative explanations for observed changes	Similar to retrospective, though can also build the contribution story more rooted in the ToC and supported by targeted evidence collection
Additional evidence	Gaps assessment at reporting stage	Identify and address data gaps. Collect new evidence (targeted stakeholder surveys, interviews, case studies) to strengthen weak causal links or validate assumptions. New evidence may also come from aligning with wider contextual factors	Similar to retrospective, though evidence needs can be more anticipated in advance, so data collection can be more efficient and aligned with the evaluation cycle
Revise and strengthen story	New stage	Iteratively refine the contribution story during review cycles. Incorporate new evidence and adapt the ToC as policies	Similar to retrospective, though additional pre-planned revisions can be more proactive, integrating lessons learned and addressing

		evolve or as new influencing/contextual factors emerge	emerging risks or opportunities
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6. Testing the approach

6.1 Introduction to section

Based on discussions with MMO, it was agreed that the development of a case study, to illustrate the application of the contribution analysis, would be useful.

This section, therefore, applies the evaluation framework described in this report. It uses the proposed evaluation objective and evaluation questions and, where possible, applies the contribution analysis approach to evaluate the effect and effectiveness. It focusses on the policies in Objective 12: Space for Nature, evaluating whether they are delivering on the ambition of that objective and the broader implications for the South Marine Plan vision. This case study is retrospective, applying the framework to a current plan and objective.

6.2 Objective 12: Space for Nature case study

6.2.1 Evaluation aim and questions

The evaluation objectives are to:

- Determine the contribution of marine plan policies in securing marine plan objectives; and
- Strengthen the understanding of the progress towards meeting marine plan objectives, and therefore the progress towards meeting the vision for each marine plan.

The evaluation questions are:

- How and to what extent has Objective 12 been achieved?
 - To what extent has the objective been met?
 - What are the other factors (contextual and external) that have contributed towards this outcome?
- How is progress towards meeting Objective 12 also progressing towards meeting the wider South Marine Plan vision?

6.2.2 The ‘contribution to’ statement

South Marine Plan Vision:

“By 2038, the south marine plan areas’ iconic and unique qualities, characteristics and culture will be conserved, promoted and where needed enhanced, through good management of its marine space. The natural beauty of the coastline and busy coastal and offshore waters are qualities that make the south marine plan areas distinctive. By 2038, the south marine plan areas will have maintained this distinctive natural beauty and diversity while sustainable economic growth, protection of the

natural and historic environment, as well as the well-being of those who live, work and visit the south coast, will have been enhanced through balanced and sustainable use of its resources” (MMO,2018)

South Marine Plan Objective 12: Space for Nature:

To safeguard space for, and improve the quality of, the natural marine environment, including to enable continued provision of ecosystem goods and services, particularly in relation to coastal and seabed habitats, fisheries and cumulative impacts on highly mobile species.

6.2.3 Theory of Change

This section describes the key considerations for a ToC, relevant to Objective 12. Developing a ToC was not in scope for this case study, however, should be developed with diverse stakeholders going forwards. This would begin by identifying the desired outcomes of Objective 12, such as increased habitat quality and extent, improved ecosystem goods and services, and enhanced resilience of highly mobile species. These outcomes are aligned with the broader vision of the South Marine Plan, which aims to conserve and promote the unique qualities of the marine area while supporting sustainable economic growth and community well-being.

The ToC maps out the causal links between policy interventions and the expected changes in outcomes. For example, policies like S-BIO-1 and S-BIO-2 focus on habitat conservation and restoration, while S-BIO-3 and S-BIO-4 emphasise ecological connectivity and species protection. The ToC includes assumptions about the conditions necessary for these policies to be effective, such as adequate funding, stakeholder engagement, and supportive regulatory frameworks.

The ToC incorporates feedback loops to account for the dynamic nature of marine systems, recognising that changes in one part of the system can have disproportionate or unexpected effects elsewhere. For instance, successful habitat restoration may positively impact fisheries management by providing essential fish habitats, while climate-induced shifts in species distributions may require adaptive management strategies.

The ToC is validated through multiple sources of evidence, including spatial data on habitat extent, monitoring reports on species populations, and stakeholder surveys on policy effectiveness. This evidence helps to refine the ToC and build a credible contribution story that demonstrates how marine plan policies are driving positive changes towards the desired outcomes. Importantly, the ToC is revised over time, with the assumptions tested and refined based on experience and emerging data and evidence to build the contribution story.

6.2.4 Existing data

Table 7. All data and evidence sources for Objective 12 and associated policies and indicators (adapted from the original table for strengths and weaknesses analysis Appendix 2: (Appendices).

*Confidence ratings in attribution to policy: low, medium, high (see Table 5 for confidence ratings table)

Policy	Indicator	Data type	Data owner	Years reported	Frequency	Complete / partial	Level of MMO processing	Baseline	Confidence* in attribution of policy to outcome
S-BIO-1 Proposals that may have significant adverse impacts on natural habitat and species adaptation, migration and connectivity must demonstrate that they will, in order of preference: a) avoid, b) minimise c) mitigate significant adverse impacts	14 Magnitude of change in the spatial extent of Section 41 (S41) priority habitats, or the sub-set of S41 priority habitats relevant to the policy	Spatial – compared across time to identify magnitude of positive or negative change; combination of survey and modelling data	Natural England 'Marine Evidence Base'	2015 and 2023	A full update of the dataset does not currently occur within a three-year reporting period. Surveying of all habitats does not occur at set intervals, therefore, changes in spatial extent of habitats areas where no new surveying or modelling has been undertaken will not be captured.	Partial – indicator only monitors priority habitats; and coastal sand dunes not included; and coastal saltmarsh and reedbeds recorded as single habitat.	The indicator requires significant GIS analysis from a member of staff who is comfortable and skilled in Arc Pro; analysis will take a day, including time to download data, run the model, and complete analysis and formatting.	2015 baseline - Seven habitats (seagrass, estuarine rocky habitats, subtidal sand and gravel, intertidal mudflat, Maerl, saltmarsh, reedbeds) No baseline – Two habitats (Coastal vegetated shingle, saline lagoon)	Medium: Shows spatial change in extent therefore can highlight policy impact, however, change in extent of priority habitats can be influenced by many other factors including other government policy, climate change, marine protected area features etc. As data is related to coastal habitats, it will be impacted by land practices including local government policy, agricultural runoff, land-based industries etc. Changes in surveying or

Policy	Indicator	Data type	Data owner	Years reported	Frequency	Complete / partial	Level of MMO processing	Baseline	Confidence* in attribution of policy to outcome
									monitoring of the priority habitats may also influence data
S-BIO-2 Proposals that incorporate features that enhance or facilitate natural habitat and species adaptation, migration and connectivity will be supported.	9.27 Improved factor consideration in decision-making: enhancement of biodiversity or geological interest	Stakeholder surveys, follow up interviews and focus groups.	MMO	2018 to 2023	Based on annual surveys, follow-up interviews and focus groups.	Partial - survey returns not guaranteed experience has shown low return.	Processing of data is substantial, and starts once the live surveys have been closed.	2018	Medium: Question is policy specific (as opposed to the non-policy specific questions in the survey), responses identify the extent to which stakeholders indicate that predicted policy specific outcomes have occurred, and therefore strongly align in attribution of policy outcome.
S-BIO-3 Proposals that enhance coastal habitats where important in their own right and/or for ecosystem functioning and provision of goods and	48.05 Marine licence applications for (include) coastal restoration projects.	Information from the Marine Case Management System and analysing the number of relevant proposals.	MMO	2017 to 2023	On demand	Complete	Fully reporting against all sub-indicators may be a highly resource intensive activity, particularly during the	2017 to 2018	Medium: Evidence collected and reported under this indicator provide information that is strongly tied to monitoring the intended outcomes of plan area marine plan policies. However, due to the small

Policy	Indicator	Data type	Data owner	Years reported	Frequency	Complete / partial	Level of MMO processing	Baseline	Confidence* in attribution of policy to outcome
services will be supported. Proposals must take account of the space required for coastal habitats where important in their own right and/or for ecosystem functioning and provision of goods and services and demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate for net loss of coastal habitat.							manual collection stage from MCMS – however, one sub indicator is less intensive. Geospatial analysis is required to set up the data collection activities and can be completed, on request, by MMO Data, Technology and Innovation (DTI) team.		sample sizes generated for this sub-indicator, it is likely to be difficult to detect clear trends in the data under future reports. Also, developments can be affected by external influences outside of the marine planning system. This can make it difficult to determine whether observed changes over time are directly driven by marine plans, or indirectly driven by external factors, or a combination of both.
S-BIO-4 Proposals that enhance the distribution and net extent of priority habitats	14 Magnitude of change in the spatial extent of S41 priority habitats, or the sub-set of	Same as S-BIO-1							

Policy	Indicator	Data type	Data owner	Years reported	Frequency	Complete / partial	Level of MMO processing	Baseline	Confidence* in attribution of policy to outcome
should be supported. Proposals must demonstrate that they will avoid reducing the distribution and net extent of priority habitats.	S41 priority habitats relevant to the policy.								
S-DD-2 Proposals must identify, where possible, alternative opportunities to minimise the use of dredged waste disposal sites by pursuing reuse opportunities through matching of spoil to suitable sites.	48.10 Number and proportion of proposals for disposal activity within licensed disposal sites that have demonstrated assessment against the waste hierarchy.	Data from MMO's Marine Case Management System (MCMS), the indicator monitored the number and proportion of proposals for disposal activity within licensed disposal sites that have demonstrated assessment against the waste hierarchy.	MMO	2017 to 2022	On demand	Partial – 25% sample technique	Fully reporting against all sub-indicators may be a highly resource intensive activity, particularly during the manual collection stage from MCMS – however, one sub indicator is less intensive. Geospatial analysis is required to	2017 to 2018	Low: Due to the small sample sizes generated for this sub-indicator, it is likely to be difficult to detect clear trends in the data under future reports. Sub-indicator uncertainty is compounded by other influencing factors external to marine planning which can make it difficult to determine whether observed changes over time are directly driven by marine plan policies, or

Policy	Indicator	Data type	Data owner	Years reported	Frequency	Complete / partial	Level of MMO processing	Baseline	Confidence* in attribution of policy to outcome
							set up the data collection activities and can be completed, on request, by MMO Data, Technology and Innovation (DTI) team.		indirectly driven by external factors, or a combination of both.
S-DIST-1 Proposals, including in relation to tourism and recreational activities, within and adjacent to the south marine plan areas must demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate significant cumulative adverse	Case study	Marine Plan Policy Assessments (MPPAs) on the Marine Case Management System (MCMS).	MMO	2022 to 2023	Assessment period.	Complete for 40 relevant Marine Licence Applications in time-period.	MMO assessment time.		Medium: Proposals assessed suggests most proponents are interpreting and using the policy in marine licence applications, however there is a need to support MMO Marine Licensing team and applicants in interpretation of this policy to avoid confusion and facilitate policy use.

Policy	Indicator	Data type	Data owner	Years reported	Frequency	Complete / partial	Level of MMO processing	Baseline	Confidence* in attribution of policy to outcome
physical disturbance or displacement impacts on highly mobile species.									
S-FISH-4 Proposals that enhance essential fish habitat, including spawning, nursery and feeding grounds, and migratory routes should be supported. Proposals must demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate significant adverse impact on essential fish habitat, including, spawning,	14 Magnitude of change in the spatial extent of S41 priority habitats, or the sub-set of S41 priority habitats relevant to the policy.	Same as S-BIO-1.							

Policy	Indicator	Data type	Data owner	Years reported	Frequency	Complete / partial	Level of MMO processing	Baseline	Confidence* in attribution of policy to outcome
nursery, feeding grounds and migration routes									
S-FISH-4-HER Proposals will consider herring spawning mitigation in the area highlighted on Figure 26 (in the technical annex) during the period 01 November to the last day of February annually.	8.08 Proportion of licensed marine activities within identified herring spawning areas that have considered herring spawning mitigation during the period 01 November to the last day of February, annually.	Geospatial data from MMO's Marine Case Management System (MCMS) to provide evidence for the identification of trends in the distribution and number of licensed marine activities, as well as their compliance with spatially specific marine plan policies.	MMO	2014 to 2023	On demand.	Complete evidence available to report against.	Fully reporting against all sub-indicators is a highly resource intensive activity, particularly during the manual interrogation of marine licence information data collection stage. However, reporting against individual sub indicators will be less resource intensive. Geospatial analysis is required to	2014 to 2018	High: Evidence collected and reported under this indicator provide information that is strongly tied to monitoring the intended outcomes of spatially specific marine plan policies. However, this indicator is limited by the scope and capacity to robustly monitor activity compliance with spatially specific marine plan policies. It only considers marine activities licensed by the Marine Management Organisation and therefore, does not consider consents issued by other

Policy	Indicator	Data type	Data owner	Years reported	Frequency	Complete / partial	Level of MMO processing	Baseline	Confidence* in attribution of policy to outcome
							set up the data collection activities and can be completed, on request, by MMO Data, Technology and Innovation (DTI) team.		decision-makers or self-service marine licence applications as they relate to applications for low risk. Also, developments can be affected by external influences outside of the marine planning system. This can make it difficult to determine whether observed changes over time are directly driven by marine plans, or indirectly driven by external factors, or a combination of both.

Underpinning Information (Monitoring and Evaluation Evidence document)

Report for Objective 12 – building on the current Underpinning Information document, add an extra sub-section ‘relevant contextual monitoring’ and include in the progress summary subsection for each objective. Though not included here (as there are no current assumptions for Objective 12), once a ToC has been developed, a sub section relating to assumptions could be included, or added to the progress summary.

S-BIO-1:

Include Relevant indicators, Methodology, Key findings, Limitations, and Recommendations as already in Underpinning Information.

Relevant Context Monitoring

- *Environment Act 2021*: Introduced Biodiversity Net Gain (BNG) and Local Nature Recovery Strategies, directly influencing policy intent for habitat preservation and enhancement.
- *Environmental Improvement Plan 2023*: Emphasises the role of marine biodiversity net gain, reinforcing the need for policy updates to reflect evolving conservation practices.
- *Sub-national Policy Review*: Increasing references to biodiversity policies, but inconsistent implementation, highlighting the need for closer local-marine policy integration.
- *International Commitments*: The G7 2030 Nature Compact adds momentum to expand protected areas, which could positively influence habitat restoration efforts.

Progress Summary

- Overall progress is positive, with S-BIO-1 contributing effectively to safeguarding space for nature. However, ongoing improvements in monitoring, stronger integration with national policy changes, and adaptive management practices will be essential to sustain and accelerate this progress. The progress aligns with the broader legislative shifts introduced by the Environment Act and the Environmental Improvement Plan, emphasising habitat restoration and biodiversity enhancement. The sub-national policy review’s findings of inconsistent local adoption of biodiversity policies suggest an opportunity for more proactive engagement with local authorities to ensure marine biodiversity considerations are more uniformly applied. Additionally, the data limitations identified through the monitoring process highlight the importance of aligning with national and international monitoring initiatives to fill data gaps and refine future assessments.

S-BIO-2:

Include Relevant indicators, Methodology, Key findings, Limitations, and Recommendations as already in Underpinning Information.

Relevant Context Monitoring

- *Environment Act 2021*: Emphasises habitat restoration, aligning with the policy aim to actively restore degraded marine habitats.
- *British Energy Security Strategy (2022)*: Introduces strategic compensation, which could create new opportunities for large-scale habitat restoration.
- *Sub-national Policy Review*: Limited explicit reference to habitat restoration policies, suggesting room for better local policy integration, suggesting a need for stronger outreach to local authorities and communities.

Progress Summary

- Progress is steady, but fragmented. While restoration efforts are producing positive results, stronger coordination with national strategies and more comprehensive long-term monitoring are necessary to build on early successes. The link to the British Energy Security Strategy's strategic compensation could unlock more opportunities for large-scale restoration, while enhanced local policy integration would help ensure restoration initiatives are better supported across planning scales.

S-BIO-3:

Include Relevant indicators, Methodology, Key findings, Limitations, and Recommendations as already in Underpinning Information.

Relevant Context Monitoring

- *G7 2030 Nature Compact*: Supports the expansion of protected areas, which is key to enhancing ecological connectivity.
- *Marine Strategy Part Two*: Provides updated methodologies that could improve monitoring of habitat corridors and species movement and could enhance data collection for connectivity assessments.
- *Policy Gap Analysis*: Highlights the need to strengthen policies promoting habitat connectivity beyond MPAs.

Progress Summary

- Progress towards ecological coherence is uneven. While MPAs are improving habitat networks, broader-scale connectivity remains a challenge that requires stronger policy direction and enhanced monitoring capabilities. The evolving international policy landscape and advances in monitoring methodologies present opportunities to accelerate progress, provided policies are updated to reflect these developments.

S-BIO-4:

Include Relevant indicators, Methodology, Key findings, Limitations, and Recommendations as already in Underpinning Information.

Relevant Context Monitoring

- *Marine Strategy Part Two (2021)*: Includes updated monitoring for species like cetaceans, seabirds, and fish, which are critical for assessing mobile species health, and could help improve species tracking and population assessments.
- *International Agreements*: Commitments under the OSPAR Convention and G7 Nature Compact reinforce the need for stronger species protection measures. Commitments within add international weight to national protection efforts.
- *UK Climate Change Risk Assessment (CCRA, 2022)*: Highlights increasing climate pressures on mobile species, such as shifting distributions and altered migratory patterns.

Progress Summary

- The policy is having an impact, with positive population trends for some highly mobile species, particularly within well-managed MPAs. However, ongoing pressures and significant data gaps limit the full effectiveness of current measures. The evolving international policy landscape and advances in national monitoring programmes present opportunities to enhance species protection, provided policies adapt to incorporate climate resilience and cross-border collaboration. Aligning national efforts with international agreements like OSPAR and leveraging new monitoring technologies will be essential to securing long-term protection for highly mobile species.

S-DD-2:

Include Relevant indicators, Methodology, Key findings, Limitations, and Recommendations as already in Underpinning Information.

Relevant Context Monitoring:

- *Marine Strategy Part Two (2021)*: Sets updated thresholds for sediment quality and contaminant levels, relevant for dredging impacts and new methodologies in the Marine Strategy enhance sediment and water quality assessments.
- *UK Clean Maritime Plan (2019)*: Promotes sustainable dredging practices and innovation to reduce environmental impacts supporting policy aims to minimise disturbance.
- *Sub-national Policy Review*: Varied regional approaches to managing dredging impacts, with some areas adopting stricter local policies.

Progress Summary:

- Progress is mixed. While sediment quality is improving in some areas, rising dredging activity and persistent contaminant hotspots present ongoing challenges. The Clean Maritime Plan and updated Marine Strategy offer opportunities to align policy with sustainable practices, but stronger monitoring and adaptive management will be critical to fully minimise disturbance from dredging and disposal activities.

S-FISH-4:

Include Relevant indicators, Methodology, Key findings, Limitations, and Recommendations as already in Underpinning Information.

Relevant Context Monitoring:

- *Fisheries Act 2020*: Introduces sustainability objectives and strengthens the UK's ecosystem-based fisheries management approach directly supporting policy goals.
- *Marine Strategy Part Two (2021)*: Provides updated indicators for fish stock health and fishing pressure providing valuable data for adaptive management.
- *Climate Change Risk Assessment 2022*: Warns of shifting species distributions and climate-induced stock variability. Climate risk assessments highlight the need to incorporate ecosystem shifts into fisheries policies.

Progress Summary:

- Progress is promising, with signs of stock recovery and stronger sustainability measures under the Fisheries Act. However, ongoing overfishing and climate-driven range shifts pose significant challenges. The policy is well-aligned with national legislation and international commitments, but continued progress will depend on improving monitoring coverage and embedding climate resilience into fisheries management strategies.

S-FISH-4-HER:

Include Relevant indicators, Methodology, Key findings, Limitations, and Recommendations as already in Underpinning Information.

Relevant Context Monitoring:

- *Fisheries Act 2020*: Establishes a framework for sustainable stock management, including herring and reinforces sustainable herring management.
- *ICES Stock Assessments*: Provide annual data on herring populations and fishing mortality rates.
- *Marine Strategy Part Two (2021)*: Sets thresholds for spawning stock biomass and recruitment success, indicators provide robust data to guide policy adjustments.

Progress Summary:

- Progress is uneven. While some herring stocks are stabilising, others remain under pressure, and spawning grounds face ongoing threats. The Fisheries Act and ICES assessments provide a strong framework for sustainable management, but success will hinge on closing data gaps, protecting critical habitats, and integrating climate resilience into long-term policy decisions.

6.2.5 The draft contribution story

Answering the evaluation questions³²:

- **How, and to what extent has Objective 12 been achieved?**

The policy landscape driving Objective 12 is multifaceted, with both reinforcing and conflicting interactions between policy areas. For instance, the Environment Act 2021's biodiversity net gain (BNG) requirement strengthens habitat conservation efforts (S-BIO-1) and restoration initiatives (S-BIO-2). This alignment is crucial for achieving the target of no net loss of priority habitats. However, the sub-national policy review highlights inconsistent local adoption, which could weaken conservation outcomes and slow progress in less engaged regions. Stronger local engagement and policy integration could bridge this gap, amplifying the positive effects of national legislation.

Restoration efforts (S-BIO-2) are further supported by strategic compensation mechanisms introduced in the British Energy Security Strategy. These mechanisms could provide much-needed funding for large-scale habitat restoration projects, reinforcing the restoration of degraded habitats. Yet, habitat connectivity (S-BIO-3) remains limited outside MPAs, and restoration projects that don't consider broader ecological networks might miss opportunities to enhance species movement and resilience. Linking restoration funding to connectivity goals could improve landscape-scale coherence and maximise biodiversity benefits.

Ecological connectivity (S-BIO-3) interacts with policies for mobile species protection (S-BIO-4) and fisheries management (S-FISH-4). The expansion of MPAs under the G7 Nature Compact could create more corridors for species movement, supporting population recovery. However, rising climate pressures, as highlighted in the Climate Change Risk Assessment, may disrupt habitat ranges and migration patterns. This underscores the need to integrate climate resilience into connectivity and species protection policies to ensure long-term effectiveness.

Dredging and disposal activities (S-DD-2) intersect with habitat conservation and fisheries management. The UK Clean Maritime Plan encourages sustainable dredging practices, which can mitigate sediment disturbance and habitat loss. Yet, increased port development and dredging frequency could still undermine conservation and restoration efforts if not carefully managed. Expanding long-term benthic monitoring and aligning dredging policies with BNG requirements could help balance development with environmental protection.

Sustainable fisheries management (S-FISH-4) shows promising progress, supported by the Fisheries Act 2020 and improved monitoring methodologies. Yet, shifting fish stock distributions due to climate change pose challenges for adaptive management. Misaligned restoration or conservation efforts could inadvertently neglect the needs

³² Answering these questions could be assisted by adding columns to the indicator matrix. What is the status of indicator X, how has it changed, and has it hit a target level (if there is a target)

of commercially and ecologically important species. Embedding ecosystem shifts into fisheries policies and enhancing cross-policy coordination will be essential to ensure sustainable resource use while preserving biodiversity.

Evaluation Sub questions:

- **To what extent has Objective 12 been met?**

Progress towards Objective 12 is evident, but not yet fully achieved. Habitat conservation and restoration initiatives have shown positive results, with five out of seven priority habitats increasing in extent, and species populations improving within well-managed MPAs. However, challenges remain, including inconsistent local policy adoption, limited habitat connectivity outside MPAs, and ongoing pressures from activities like dredging and fishing. While the direction of travel is positive, sustained effort, stronger policy integration, and improved long-term monitoring are needed to fully meet the objective.

- **What are the other factors (contextual and external) that have contributed towards this outcome?**

Contextual and external contributing factors include the Environment Act 2021, which enforces biodiversity net gain requirements, and the Environmental Improvement Plan 2023, which reinforces marine biodiversity priorities. The Fisheries Act 2020 has driven ecosystem-based fisheries management, while the British Energy Security Strategy has created opportunities for strategic compensation and habitat restoration funding. Evidence of policy impact comes from spatial data showing habitat extent changes, monitoring reports tracking species populations, and survey responses indicating growing policy consideration in decision-making.

International commitments like the G7 2030 Nature Compact and the OSPAR Convention have added momentum to conservation efforts by promoting MPA expansion and cross-border collaboration. Scientific advancements in monitoring methodologies, including those in the Marine Strategy Part Two, have improved data quality and the ability to track environmental change. However, external factors like climate change, coastal development pressures, and data limitations for certain habitats and species remain critical barriers.

- **How is progress towards meeting Objective 12 also progressing towards meeting the wider South Marine Plan vision?**

Objective 12's progress directly contributes to the South marine plans 2038 vision by enhancing the natural environment while supporting sustainable resource use. The expansion of protected areas, habitat restoration, and improved fisheries management help maintain the region's iconic biodiversity and natural beauty. These efforts align with the vision's emphasis on balancing environmental protection with sustainable economic growth and community well-being. However, gaps in habitat connectivity, cumulative human impacts, and climate-driven changes pose risks to long-term resilience. Strengthening policy integration, expanding local engagement, and embedding climate adaptation into all policy areas will be crucial to fully realising the vision of a thriving, distinctive, and well-managed marine environment by 2038.

In summary, and to provide quick review for reporting to Defra, it can be said with **medium confidence, Objective 12 of the South Marine Plan has been partially met**, as policies and indicators support space for nature, but gaps in evidence, implementation challenges, and external pressures limit full achievement. Fulfilling reporting requirements could also be visual with the use of the Evaluation Triangles (Appendix 3: Appendices).

6.2.6 Additional evidence

To further strengthen policy outcome findings and improve understanding of effectiveness, targeted evidence collection with wider contextual relationships, for example, the Marine Strategy evidence, could enhance the current monitoring framework. Broadly speaking, the following data suggestions could fill in data gaps and improve the ability to monitor and evaluate outcomes, highlighted here for recommendations if there was resource to collate:

- **Local Policy Implementation:** Collect case studies and best practice examples from local authorities to identify successful policy adoption and highlight replicable strategies for biodiversity net gain and habitat restoration.
- **Species Movement and Connectivity:** Use acoustic telemetry, satellite tracking, and genetic studies to gather evidence on species movements, validating the effectiveness of ecological corridors and restored habitats.
- **Climate Impact Monitoring:** Establish long-term climate impact datasets, including ocean temperature, acidification, and species range shifts, to refine adaptive management policies for habitats and fisheries.
- **Benthic and Sediment Monitoring:** Conduct baseline and post-disturbance surveys of benthic habitats and sediment composition to assess the cumulative impacts of dredging and disposal activities.
- **Ecosystem Dynamics in Fisheries:** Expand monitoring to assess predator-prey dynamics, food web interactions, and habitat quality to support more holistic, ecosystem-based fisheries management.
- **Citizen Science Data:** Working with NGOs / charities / universities to develop / use their citizen science programme outputs, for example local ocean literacy initiatives.

As new data and evidence emerges, through each M&E cycle, the contribution story will be revised and strengthened. As described in Section 4.3.6 Evaluation Triangles could be used here for reporting on marine plans, and could actively show, visually, the current status of the marine plan system.

7. Conclusion

Significant evolution has occurred in MMO's Approach to Monitoring. However, there remain critical areas where improvements to the approach need to be made. Making these improvements will improve the usefulness of M&E evidence, better supporting the review and improvement of marine plans.

Key strengths of the current approach include the use of logic models, alignment with legal requirements and government policy, and a robust indicator system for tracking policy outcomes. However, the framework primarily focuses on monitoring rather than evaluation, making it difficult to draw confident conclusions about policy effectiveness or understand policy interactions across scales.

This report outlines the development and application of a revised 'Approach to Monitoring and Evaluation' framework for marine plans. The proposed framework seeks to address the complexities of marine social-ecological-economic systems and improve the assessment of marine plan policy effects and effectiveness.

Evaluation objectives, evaluation questions and systems-based contribution analysis are recommended as a framework to more effectively focus resources and evidence the extent to which marine plan policies are impacting target outcomes. Applying this framework retrospectively to existing marine plans offers an opportunity to enhance the understanding of policy impacts, despite data limitations. Integrating the framework into new marine plan development encourages the creation of SMART objectives and more strategic data collection practices, setting a stronger foundation for future evaluations.

By adopting this approach, the MMO can generate better evidence on the effectiveness of marine plans. This will help to improve decision-making, adaptation of policies over time, and reporting of progress towards marine plan objectives, HLMOs and broader government commitments. Ultimately, this will strengthen the role of marine plans in supporting sustainable development, biodiversity conservation, and the resilience of coastal and marine communities, helping to safeguard marine environments for future generations.

7.1 Next steps

1. **Pilot the Revised Framework.** Begin by piloting the revised 'Approach to Monitoring and Evaluation' framework on a selected marine plan area. This will help identify any practical challenges and areas for improvement:
 - **Retrospective:** Apply to the next plan area in the reporting cycle, develop the Monitoring and Evaluation Evidence document (formerly Underpinning Information), with the additional evaluation objectives and evaluation questions, and steps in the contribution analysis.
 - **New marine plan development:** Develop steps alongside new plan development, including the new Approach to Monitoring and

Evaluation that includes the evaluation objectives and evaluation questions, and the contribution analysis framework as set out.

2. **Activities to plan and conduct** alongside both retrospective and new marine plan development:

- **Participatory workshops:** Develop evaluation objectives and evaluation questions; build upon (retrospective logic chains) and develop (new plans) ToC; and further develop the use of and marine plan specificities of the Evaluation Triangles
- **Data Collection and Analysis:** Enhance data collection efforts by addressing identified gaps, in the MMO gaps analysis work, utilise citizen science data where possible to supplement official data sources, and design stakeholder questionnaire questions based on known gaps or outcomes that need triangulating.

8. References

- Abson, D. J., Fischer, J., Leventon, J., Newig, J., Schomerus, T., Vilsmaier, U. et al. (2017). Leverage points for sustainability transformation. *Ambio*, 46(1), 30–39. doi:[10.1007/s13280-016-0800-y](https://doi.org/10.1007/s13280-016-0800-y).
- Burdon, D., Potts, T., McKinley, E., Lew, S., Shilland, R., Gormley, K., ... & Forster, R. (2019). Expanding the role of participatory mapping to assess ecosystem service provision in local coastal environments. *Ecosystem services*, 39, 101009.
- Defra. (2018). A green future: our 25 year plan to improve the environment.
- Better evaluation. (2025). *Develop agreed key evaluation questions*. <https://www.betterevaluation.org/frameworks-guides/managers-guide-evaluation/scope-evaluation/develop-agreed-key-evaluation-questions>
- European Union CAP Network. (2025). *Qualitative approaches: contribution analysis*, 5. Accessed March 2020. <https://eu-cap-network.ec.europa.eu/training/evaluation-learning-portal/qualitative-approaches-contribution-analysis>
- Fiksel, J. (2006). Sustainability and resilience: toward a systems approach. *Sustainability: Science, Practice and Policy*, 2(2), 14-21.
- Gunderson, L. H., & Holling, C. S. (Eds.). (2002). Panarchy: understanding transformations in human and natural systems. Island press. *Resilience and the behaviour of large-scale systems* L. H. Gunderson & L. Pritchard (Eds.). (2012), 60. Washington, DC: Island Press.
- HMT. (2020). The magenta book central government guidance on evaluation. https://assets.publishing.service.gov.uk/media/5e96cab9d3bf7f412b2264b1/HMT_Magenta_Book.pdf
- Hopkins, L. (2021). Tools and tips for implementing contribution analysis: A quick guide for practitioners.
- Lockie, S. (2016). Beyond resilience and systems theory: reclaiming justice in sustainability discourse. *Environmental Sociology*, 2(2), 115–117. doi:[10.1080/23251042.2016.1182308](https://doi.org/10.1080/23251042.2016.1182308)
- Lomborg, B., and Rubin, O. (2002). Limits to growth. *Foreign Policy*, 133, 42–44.
- MMO (2014). Method and Data to Monitor the Social Outcomes of Marine Plans. A report produced for the Marine Management Organisation, pp 84. MMO Project No: 1061. ISBN: 978-1-909452-28-2.
- MMO (2016) Review of the Marine Planning Monitoring and Evaluation Framework and Development of Baselines. A report produced for the Marine Management Organisation, pp86. MMO Project No: 1087. ISBN: 978-1-909452-89-3.

MMO (2018). Review of marine plan monitoring indicators and their associated logic chains. A report produced for the Marine Management Organisation. MMO Project No: 1151, August 2018, 69pp

MMO (2018). *South Marine Plan Approach to monitoring.*
[Approach to Monitoring.pdf](#)

MMO (2020). North East, North West, South East and South West Marine Plans Approach to Monitoring. [NENWSESW Monitoring Approach.pdf](#)

Mayne, J. (2008). Contribution analysis: an approach to exploring cause and effect.
Mayne, J. (2012). Contribution analysis: coming of age? *Evaluation*, 18(3), 270–280.
doi:[10.1177/1356389012451663](#).

Mayne, J. (2017). Theory of change analysis: Building robust theories of change. *Canadian Journal of Program Evaluation*, 32(2), 155-173.

McKinley, E., Burdon, D., & Shellock, R. J. (2023). The evolution of ocean literacy: A new framework for the United Nations Ocean Decade and beyond. *Marine Pollution Bulletin*, 186, Article 114467. doi:[10.1016/j.marpolbul.2022.114467](#).

Meadows, D. (2015). Leverage points-places to intervene in a system.

Patton, M. Q. (2008a). *Utilisation-focused evaluation* (4th ed.). Thousand Oaks, CA: Sage Publications.

Peersman, G., Rogers, P., Guijt, I., Hearn, S., Pasanen, T., & Buffardi, A. (2016). When and how to develop an impact-oriented monitoring and evaluation system. *A Methods Lab publication*. London: Overseas Development Institute.

Raworth, K. (2018). Doughnut economics: seven ways to think like a 21st-century economist. Chelsea Green Publishing.

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin III, F. S. I., Lambin, E. et al. (2009). Planetary boundaries: exploring the safe operating space for humanity. *Ecology and Society*, 14(2). doi:[10.5751/ES-03180-140232](#).

Stern, E., Stame, N., Mayne, J., Forss, K., Davies, R., & Befani, B. (2012) DFID Working Paper 38. Broadening the range of designs and methods for impact evaluations. London: DFID p. vi + 92. URL: <http://www.dfid.gov.uk/R4D/Output/189575/Default.aspx>.

Ungar, M. (2018). Systemic resilience. *Ecology and society*, 23(4).

UK Climate Change Risk Assessment (CCRA3, 2022) Available on [UK Climate Change Risk Assessment 2022](#)

Wimbush, E., Montague, S., & Mulherin, T. (2012). Applications of contribution analysis to outcome planning and impact evaluation. *Evaluation*, 18(3), 310–329.
doi:[10.1177/1356389012452052](#).

9. Appendices

Appendix 1: Selected Pathway for Review

Table 8. Selected pathway for review

Marine Plan Area	Objective	Policies contributing to Objective	Indicator	Relevant Policies (direct)	Sub-indicators	Underpinning Information
South	4	Direct S-EMP-1, S-EMP-2 Indirect S-AGG-1, S-AGG-2, S-AGG-3, S-AGG-4, S-FISH-1, S-OG-1, S-PS-3, S-REN-1, S-WQ-1, S-WQ-2	9	S-EMP-1	9.01 9.02 9.03	Marine Plans Stakeholder Monitoring Surveys
			13	S-EMP-2	13.1 to 13.13	Office for National Statistics (ONS) Annual Business Register and Employment Survey (BRES)
	8	Direct S-HER-1 Indirect S-PS-1, S-SCP-1, S-TR-1, S-TR-2	15	S-HER-1		Historic England's Heritage at Risk Register Marine Case Management System
	12	Direct S-BIO-1, S-BIO-2, S-BIO-3, S-BIO-4, S-DD-2, S-DIST-1 (case study), S-FISH-4, S-FISH-4-HER Indirect S-AQ-1, S-CC-2, S-CC-4, S-CO-1, S-MPA-1, S-MPA-2, S-MPA-3, S-MPA-4, S-SOC-1	8	S-FISH-4-HER	8.8	Marine Case Management System
			9	S-BIO-2	9.27	Survey Questions
				S-WQ-2	9.36	
			14	S-BIO-1	14.1 14.2	Natural England 'Marine Evidence Base'
				S-BIO-3		
				S-BIO-4		
				S-FISH-4-HER		
			48	S-FISH-4		Marine Case Management System
				S-WQ-1		
				S-BIO-3		
				S-DD-2	48.1	

Appendix 2: Underpinning Information

Table 9. Underpinning Information data detail and attribution to policy outcome

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
4	EMP-1 Proposals that develop skills related to marine activities, particularly in line with local skills strategies, will be supported.	9 Marine plan monitoring survey responses identify the extent to which stakeholders perceive predicted specific plan and policy outcomes to have occurred.	Marine Plans Stakeholder Monitoring Surveys. These are conducted either by questionnaire, interviews or focus groups.	MMO	2014 to 2023	Every 12 to 18 months	Partial	Surveys are downloaded from Qualtrics as raw data, inputted into annual pre-formulated excel spreadsheets to process the data and then documented into annual monitoring reports which enables comparison across the years.	There were no baseline findings as the question for sub-indicator 9.01, 9.02 and 9.03 was introduced to surveys in 2019.	Results and trends may be more difficult to determine if question wording and the respondent type pulled for each indicator throughout the years is inconsistent. This should be considered for future indicator collection by maintaining consistency where possible, but also adapting the analysis if changes are made. Surveys are limited to those who respond and may not include all stakeholders. The results are limited by low

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
										survey responses across the years, which limits the ability to apply the responses as a 'standard representation' as to how all marine plan users feel and determine trends.
	EMP-2 Proposals resulting in a net increase to marine related employment will be supported, particularly where they are in line with the skills available in and adjacent to the south marine plan areas.	13 Office for National Statistics sectorial employment statistics derived from marine activity Standard Industrial Classification codes and Nomenclature of Territorial Units for Statistics level 3 spatial extents.	Data derived from the Office for National Statistics (ONS) annual Business Register and Employment Survey (BRES)	Office for National Statistics	2015 to 2023	Yearly	Complete	Defined tasks are used to show how data can be obtained from the Nomis digital service by downloading information specific to individual SIC codes for a single marine plan at a time. This is necessary to ensure that accurate and	2015 to 2018	The influence of strong external factors such as socio-economic issues, therefore, makes it difficult to directly attribute measured change in employment numbers over time to marine plan policy intervention.

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
								consistent data are collected.		
8	S-HER-1 Proposals that may compromise or harm elements contributing to the significance of heritage assets should demonstrate that they will, in order or preference: a) avoid, b) minimise, c) mitigate compromise or harm. If it is not possible to mitigate, the public benefits for proceeding with the proposal must outweigh the	15 Changes to the number of Heritage at Risk Register entries linked to proposals approved.	Historic England's Heritage at Risk (HAR) Register. Marine Case Management System.	Historic England	The HAR is available for all years. The MCMS is available from 2018.	Yearly	Complete	There are two data sources for the HAR which must be combined with the marine plan and marine licence information to understand the change in condition or vulnerability of heritage assets within plan areas and close to marine licences.	2014 to 2017	Currently, there is no way to attribute a change in heritage asset status directly to a licensable activity just from data held on the Heritage at Risk Register. This could have occurred because of other activity for example, asset conservation work. Further investigation into the relevant marine licence decisions will need to take place to identify links between this and the asset in question.

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
	compromise or harm to the heritage asset.									
12	S-BIO-1 Proposals that may have significant adverse impacts on natural habitat and species adaptation, migration and connectivity must demonstrate that they will, in order of preference: a) avoid, b) minimise c) mitigate significant adverse impacts.	14 Magnitude of change in the spatial extent of S41 priority habitats, or the sub-set of S41 priority habitats relevant to the policy.	Spatial – compared across time to identify magnitude of positive or negative change; combination of survey and modelling data.	Natural England 'Marine Evidence Base'	2015 and 2023	A full update of the dataset does not currently occur within a three-year period. Surveying of all habitats does not occur at set intervals, therefore, changes in spatial extent of habitats areas where no new surveying or modelling has been undertaken will not be captured.	Partial – indicator only monitors priority habitats; and coastal sand dunes not included; and coastal saltmarsh and reedbeds recorded as single habitat.	The indicator requires significant GIS analysis from a member of staff who is comfortable and skilled in Arc Pro; analysis will take a day, including time to download data, run the model, and complete analysis and formatting.	2015 baseline - 7 habitats (seagrass, estuarine rocky habitats, subtidal sand and gravel, intertidal mudflat, Maerl, saltmarsh, reedbeds) No baseline – 2 habitats (Coastal vegetated shingle, saline lagoon).	Shows spatial change in extent therefore can highlight policy impact, however, change in extent of priority habitats can be influenced by many other factors including other government policy, climate change, marine protected area features etc. As data is related to coastal habitats, it will be impacted by land practices including local government policy, agricultural runoff, land-based industries etc. Changes in surveying or monitoring of the

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
										priority habitats may also influence data.
	S-BIO-2 Proposals that incorporate features that enhance or facilitate natural habitat and species adaptation, migration and connectivity will be supported.	9.27 Improved factor consideration in decision-making: enhancement of biodiversity or geological interest.	Stakeholder surveys, follow up interviews and focus groups.	MMO	2019 to 2023	Every 12 to 18 months	Partial - survey returns not guaranteed experience has shown low return.	Processing of data is substantial, involving all Coastal Planners and some HEOs, and starts once the live surveys have been closed.		This question is policy specific (as opposed to the non-policy specific questions in the survey), responses identify the extent to which stakeholders indicate that predicted policy specific outcomes have occurred, and therefore strongly align in attribution of policy outcome.
	S-BIO-3 Proposals that enhance coastal habitats where important in their own right and/or for ecosystem functioning	48.05 Marine licence applications for (include) coastal restoration projects.	Information from the Marine Case Management System and analysing the number of relevant proposals.	MMO	2017 to 2023	On demand	Complete	Fully reporting against all sub-indicators may be a highly resource intensive activity, particularly during the	2017 to 2018	Evidence collected and reported under this indicator provide information that is strongly tied to monitoring the intended outcomes of plan area marine plan policies. However,

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
	and provision of goods and services will be supported. Proposals must take account of the space required for coastal habitats where important in their own right and/or for ecosystem functioning and provision of goods and services and demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate for net loss of coastal habitat.							manual collection stage from MCMS – however, one sub indicator is less intensive. Geospatial analysis is required to set up the data collection activities and can be completed, on request, by MMO Data, Technology and Innovation (DTI) team.		due to the small sample sizes generated for this sub-indicator, it is likely to be difficult to detect clear trends in the data under future reports. Also, developments can be affected by external influences outside of the marine planning system. This can make it difficult to determine whether observed changes over time are directly driven by marine plans, or indirectly driven by external factors, or a combination of both.

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
	S-BIO-4 Proposals that enhance the distribution and net extent of priority habitats should be supported. Proposals must demonstrate that they will avoid reducing the distribution and net extent of priority habitats.	14 Magnitude of change in the spatial extent of S41 priority habitats, or the sub-set of S41 priority habitats relevant to the policy.	Same as S-BIO-1							
	S-DD-2 Proposals must identify, where possible, alternative opportunities to minimise the use of dredged waste	48.10 Number and proportion of proposals for disposal activity within licensed disposal sites that have demonstrated assessment	Data from MMO's Marine Case Management System (MCMS), the indicator monitored the number and proportion of proposals for	MMO	2017 to 2023	On demand	Partial – 25% sample technique	Fully reporting against all sub-indicators may be a highly resource intensive activity, particularly	2017 to 2018	Due to the small sample sizes generated for this sub-indicator, it is likely to be difficult to detect clear trends in the data under future reports.

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
	disposal sites by pursuing reuse opportunities through matching of spoil to suitable sites.	against the waste hierarchy.	disposal activity within licensed disposal sites that have demonstrated assessment against the waste hierarchy.					during the manual collection stage from MCMS – however, one sub indicator is less intensive. Geospatial analysis is required to set up the data collection activities and can be completed, on request, by MMO Data, Technology and Innovation (DTI) team		Sub-indicator uncertainty is compounded by other influencing factors external to marine planning which can make it difficult to determine whether observed changes over time are directly driven by marine plan policies, or indirectly driven by external factors, or a combination of both.
	S-DIST-1 Proposals, including in relation to tourism and recreational activities,	Case study	Marine Plan Policy Assessments (MPPAs) on the Marine Case Management	MMO	2022 to 2023	Assessment period	Complete for 40 relevant Marine Licence Applications	MMO assessment time		Proposals assessed suggests most proponents are interpreting and using the policy in marine licence

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
	within and adjacent to the south marine plan areas must demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate significant cumulative adverse physical disturbance or displacement impacts on highly mobile species.		System (MCMS)				in time period -			applications, however there is a need to support MMO Marine Licensing team and applicants in interpretation of this policy to avoid confusion and facilitate policy use.
	S-FISH-4 Proposals that enhance essential fish habitat, including spawning, nursery and feeding grounds, and migratory routes	14 Magnitude of change in the spatial extent of S41 priority habitats, or the sub-set of S41 priority habitats relevant to the policy.	Same as S-BIO-1.							

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
	should be supported. Proposals must demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate significant adverse impact on essential fish habitat, including, spawning, nursery, feeding grounds and migration routes.									
	S-FISH-4-HER Proposals will consider herring spawning mitigation in the area highlighted on Figure 26 (in the	8.08 Proportion of licensed marine activities within identified herring spawning areas that have	Geospatial data from MMO's Marine Case Management System (MCMS) to provide evidence for the identification of	MMO	2018 to 2023	On demand	Complete evidence available to report against.	Fully reporting against all sub-indicators is a highly resource intensive activity, particularly during the	2014 to 2018	Evidence collected and reported under this indicator provide information that is strongly tied to monitoring the intended outcomes of spatially specific

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
	technical annex) during the period 01 November to the last day of February annually.	considered herring spawning mitigation during the period 01 November to the last day of February, annually.	trends in the distribution and number of licensed marine activities, as well as their compliance with spatially specific marine plan policies.					manual interrogation of marine licence information data collection stage. However, reporting against individual sub indicators will be less resource intensive. Geospatial analysis is required to set up the data collection activities and can be completed, on request, by MMO Data, Technology and Innovation (DTI) team.		marine plan policies. However, this indicator is limited by the scope and capacity to robustly monitor activity compliance with spatially specific marine plan policies. It only considers marine activities licensed by the Marine Management Organisation and therefore, does not consider consents issued by other decision-makers or self-service marine licence applications as they relate to applications for low risk. Also, developments can be affected by external influences outside of the marine planning system.

Objective	Policy	Indicator	Data type	Data owner	Years data collected	Frequency	Complete / partial	Level of MMO processing	Baseline	Attribution of Policy to outcome
										This can make it difficult to determine whether observed changes over time are directly driven by marine plans, or indirectly driven by external factors, or a combination of both.

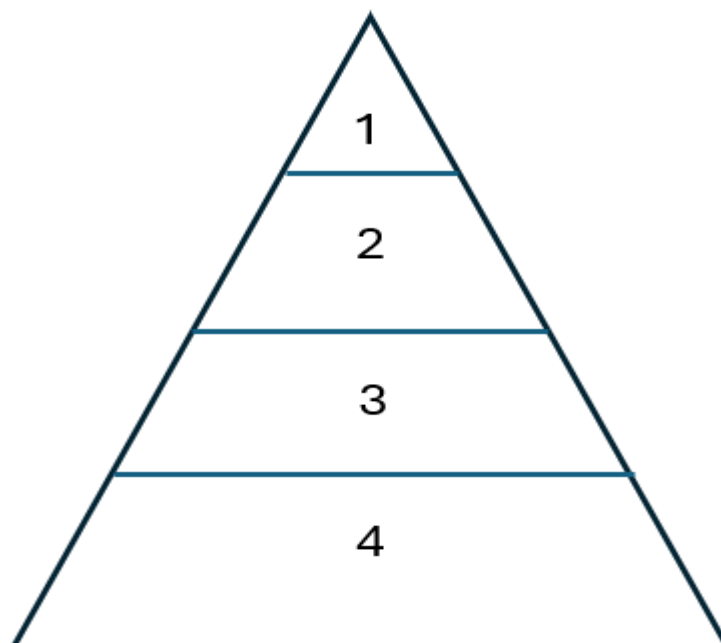
Appendix 3: Evaluation Triangles

An evaluation planning triangle is a basic form of ToC. It helps reflect on the connections between the policy and the difference it makes and could work alongside the logic models to further elaborate the right-side of the logic chains. A typical triangle would consist of:

1. At the top of the triangle, include the overall impact, which is the big long-term or broad change to contribute to.
2. The next layer would be to define outcomes as short- to medium-term changes that support progress towards impact.
3. Thereafter, list the activities to achieve the outcomes.
4. Lastly, identify the assumptions underlying the theory.

This basic framework (figure 4) helps ensure that the work being delivered is connected to the larger objectives and outcomes and can be monitored and evaluated against these. This approach is relatively simple and would work for each individual plan objective.

Figure 4. Evaluation planning triangle.



The evaluation triangle could be adapted to meet the needs of a marine plan monitoring and evaluation framework and could support participatory methods and visualisation of the monitoring and evaluation approach. The following 2 figures are abstract versions that require feedback from MMO and wider stakeholders to refine. Figure 5 shows the example of *Objective 12: Space for Nature* (1 dark blue). The

desired outcomes for which to evaluate against (2 lighter blue) for Objective 12, within the following review cycle could be discussed and presented.

The following box (3, lightest blue, +ve) provides space for the policies that support meeting those outcomes, while on the same level (3, white, -ve), when looking at the marine plan as a system, there may be policies that do not support achievement of those outcomes or that may negatively impact those policies that do. The final layer are the indicators associated with those policies.

An evaluation triangle such as this could be developed for each of the 12 marine plan objects. These could be aggregated in an overall 'circle of evaluation triangles' or 'wheel' to show the system as a whole (figure 6), with the overall aim of simplifying the complexity in the system, to show resilience and sustainability within the system, and highlight which objectives are within safe or expected system limits, to inform adaptations and improvements, and to communicate and report on the marine objectives individually (triangles, figure 3) and as a system (circle/wheel, figure 4).

This approach is informed by the Doughnut Economics (Raworth, 2018) (Figure 7) and Planetary Boundaries (Rockström et al., 2009) (Figure 8) approaches.

Figure 5. Evaluation triangle adapted for MMO evaluation of marine plan policies contribution towards objectives.

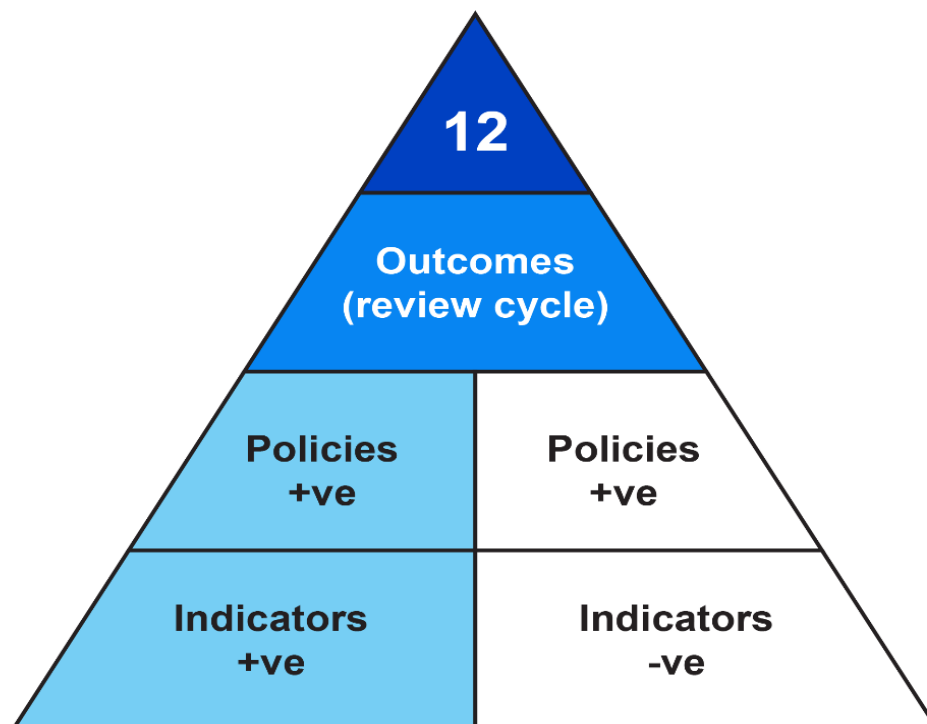


Figure 6. Combination of marine plan objective evaluation triangles to show at system-level. This could be used as a visual tool in participatory workshops, or for reporting on the marine plan policies at a system level.

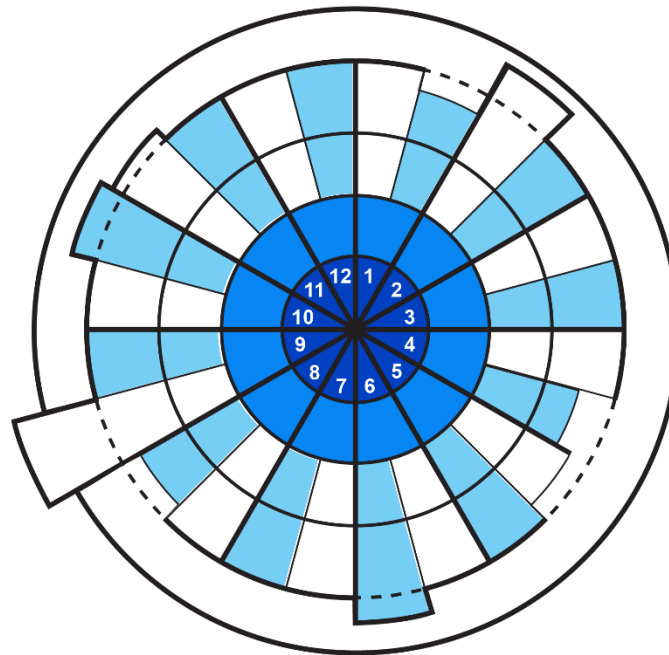


Figure 7. Example of presentation of Doughnut Economics (Raworth, 2018).



Figure 8. Example of presentation of Planetary Boundaries (Rockström et al., 2009).

