Marine Management Organisation

# Evaluating MPA Management Measures

## MMO1421








# MMO1421: Evaluating MPA Management Measures
# March, 2025






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# Acronyms

| | |
|---|---|
| EQ | Evaluation question |
| FCS | Favourable Conservation Status |
| HPMA | Highly Protected Marine Area |
| IFCAs | Inshore Fisheries and Conservation Authorities |
| JNCC | Joint Nature Conservation Committee |
| MarLIN | Marine Life Information Network |
| MCZ | Marine Conservation Zone |
| MMO | Marine Management Organisation |
| mNLA | Marine non-licensable activities |
| MPA | Marine Protected Area |
| NE | Natural England |
| SAC | Special Area of Conservation |
| ToC | Theory of Change |
| VNAZ | Voluntary No Anchor Zone |

# Executive Summary

This report and accompanying PowerPoint guidance explore an evaluation approach to assessing the impact of the Marine Management Organisation (MMO) management measures in Marine Protected Areas (MPAs).

MPAs in England aim to recover and protect the rich marine environment and wildlife through the development of a strong, ecologically coherent and well managed network. Each MPA has specific conservation objectives which describe the current and desired state of the designated features afforded protection in the site. Management measures are implemented to mitigate the impacts of activities that are not compatible with MPA conservation objectives and are thereby intended to enable MPA conservation objectives to be met.

Through this study, ICF, Plymouth Marine Laboratory and Live Economics developed an initial impact evaluation framework and tested it using four MPA case studies, subsequently producing guidance for the MMO Marine Conservation Team to conduct future impact evaluations of management measures. This is intended to support MMO's 5-yearly review of MPA management.

## An impact evaluation framework was developed

The impact evaluation framework consists of a series of evaluation questions, and an approach to responding to each, looking at (i) the environmental impacts of MMO management, (ii) the socio-economic impacts of MMO management, and (iii) the changes that could be made to the MPA management.

## The evaluation framework was tested using four MPA case studies

Four case study sites were selected using four criteria, to provide for a range of differing contexts in which to test the initial framework. The criteria used, and a description for each of the case study sites, is described in Table 1.

**Table 1: Case study selection**

| Criteria | Studland Bay MCZ | West of Walney MCZ | Haisborough, Hammond and Winterton SAC | Start Point to Plymouth Sound and Eddystone SAC |
|---|---|---|---|---|
| Designated features | Intertidal coarse sediments; Subtidal sand; Subtidal seagrass beds; Spiny (long-snouted) seahorse *Hippocampus guttulatus* | Subtidal sand; Subtidal mud; Seapen and burrowing megafauna | Sandbanks slightly covered by sea water all the time; Reefs; (overlaps with the Southern North Sea SAC for harbour porpoise) | Reefs |
| Condition assessment | Not assessed | Not assessed | 100% Unfavourable (2018/2019) | 100% Favourable |
| Year management introduced | 2021, expanded in 2022 | MCZ 2016; byelaw 2018, implemented 2019 | 2013, updated in 2023 | SAC 2011; byelaw 2013; |
| Management | Voluntary No Anchor Zone | Bottom-towed gear banned throughout site within 12 nm | Bottom-towed gear banned in specified areas (*Sabellaria* reefs) | Bottom-towed gear banned in specified areas (bedrock reefs) |

The evaluation process drew on a review of key literature and secondary data analysis including MPA monitoring and other environmental data, and a review of site assessments and impact assessments. Primary research was also essential to the evaluation methodology: interviews were conducted with MMO site officers, coastal teams, and data teams, Inshore Fisheries and Conservation Authorities (IFCAs), Natural England site officers, local and industry representatives, and commercial fishers.

# Key findings from the evaluation of MPA test cases

The key findings from the case studies were as follows:

- **Studland Bay MCZ:** The voluntary no-anchor zone (VNAZ) in Studland Bay Marine Conservation Zone (MCZ) has experienced good to moderate compliance. Compliance was supported through the provision of eco-moorings by the Studland Bay Marine Partnership (SBMP), which enable recreational boaters to continue to moor within the bay whilst respecting the VNAZ. This has resulted in reduced pressure from boat anchoring in the densest seagrass areas. However, boat anchoring and associated pressures have not been completely eliminated in the VNAZ, and there is also widespread anchoring across the bay outside the VNAZ where the seagrass is less dense. The condition of the seagrass designated feature is still

unfavourable but improving, which is supported by the MPA management. Ongoing funding is required for the continued provision of sufficient eco-moorings and it will be important to support the SBMP with eco-mooring installation, maintenance, and engagement activities. There have been some social impacts and limited economic impacts on the local community. Initial community resistance to the VNAZ has become more positive as SBMP publicity and outreach work has taken place, with community engagement helping to manage conflicts.

**West of Walney MCZ:** The prohibition of bottom-towed fishing gear in specified areas of the West of Walney MCZ has supported reduced pressures from bottom-towed fishing. No data or formal condition assessment is available on which to conclude the post-management condition of the designated features. However, the successful reduction in pressures is expected to support the recovery of the designated features within the management area, such as subtidal sand, subtidal mud, and sea-pen habitats. Outside of the management area, risk to designated feature condition from demersal trawl pressure remains and may require management. Socio-economic challenges have arisen, particularly for the fishing industry and local communities. The spatial squeeze from both the MPA and offshore wind farms have reduced flexibility for fishers, leading to concerns about fleet sustainability.

- **Haisborough, Hammond and Winterton SAC:** The areas in which bottom-towed fishing gear was already prohibited were expanded in 2023. There has been minimal displacement of commercial fishing activity from the expansion of the management areas due to low levels of bottom trawling activity in the area prior to the management. Other activities within and outside the site, including those related to energy generation, offshore wind farm construction and operation, aggregate extraction, and invasive species, generate pressures on the MPA features. The bottom-towed fishing gear byelaw has resulted in pressure from bottom trawls being removed from sensitive areas, but there is still an impact on sandbanks outside of the specific management areas, and habitat loss from pipelines is not reduced within the site and represents a permanent pressure. The conservation objectives have not been achieved but it is likely that the 2023 byelaw expansion will allow more of the reef to recover. Protection of the reef requires continuation of the byelaw. The management has not led to significant economic or social impacts.

- **Start Point to Plymouth Sound and Eddystone SAC:** The prohibition of bottom-towed fishing gear in specified areas of Start Point to Plymouth Sound and Eddystone Special Area of Conservation (SAC) has supported maintenance of the designated reef features in favourable condition. However, increasing static gear use, particularly traps, has been identified as a potential risk to site integrity, leading to proposed additional management measures. There are very limited socio-economic impacts to fishers and the local supply chain from the existing management measures. There are potentially increased operational costs, displacement of fishing activities, and knock-on effects on fish markets, but these effects cannot solely be attributed to MPA management.

# Key learnings were taken from the case studies and impact evaluation guidance developed

The key lessons and recommendations that emerged from conducting the case studies were around data sharing and collection, primary research with stakeholders, assessing the impacts of MPA management, and the presentation of evaluation questions and answers. These lessons and recommendations are listed below.

Lessons learned through applying the guidance to the case studies:

- Evaluation questions should be targeted and clear.
- Clear articulation of an MPA evaluation's confidence in any given question response is necessary to support future decision making.
- Adherence to a simple system for summarising impacts and confidence is not always easy but is necessary.
- The evaluation draws on a theory-based approach. There is insufficient monitoring data, or suitable comparison sites, to enable counterfactual-based evaluation.
- MPAs cannot be considered in isolation of other local factors which may be contributing to observable or perceived impacts.
- Where MPA management has been in place for a long time, it may not be possible to articulate the economic or social impact, or that impact may have been accommodated into a new 'normal'.

Operational lessons for MMO to take forward in the short term:

- Forward planning will be essential for planning Marine Conservation Team capacity, given the aim to complete 47 MPA impact evaluations.
- Forward planning and prioritisation is necessary to ensure analysis of MMO commercial fisheries data can be factored into MMO statistics and spatial data teams' work plans, where it is required.
- An iterative approach should be taken to stakeholder interviews, starting with MMO internal stakeholders and ending with local stakeholders.
- Especially in MPAs where there is expected to be more conflict around MPA management measures, it is advised that interviews are conducted by a third party rather than MMO.

Longer term reflections and recommendations on governance:

- Monitoring data should be improved and better funded, so that high quality long-term monitoring data is available for analysis.
- MMO should liaise and coordinate timing with other relevant bodies to form a joined-up approach to areas analysed in assessments (e.g., site assessments, condition assessments, and impact assessments) to enable more accurate impact evaluation.

The accompanying PowerPoint guidance (provided as an Annex) provides a step-by-step approach to answering each evaluation question, identifies key stakeholders to contact and key sources of information to use, and instructs MMO on how to apply key recommendations and findings. The guidance is split into three phases:

- **Phase 1: Scoping.** Review and refine the evaluation focus.
- **Phase 2: Evaluation.** Collect and analyse secondary and primary data to answer each evaluation question, using questions tailored to the MPA.
- **Phase 3: Reporting.** Present impact evaluation findings.

The guidance is intended to be used by the MMO Marine Conservation Team for conducting future impact evaluations of MPA management.

# 1. Introduction

Marine Protected Areas (MPAs) in England aim to recover and protect the rich marine environment and wildlife through the development of a strong, ecologically coherent and well managed network. Each MPA has specific conservation objectives which describe the current and desired state of the designated features afforded protection in the site. Where activities are not compatible with MPA conservation objectives, management measures are implemented to mitigate the effects of these activities on sensitive features and are thereby intended to enable MPA conservation objectives to be met.

The Marine Management Organisation (MMO) is responsible for implementing certain types of management in English waters. Every 5 years, MMO is obliged to undertake a review of the management it has introduced on MPAs. To support this management review process, MMO commissioned ICF, Plymouth Marine Laboratory (PML) and Live Economics to design a general approach to undertaking an impact evaluation of an MPA, to test this approach through application on a set of case study MPAs, and to provide guidance to support future MPA impact evaluation.

## 1.1 Introduction to this report

The project consisted of three components. Firstly, an initial MPA management impact evaluation approach was developed. Secondly, this initial evaluation approach was tested using four learning case studies. Finally, impact evaluation guidance was developed to support MMO's future MPA management reviews, using the lessons learnt from the testing process.

This report is structured as follows:

- Section 2: An introduction to the work done to develop an initial MPA impact evaluation approach
- Section 3: Applying that approach to four learning case studies
- Section 4: Lessons and recommendations from applying the initial MPA impact evaluation approach to the four case studies
- Section 5: An introduction to MMO guidance for conducting MPA management impact evaluation
- Appendix A: A high-level evaluation framework including a Theory of Change and evaluation questions.
- Annex A: PowerPoint guidance to MMO for conducting MPA management impact evaluation – provided as a separate document.

## 1.2 Introduction to MPA management

MMO is responsible for managing the impacts of fishing, marine licensable activities and marine non-licensable activities (mNLA) on MPAs. MMO's responsibilities are:

- Management of fishing activities: MMO leads on management between 6-200nautical miles (nm), with the Inshore Fisheries and Conservation Authorities (IFCAs) leading in the 0-6nm area.

- mNLA: MMO is responsible for management from 0-12nm. Local authorities manage some shore-based recreational activities.
- Licensable activities: MMO provides marine licenses under the Marine and Coastal Access Act, and must have regard to MPAs while they undertake their decision from 0-200nm.

This report, and the 5-yearly MMO review of MPA management that it supports, focuses on management put in place by MMO with regards to fishing activities and mNLA. Licensable activities are not included.

For fishing and mNLA, MMO is responsible for making byelaws in English waters to protect habitats and species from activities that may harm them and support achievement of MPA conservation objectives. MMO will consider voluntary measures before making a byelaw. If a permanent byelaw is required, this will be formally consulted upon (MMO, 2023a).

### 1.2.1 MMO management measures for fishing in MPAs

MMO has been introducing byelaws to manage fishing activity in MPAs through a staged process (MMO, 2023b) determined by greatest sensitivities to fishing:

- Stage 1: Impacts of fishing on four MPAs (byelaws introduced in June 2022)
- Stage 2: Impacts of bottom-towed fishing gear on all rock and reef MPA features (Marine Protected Areas Bottom-Towed Fishing Gear Byelaw 2023 covers 13 MPAs)
- Stage 3: Remaining impacts of fishing on the seabed features not already covered in Stages 1 and 2, completing the management measures for all 47 offshore MPAs
- Stage 4: Impacts of fishing on MPAs with highly mobile species features (two MPAs protecting harbour porpoise, and three MPAs protecting certain bird species).

Table 2 presents current MMO byelaws for fishing activities in MPAs (MMO, 2023a).

**Table 2: Current MMO byelaws for fishing activities in MPAs**

| Byelaw | Prohibits the use of |
|---|---|
| The West of Walney Marine Conservation Zone (Specified Area) Bottom Towed Fishing Byelaw 2018 | Bottom-towed fishing gear |
| The Dogger Bank Special Area of Conservation (Specified Area) Bottom Towed Fishing Gear Byelaw 2022 | Bottom-towed fishing gear |
| The Margate and Long Sands European Marine Site (Specified Areas) Bottom Towed Fishing Gear Byelaw 2017 | Bottom-towed fishing gear |
| The South Dorset Marine Conservation Zone (Specified Area) Bottom Towed Fishing Gear Byelaw 2022 | Bottom-towed fishing gear |
| The Land's End and Cape Bank European Marine Site (Specified Areas) Bottom Towed Gear Byelaw | Bottom-towed fishing gear |
| The Start Point to Plymouth Sound and Eddystone European Marine Site (Specified Areas) Bottom Towed Gear Byelaw SAC | Bottom-towed fishing gear |
| The Inner Dowsing, Race Bank and North Ridge Special Area of Conservation (Specified Areas) Prohibited Fishing Gears Byelaw 2022 | Bottom-towed fishing gear and static gears |
| The Canyons Marine Conservation Zone (Specified Area) Prohibited Fishing Gears Byelaw 2022 | Bottom-towed fishing gear and anchored nets and lines |
| Marine Protected Areas Bottom Towed Fishing Gear Byelaw 2023 | Bottom-towed fishing in 13 MPAs |

Bottom-towed fishing gear usually refers to *'*any trawls, seines, dredges, or similar gear, including trawls towed on or very close to the seabed, which are actively moved in the water by one or more fishing vessels or by any other mechanised system and in which any part of the gear is designed and rigged to operate on, and be in contact with, the seabed in order to take any sea fisheries resources' (*Marine Protected Areas Bottom Towed Fishing Gear Byelaw*, 2023).

### 1.2.2 Application to Highly Protected Marine Areas (HPMAs)

Highly Protected Marine Areas (HPMAs) are areas of the sea (including the shoreline) that allow the protection and full recovery of marine ecosystems (Defra, 2023). The MMO byelaw review process will also apply to these sites.

Unlike MPAs which are designated for habitat and species features and do not preclude some activities that are consistent with conservation objectives, HPMAs are whole site designations. HPMAs will protect all species and habitats and associated ecosystem processes within the site boundary, including the seabed and water column. The first three HPMA designations in English waters came into force on 5th July 2023 (Defra, 2023). HPMAs are a form of MCZ, and a byelaw is currently in development which will prohibit the removal of sea fisheries resources and the use of fishing gear from within the three HPMAs.

The impact evaluation approach presented in this study could also be relevant for HPMAs as well as MPAs, but it should be noted that (1) HPMAs may have more monitoring data that could be used in the assessment, (2) HPMAs do not have a

feature-based approach but apply a site-based approach to all elements, which may affect reporting on impacts, and (3) HPMAs, given their higher level of protection, may have more significant social and economic impacts and hence warrant more detailed evaluation and more extensive primary research (environmental, economic and social) than is suggested in the MPA evaluation guidance.

### 1.2.3 MMO management measures for non-licensable activities in MPAs

MMO conduct site assessments to review the impact of mNLA on MPAs. If it is concluded that they hinder conservation objectives, MMO are responsible for considering management measures (MMO, 2022).

MMO are taking a phased approach to reviewing mNLA impacts. A voluntary no-anchor zone (VNAZ) was introduced by MMO in Studland Bay MCZ in December 2020 (MMO, 2022).

There are six further priority MPAs that are due to be taken forward by MMO for detailed site assessment with regards to mNLA (MMO, 2022):

- Cromer Shoal Chalk Beds MCZ
- Fal and Helford SAC
- Isles of Scilly Complex SAC
- Plymouth Sound and Estuaries SAC
- Solent Maritime SAC
- The Wash and North Norfolk Coast SAC.

# 2. Approach to developing guidance for MPA impact evaluation

To develop guidance for MMO to use when conducting MPA management impact evaluations, a process was undertaken whereby (1) an initial impact evaluation framework was designed, (2) case studies were used to test this initial impact evaluation framework, and (3) lessons learned from the testing process were used to refine the initial impact evaluation framework and produce guidance (presented in PowerPoint) for MMO.

## Stage 1: Impact evaluation framework design

The evaluation approach described in this report should be read alongside MMO1347 Evaluation Plan for MMO Conservation Byelaws (see MMO Evidence project register Evidence projects register - GOV.UK). The evaluation design also draws on MMO strategic goals and evidence needs for the 5-year review of management measures. The key steps in the evaluation design were as follows:

- Establish MMO's aims and objectives for the evaluation.

- A generic MPA management Theory of Change (ToC) was developed to describe the causal pathways through which MPA management measures are expected to deliver on conservation objectives and generate other impacts that are relevant to the MPA five-year review.

  The ToC describes the activities, outcomes, impacts, and secondary and indirect effects that may occur as a result of the management measures. ToC development was informed by a review of key literature and was refined through a workshop with MMO stakeholders from Marine Conservation Team and Evidence & Evaluation. The ToC is included in Appendix A of this report.

- An initial evaluation framework was developed including the ToC, a set of evaluation questions and data/methods needed to respond to the questions. The initial evaluation questions (EQs) are presented in Section 3.

- An evaluability assessment was undertaken to assess the extent to which the evaluation questions could be responded to reliably and credibly, given the nature of the intervention being evaluation (i.e. MPA management) and potential knowledge/data gaps.

  Assessing each of the evaluation questions in the context of the four pilot MPAs demonstrated that evaluability is a question of degree rather than a 'yes or no'. Every evaluation question was deemed answerable, although the detail and confidence in evaluation results varied across EQs and was expected to vary for different MPAs given large differences in the features of MPAs, the magnitude/timeframes of management impacts, and availability of data.

## Stage 2: Case studies to test the impact evaluation framework

Four MPAs were proposed to test the evaluation framework and case study profiles were developed to confirm key attributes and issues of interest for the evaluation. The case studies are presented in Section 3.

As part of case study completion, secondary data analysis was undertaken, involving a review of MPA monitoring and other environmental data and a review of site assessments and impact assessments. No new analysis of fishing data was undertaken due to a lack of availability from MMO teams to provide this data, but some data analysis has been integrated drawing on analyses presented in MPA documents.

Primary research was also conducted and is an essential part of the evaluation methodology. In total, 37 stakeholders were consulted across the four MPAs, including MMO site officers, coastal teams, and data teams, IFCAs, Natural England site officers, fishers, and local and industry representatives.

## Stage 3: Developing MMO guidance for conducting impact evaluations

Findings from the case studies were used to reflect on lessons learned for future impact evaluations, as presented in Section 4.

The evaluation framework was refined and developed as a guidance for MMO to use in MPA management impact evaluation. Section 5 of the report introduces the guidance. The guidance takes the form of a PowerPoint and is included as an Annex to this report (Annex A).

# 3. Impact evaluation test case studies

The evaluation framework was tested using four case study MPAs. The below list comprises the final list of evaluation questions. Only two questions were changed as a result of the MPA case studies (discussed in Section 4). The questions are presented in a logical order as the answers to some evaluation questions rely on answers to earlier questions.

## 3.1 Impact evaluation framework

### 3.1.1 Evaluation questions (EQs) were tested using four case studies

**Effects of MMO management in the MPA**

- EQ 1.1: Have MMO management measures been complied with?
- EQ 1.2: How have activities occurring in (or near) the MPA changed because of the management?
- EQ 1.3: What is the impact of pressures on the MPA?
- EQ 1.4: To what extent have pressures that negatively affect the protected feature(s) been reduced?
- EQ 1.5: To what extent has the site conservation objective been achieved? And how did MMO management of the MPA contribute to this?
- EQ 1.6: What other environmental impacts in the MPA have occurred due to the MPA management?
- EQ 1.7: To what extent, and how, has MPA management affected other marine areas outside of the MPA?

**Socio-economic impacts of MMO management**

- EQ 2.1: What have the impacts been on stakeholders directly affected by MMO management?
- EQ 2.2: What have the impacts been on stakeholders indirectly affected by MMO management?
- EQ 2.3: What have the social and economic impacts been on the relevant local economy and community?

**Changes to the MPA management**

- EQ 3.1: Considering the responses to EQ1, does the MPA management require any change?
- EQ 3.2: Are the intended objectives and outcomes still appropriate? If not, what change do they require?
- EQ 3.3: Could intended outcomes and impacts be reached while at the same time reducing negative impacts (including costs) on other stakeholders?

### 3.1.2 Case studies selection based on variation in designated feature and management

The four MPAs selected for the learning case studies were chosen to provide a representative range of characteristics, with variation in designated feature and management:

- Studland Bay MCZ
- West of Walney MCZ
- Haisborough, Hammond and Winterton SAC
- Start Point to Plymouth Sound and Eddystone SAC

Further detail on these MPAs is presented in Table 3.

**Table 3: Overview of case study MPAs**

| Criteria | Studland Bay MCZ | West of Walney MCZ | Haisborough, Hammond and Winterton SAC | Start Point to Plymouth Sound and Eddystone SAC |
|---|---|---|---|---|
| Designated features | Intertidal coarse sediments; Subtidal sand; Subtidal seagrass beds; Spiny (long-snouted) seahorse *Hippocampus guttulatus* | Subtidal sand; subtidal mud; seapen and burrowing megafauna | Sandbanks slightly covered by sea water all the time; Reefs; (overlaps with the Southern North Sea SAC for harbour porpoise) | Reefs |
| Condition assessment | Not assessed | Not assessed | 100% Unfavourable (2018/2019) | 100% Favourable |
| Year management introduced | 2021, expanded in 2022 | MCZ 2016; byelaw 2018, implemented 2019 | 2013, updated in 2023 | SAC 2011; byelaw 2013; |
| Management | Voluntary No Anchor Zone | Bottom-towed gear banned throughout site within 12nm | Bottom-towed gear banned in specified areas (*Sabellaria* reefs) | Bottom-towed gear banned in specified areas (bedrock reefs) |

Lessons learned and recommendations from the case studies were used to refine the evaluation framework.

### 3.1.3 Confidence ratings used to indicate strength of evidence for each EQ

The strength of evidence varies for each evaluation question depending on the extent and result of data triangulation, and the robustness of the data sources used, as shown in Table 4. A data source is considered robust if the source is objective and authoritative (e.g., MMO data, monitoring data), moderately robust if it is indicative but needs to be supported by further assessment (e.g., Marine Life Information Network, MarLIN: Home - MarLIN - The Marine Life Information Network), and weak if it is only indicative (e.g., anecdotal evidence). Sources are triangulated and the confidence rating is informed by the extent to which sources confirm or contradict each other.

The strength of evidence confidence opinion for each evaluation question is indicated alongside each finding in the case study impact summary tables.

**Table 4: Confidence matrix**

| | 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 |

The following sections walk through each of the case studies in turn, providing site context, sources used, and a table presenting trial impact evaluation results.

## 3.2 Studland Bay MCZ

### 3.2.1 Site context and background

Studland Bay Marine Conservation Zone (MCZ) is an inshore site spanning approximately 4km$^2$ on the south coast of Dorset (MMO, 2019). It is the only sheltered anchorage between the Needles and Weymouth. A sandy beach fringes the bay, and its physiographic setting makes it very popular with recreational users. The MCZ was designated in May 2019 (MMO, 2019). MMO introduced a voluntary no anchor zone (VNAZ) in two phases, with the first phase in 2021 and the second phase in 2022 (MMO, 2024a).

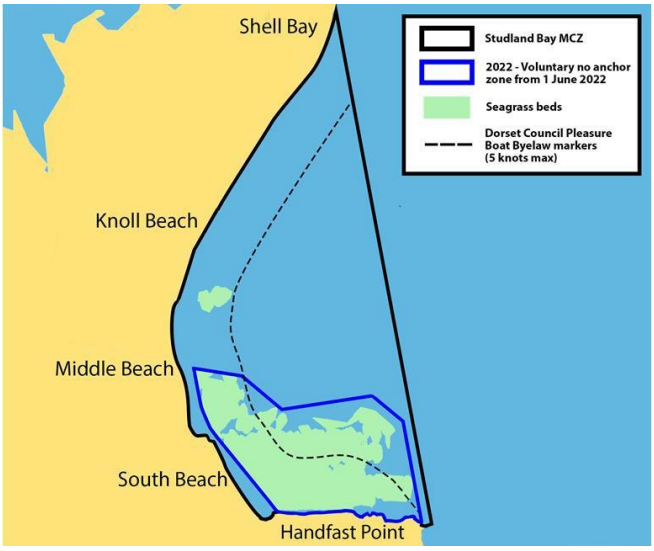
Studland Bay MCZ is designated for:

- intertidal coarse sediments,
- subtidal sand,
- seagrass meadows,
- seahorses.

Subtidal sand is the most common subtidal sediment habitat type in Studland Bay MCZ and supports the seagrass beds (MMO, 2021). The site is the only known breeding place of the long-snouted seahorse in the UK (Defra, 2019).

MMO introduced a VNAZ in 2021 and expanded it in 2022 to limit damage from anchoring into seagrass beds and to promote recovery of seagrass habitats and species in line with the MPA conservation objectives (MMO, 2024a). Anchoring in the VNAZ in emergency situations is allowed at all times (Dorset Coast Forum, 2025a). The map in Figure 1 shows the location of the VNAZ in relation to the seagrass beds (Dorset Coast Forum, 2025b).

**Figure 1: Studland Bay Voluntary No Anchor Zone**




The Studland Bay Marine Partnership (SBMP) is a local partnership made up of stakeholders including conservation and boating organisations, academics, and community groups (Dorset Coast Forum, 2025a). The partnership aims to find ways

for recreational boaters and the public to continue to enjoy the bay while adhering to the VNAZ, enabling marine conservation objectives to be met (Dorset Coast Forum, 2023). The partnership installed eco-moorings in the bay as an alternative to anchoring in the seagrass within the VNAZ.

Advanced eco-Mooring systems (AeMS) protect the seagrass through the use of a helical screw anchor that is installed into the seabed with an elastic rod attached to a mooring buoy that stretches and contracts with the tides so as not to drag against the seagrass as a traditional mooring would (Dorset Coast Forum, 2023). The partnership has installed 87 eco-moorings. This was financed through grant funding and donations (Dorset Coast Forum, 2023). There is a minimal fee for boaters to use the eco-moorings (Dorset Coast Forum, 2023).

### 3.2.2 Sources used for the assessment

Table 5 details the key literature, data and interview sources used for the impact evaluation of Studland Bay MCZ.

**Table 5: Studland Bay MCZ sources**

| Data reviewed | Key sources |
|---|---|
| Key literature | MMO Marine Non-licensable Activity Assessment (MMO, 2021) MMO Studland Bay VNAZ 2022 Review (MMO, 2023c)<br>MMO Studland Bay VNAZ 2023 Review (MMO, 2024i)<br>Impact Assessment materials in support of the Regional Marine Conservation Zone Projects' Recommendations (Finding Sanctuary et al., 2012)<br>Dorset Coast Forum website (Dorset Coast Forum, 2025b)<br>Natural England Subtidal seagrass monitoring survey 2021 (Doggett and Northen, 2023) |
| Data | MMO infringements data (MMO, 2024a)<br>MMO manual boat count of boats anchoring in Studland Bay, summer 2024 (MMO, 2024d)<br>NE Designated Sites View (Advice on Operations, Condition assessment, general site information) (Natural England, 2024) Defra Magic Map (Defra, 2024) |
| Interviews (11 interviewees in total) | MMO site officers<br>MMO coastal officers Natural England<br>Dorset Coast Forum and National Trust<br>Recreational boaters (n = 2) |

### 3.2.3 Impact evaluation trial case study results

Table 6 presents a summary of impact evaluation trial case study results, with further details then discussed after.

**Table 6: Impact evaluation summary for Studland Bay MCZ case study**

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 1.1: Have MMO management measures been complied with? | **Good to moderate compliance**<br>There is good compliance with the VNAZ, especially in non-busy periods, but non-compliance can peak in afternoon periods on weekends and in the summer. | **High confidence**<br><br>Robust sources (including MMO boat count data and evidence from multiple interviews) point towards the same conclusion.<br><br>(MMO, 2024c); (MMO, 2024a); Interviews |
| EQ 1.2: How have activities occurring in (or near) the MPA changed because of the management? | **Some changes**<br>Changes in how and where boaters anchor. No observed change in number of users of the MPA. | **High confidence**<br><br>Consensus achieved among interviewees from different stakeholder groups.<br><br>Interview evidence from the MMO, Dorset Coast Forum, Natural England, and boaters |
| EQ 1.3: What is the impact of pressures on the MPA? | **No impact (ICF assessment of the evidence presented)**<br><br>No external pressures impacting the site were identified through data review or interviews. | **High confidence**<br><br>Based on robust sources with same conclusion.<br><br>Interviews with key site stakeholders including Natural England, Dorset Coast Forum, Environment Agency and The Crown Estate data |
| EQ 1.4: To what extent have pressures that negatively affect the protected feature(s) been reduced? | **Partial**<br><br>VNAZ compliance reduces key pressure in the densest seabed areas, but motorboats continue mooring.<br>Swinging moorings still occur within other parts of the site. | **High confidence**<br><br>Assessment based on site monitoring reported in interviews. Sources in agreement.<br><br>Interviews with Natural England; monitoring by (Doggett and Northen, 2023); (MMO, 2021) |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 1.5: To what extent has the site conservation objective been achieved? And how did MMO management of the MPA contribute to this? | **Partial**<br><br>Natural England interview suggests conservation status will be assessed as 'unfavourable recovering', which represents an improvement, from previous assessment. This is wholly attributed to the VNAZ. | **High confidence**<br><br>No updated condition assessment is available for this site on the Natural England Designated Sites View.<br>Conclusion based on authoritative sources including Natural England's Supplementary Advice on Conservation Objectives.<br><br>(Natural England, 2024); Interview evidence from Natural England and Dorset Coast Forum |
| EQ 1.6: What other environmental impacts in the MPA have occurred due to the MPA management? | **None**<br><br>Conceptually, pressure removal should not lead to adverse effects on natural features. Management may lead to displacement within site altering spatial pressure distribution but in this instance to less sensitive areas. | **Medium confidence**<br><br>Environmental impacts from MPA management were not identified by monitoring or in interviews. Confidence not high as the assessment is not based on monitoring for adverse impacts.<br><br>Interview evidence from MMO, Dorset Coast Forum, Natural England, and boaters |
| EQ 1.7: To what extent and how has MPA management affected other marine areas outside of the MPA? | **Limited extent**<br><br>A limited number of boaters are said to be using other marine areas outside of the MPA. Due to small numbers, any environmental impacts are considered low or negligible. | **Medium confidence**<br><br>No quantitative data for displacement. Qualitative evidence from interviews.<br><br>Interview evidence from MMO, Dorset Coast Forum, Natural England, and boaters |
| EQ 2.1: What have the impacts been on stakeholders directly affected by MMO management? | **Mixed impacts**<br><br>There are both positive and negative impacts for boaters, including a safer alternative to anchoring provided | **High confidence**<br><br>The same points were raised in interviews with a number of stakeholders.<br><br>Interview evidence from MMO, Dorset Coast Forum, Natural England, and boaters |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| | by the eco-moorings installed by the SBMP, but having to pay to use the mooring and some larger vessels may find the eco-moorings unsuitable due to weight restrictions. | |
| EQ 2.2: What have the impacts been on stakeholders indirectly affected by MMO management? | **Mixed impacts**<br><br>Possible negative impacts from overcrowding, and positive impacts for water users who dive within the MPA. | **Medium confidence**<br><br>Anecdotal evidence only, and limited evidence to show there is overcrowding significant enough to have an effect.<br><br>Interview evidence from the Dorset Coast Forum, Natural England, and boaters |
| EQ 2.3: What have the social and economic impacts been on the relevant local economy and community? | **Some social impacts and limited known economic impacts**<br><br>Social impacts include initial conflict due to resistance to the VNAZ, but this has improved. There have been limited known economic impacts on the local community;<br>the bay remains busy with visitors. | **Medium confidence**<br><br>Robust evidence and consensus achieved among interviewees, but unable to speak to local sectors or businesses to understand whether they felt there were any economic effects of the management and no quantitative data was made available for this assessment.<br><br>Interview evidence from MMO, Dorset<br>Coast Forum, Natural England, and boaters |
| EQ 3.1: Considering the responses to EQ1, does the MPA management require any change? | **Yes**<br><br>Ongoing management is required to support and potentially expand eco-moorings. The remaining<br>private moorings should be replaced with eco- moorings in other parts of the site. | **Medium confidence**<br><br>Stakeholder engagement and results from MMO stakeholder engagement reveal the need for alternative moorings within the VNAZ.<br><br>(MMO, 2023c); Interview evidence from Dorset Coast Forum, Natural England, and local boaters |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 3.2: Are the intended objectives and outcomes still appropriate? If not, what change do they require? | **Yes**<br><br>The site features remain present in the site, sensitive to managed risks, and responsive to that management. | **Medium confidence**<br><br>Consensus based on interviews and reports that seagrass and seahorses are present and require protection from anchoring. Consensus among interviewees that greater support is needed in order to raise the revenue required for the installation and maintenance of eco-moorings.<br><br>Interview evidence from National England, Dorset Coast Forum, the National Trust, and boaters |
| EQ 3.3: Could intended outcomes and impacts be reached while at the same time reducing negative impacts (incl. costs) on other stakeholders? | **No**<br><br>The existing management approach is considered appropriate, but non-financial support to SBMP may be beneficial in reducing the risk of user non-compliance with the VNAZ. | **Medium confidence**<br><br>Interviews with several stakeholders with consensus on the importance of the eco-moorings.<br><br>Interview evidence from Dorset Coast Forum, National Trust, boaters |

**EQ 1.1: There is good to moderate compliance with the VNAZ, with good compliance reported in non-busy periods, due to provision of eco-moorings by the Studland Bay Marine Partnership.** A manual boat count by MMO found that over 20 days in summer 2024, there was an average of 88.2% compliance (MMO, 2024d). The lowest recorded compliance in the period was 50% (MMO, 2024d). Of the 15,423 boats counted in the images, 64% were using the eco-moorings, 18% were anchoring outside of the VNAZ, 10% were non-compliant, and 8% were undetermined (the counters were not sure, or the boats were moving) (MMO, 2024d). The eco-moorings are in 'the right place for where people want to be anchoring', close to the beach and away from the prevailing wind (Boater interview). While usually available, the eco-moorings can be fully occupied on the weekend if the weather is good. MMO data found that non-compliance peaked during afternoon periods, especially on the weekends and in the summer (MMO, 2024d). The main reason for anchoring within the VNAZ by non-compliant boaters was a 'lack of alternative anchorage or mooring' (MMO, 2024i).

There is an eco-mooring fee associated with using the moorings. Payment compliance is at 26.4% (MMO, 2024i). The SBMP engage in community awareness and go out onto the water to encourage boaters to pay the fee and understand the importance of adhering to the VNAZ.

**EQ 1.2: The VNAZ has resulted in changes in how and where boaters anchor, with many of them continuing to anchor inside the bay using eco-moorings and widespread anchoring in the bay outside of the VNAZ. There is no change in the number of users of the MPA.** Boaters are still visiting Studland Bay MCZ and many of them are using the provided eco-moorings. Data analysis using data from an MMO manual boat count in summer 2024 (MMO, 2024d) revealed that out of compliant boats (i.e., excluding undetermined boats and non-compliant boats), 78% were using the eco-moorings, and the remaining 22% were anchoring outside of the VNAZ. When asked in interviews, it was discovered that some boats are anchoring outside the VNAZ due to weight limits on moorings.

The MCZ is large in comparison to the VNAZ area (see Figure 1) so it is not significantly busier outside of the VNAZ if boaters choose to anchor outside. There has been no observed decrease in visitor numbers and no change observed in the number of people who are coming ashore from boats. Studland Bay MCZ remains busy and a popular destination for recreational boaters, those enjoying water sports, and other visitors to the bay. Visitors are using the bay the same way they were before the management was implemented, as evidenced through interviews with MMO, Dorset Coast Forum, Natural England, and boaters. There is some conflict for space within the VNAZ with eco-moorings sometimes being full in busy periods, but it does not appear to have reduced visitor numbers to the bay.

Some interviewees offered anecdotal evidence that the VNAZ and eco-mooring fee may have meant that, especially on busy days, a small but limited number of boaters may choose to visit Swanage or Poole Harbour instead of Studland Bay. Any impacts from this are expected to be negligible due to the small number of boaters.

**EQ 1.3: No significant external pressures were identified for the site.** No interview or secondary data evidence identified external pressures that could impact the site, and no evidence was found for activities known to result in pressures to

which the designated site features are sensitive. Potential external pressures that could affect this site are disruptions to sediment supply and changes in water quality that create turbidity and reduce light for seagrass. No risks to the designated features were identified from reports or interviews. The Environment Agency classifies bathing water quality within the site as excellent (for years 2001 to2024), indicating that contaminant inputs to the site from external sources are not an issue for ecological status.

**EQ 1.4: Anchoring and mooring pressures were identified as the key site risks to the designated features. Numerous recreational vessels were observed to anchor in the seagrass beds during surveys.** In 2018, 13 public and private swing moorings recorded as being used in the seagrass beds during the same survey. Some of the moorings were observed to be over patches of bare sediment, and were assumed to have scoured away the surrounding seagrass bed (Environment Agency, 2018). In 2021, the year of the VNAZ implementation, anchor and mooring damage to the seagrass was apparent throughout the areas monitored, leaving bare sand patches, exposed rhizomes and detached plants (Doggett and Northen, 2023). The MMO mNLA report (MMO, 2021) identified the pressures associated with anchoring and mooring on the designated features (Table 7). Key pressures were change in seabed type (from mooring blocks) and abrasion and penetration of the sediment associated with anchoring and mooring. Other mNLA were not considered to be affecting site integrity (MMO, 2021).

Activity levels and associated pressures have been reduced but not eliminated by the VNAZ and the provision of the eco-moorings (see EQ 1.1).

**Table 7: Pressures associated with anchoring and mooring activity which were assessed (MMO, 2021) as being capable of affecting the designated features**

| | Intertidal coarse sediment | Subtidal sand | Seagrass beds | Long snouted seahorse |
|---|---|---|---|---|
| Physical change to another seabed type | Yes | Yes | Yes | Not assessed or screened out earlier in the assessment |
| Abrasion/disturbance of the substrate | Not assessed or screened out earlier in the assessment | Yes | Yes | Yes |
| Penetration and/or disturbance of the substratum | Not assessed or screened out earlier in the assessment | Yes | Yes | Not assessed or screened out earlier in the assessment |

Some pressures remain, as at busy times demand for eco-moorings may exceed supply. Privately owned moorings are present in the bay of the typical block and chain style which can cause abrasion (from the swinging chain) and habitat change (from the block). Some of these moorings do not need a licence since they pre-date the current marine licensing system, however, any new mooring would require a licence (MMO interview). There is also widespread anchoring across the bay outside of the VNAZ in areas where seagrass is less dense.

**EQ 1.5: Condition of the seagrass designated feature is still unfavourable but improving, this is wholly attributed to the VNAZ.** No condition assessment is currently available for this site (NE designated sites view).

Natural England's supplementary advice on conservation objectives (available via Natural England's Designated Sites View), indicates the feature targets are:

- Intertidal coarse sediments: maintain for all feature attributes that could be affected by anchoring and mooring.
- Subtidal sand: maintain for all feature attributes that could be affected by anchoring and mooring.
- Seagrass beds: feature attribute targets a mix of maintain and recover, see Table 8 for attributes with a recover target.
- Long snouted seahorse (*Hippocampus guttulatus*) feature attribute targets a mix of maintain and recover, see Table 9 for attributes with a recover target.

Seagrass beds and long snouted seahorse are the designated features with recover targets for some feature attributes and therefore the condition assessment will consider whether anchoring and mooring continue to affect the attributes outlined in Table 8 and Table 9.

**Table 8: Natural England Supplementary Advice on Conservation Objectives for Seagrass beds (Last updated 9th May 2023)**

| Attribute | Target | Anchoring may affect | Mooring (block and chain) may affect |
|---|---|---|---|
| Extent and distribution | **Recover** the total extent and spatial distribution of seagrass beds. | Yes | Yes |
| Structure: biomass | **Recover** the leaf / shoot density, length, percentage cover, and rhizome mat across the feature at natural levels (as far as possible), to ensure a healthy, resilient habitat. | Yes | Yes |
| Structure: rhizome structure and reproduction | **Recover** the extent and structure of the rhizome mats across the site, and conditions to allow for regeneration of seagrass beds. | Yes | Yes |
| Structure: species composition of component communities | **Recover** the species composition of component communities. | Yes | Yes |

Attributes with a Maintain status are not shown, as these are considered to be unimpacted by anthropogenic activities within the site. This table is aligned with (MMO, 2021) to show which attributes anchoring and mooring may impact.

**Table 9: Natural England Supplementary Advice on Conservation Objectives for Long snouted seahorse (*Hippocampus guttulatus*) (Last updated 9th May 2023)**

| Attribute | Target | Anchoring may affect | Mooring (block and chain) may affect |
|---|---|---|---|
| Population: population size | **Recover** the population size within the site. | Yes | Yes |
| Structure and function: biological connectivity | **Recover** connectivity of the habitat within sites and the wider environment to ensure larval dispersal and recruitment, and / or to allow movement of migratory species. | Yes | Yes |
| Supporting habitat: extent and distribution | **Recover** the extent and spatial distribution of the following supporting habitats: seagrass. | Yes | Yes |

Attributes with a Maintain status are not shown, as these are considered to be unimpacted by anthropogenic activities within the site. This table is aligned with (MMO, 2021).

**EQ 1.6: No evidence for other environmental impacts arising from MPA management.** Pressure removal is beneficial for sensitive features. Interviewees and monitoring have not flagged any observed impacts.

**EQ 1.7: Management impacts on other marine areas outside of the MPA are considered to be limited.** Interviewees related that a small number of boaters are said to be using other marine areas outside of the MPA (the number electing to use other sites is not quantified). Interviewees indicated that numbers were thought to be small, any environmental impacts are therefore considered likely to be low or negligible.

**EQ 2.1: There are positive and negative impacts for stakeholders directly affected by MMO management.** The stakeholders directly affected by the management are boat users who anchor at Studland Bay MCZ. There are positive and negative impacts for boaters. The eco-moorings put in place by the SBMP as a response to the MMO management can offer positive impacts from a safety perspective as they provide a secure mooring option and a safer alternative to anchoring. On the other hand, some boaters have expressed dissatisfaction at having to pay a mooring fee, especially if they only intend to moor for a short period, and some boaters with larger vessels may find the eco-moorings unsuitable due to weight restrictions and must anchor outside of the VNAZ.

**EQ 2.2: There may be some negative impacts for stakeholders indirectly**

**affected by MMO management if there is overcrowding outside the VNAZ, but evidence of this occurring is limited. There are positive impacts for water users who dive within the MPA.** Water skiers may experience negative impacts from the management due to increased boat activity outside of the VNAZ, however it is unclear how large this impact is due to a lack of data on the increased number of boats anchoring outside the VNAZ. Additionally, other interviewees explained that the MPA area is big, so boats anchoring outside the VNAZ does not make the bay significantly busier. Overcrowding and business can cause frictions, but Natural England said that no specific issues had been reported.

Other stakeholders indirectly affected by MMO management are water users (such as snorkelers and divers) who dive within the MPA. There are positive impacts for water users from management measures leading to healthier seagrass habitats.

**EQ 2.3: There are some social impacts and limited economic impacts on the local community as a result of the management.** There was initially some resistance to the VNAZ from the community, but the reaction has become more positive as more publicity and outreach work has been carried out by the SBMP to spread information about the VNAZ's purpose. Initial vocal opposition from a boat user group has reduced and the community has in recent times generally been supportive of the management. The level of conflict between different user groups has decreased as compliance has improved and the use of marker buoys around the VNAZ and community engagement with stakeholders has helped manage conflicts.

There is no specific data on the impact on the local economy, but Studland Bay MCZ remains busy with visitors and no significant changes in the number of people accessing the shore from the water have been reported by interviewees, with no known knock-on effects for local businesses. The introduction of eco-moorings has come with costs for the SBMP but also may have created local employment opportunities for mooring installation and maintenance.

**EQ 3.1: Ongoing management is required to support sufficient eco-moorings, communicate the presence of eco-moorings, and potentially expand the number of eco-moorings. In other parts of the site, existing private moorings should be replaced as licensing allows. Achieving this with stakeholder support will facilitate compliance.** There is reasonable compliance with MMO management, but continued compliance will only be possible if there are sufficient eco-moorings within the VNAZ. Good compliance is attributable to the option to moor within the VNAZ using existing eco-moorings supplied by the SBMP. Communication with, and support for, the SBMP will be important. If there are insufficient eco-moorings within the VNAZ (e.g., due to a lack of SBMP funds to install and maintain them), MMO may have to change its management approach as compliance could fall significantly. The 2022 review of the VNAZ says 'the need for more moorings' was raised during the survey and stakeholder engagement and 'the importance of having an alternative to anchoring through available moorings has been highlighted as key to support the success of the VNAZ' (MMO, 2023c). In terms of other changes to MMO management, ongoing phasing out of old moorings would support site conservation objectives.

**EQ 3.2: Outcomes and impacts are still appropriate from an environmental perspective.** The site features remain present in the site, sensitive to managed

risks, and responsive to that management.

**EQ 3.3: There are no other ways identified to achieve intended outcomes and impacts while at the same time reducing negative impacts (including costs) on other stakeholders. Whether non-financial support for the SBMP in their work to install and maintain eco-moorings is needed, as they are essential to the success of the VNAZ, should be kept under review.** There is an ongoing cost of installation and maintenance of eco-moorings, which will require continued support and funding.

Evidence from interviewees with the SBMP indicate that there are currently 87 eco-moorings for which £80,000 needs to be raised annually for inflationary installation and maintenance costs. This covers the basic cost of removing the eco-moorings every winter, storing them, conducting safety inspections and maintenance, reinstalling them, and a depreciation budget (it is assumed the eco-moorings have a life of 20 years). This also includes the cost of insuring the moorings at approximately £60,000 a year. In addition, there are two other areas where the partnership have identified a revenue need: ongoing engagement costs and funding for site monitoring.

The SBMP must raise money to fund these costs and does not have a secure revenue stream. There is currently an eco-mooring fee but due to low compliance with the fee, only £11,000 was collected through this channel by the partnership last year: payment compliance is low, at an average of 26.4% (MMO, 2024i). The partnership engage with local boaters and go out onto the water to encourage payment compliance. Significant other revenue needs to be raised in order to meet the costs.A complete picture of costs should be available in the 2024 Business Case produced by the SBMP[1].

In the Studland Bay MCZ VNAZ Review Report 2022, MMO detailed why they will not fund installation of the moorings: ‘The government recently published the Environmental principles policy statement, which includes the polluter pays principle. This principle means that where environmental damage is taking (or may take place) associated costs should be borne by those causing the damage rather than the wider community (for example through use of public money). As such, it is not appropriate for MMO to fund the installation of moorings to provide an alternative to anchoring in the VNAZ’ (MMO, 2023c).

The availability of funding for the eco-moorings remains a risk. While MMO will not provide direct funding, other routes to support SBMP in securing revenue (including compliance with eco-mooring user charges) may be investigated.

[1] This publication was not available to ICF at the time of writing this report, hence all costs in this section are evidenced through interviews with members of the SBMP steering group and are reliant on reported accuracy from interviews.

# 3.3 West of Walney MCZ

## 3.3.1 Site context and background

West of Walney Marine Conservation Zone (MCZ) illustrated in Figures 2 and 3 is a joint inshore and offshore MPA site located 8km west of Walney Island, Cumbria, within the Irish Sea Charting Progress Area. The MCZ was designated in 2016 to protect:

- subtidal mud which includes, sea-pen and burrowing megafauna communities
- subtidal sand

The habitat feature of conservation importance 'Sea-Pen and Burrowing Megafauna Communities' and the subtidal mud is the most extensive protected feature and is part of the wider Irish Sea mud belt. Subtidal sand is the second habitat for which the site is designated for but occurs over a far smaller area. The subtidal mud is an important habitat for a range of animals including worms, molluscs, sea urchins, crustaceans, including the commercially important Norway lobster and sea-pens (Natural England, 2024).The favourable condition targets for the site features were set in 2014 by Natural England as 'recover' due to their high sensitivity to pressures from bottom-towed gear.

**Figure 2: West of Walney location overview (MMO, 2024h)**

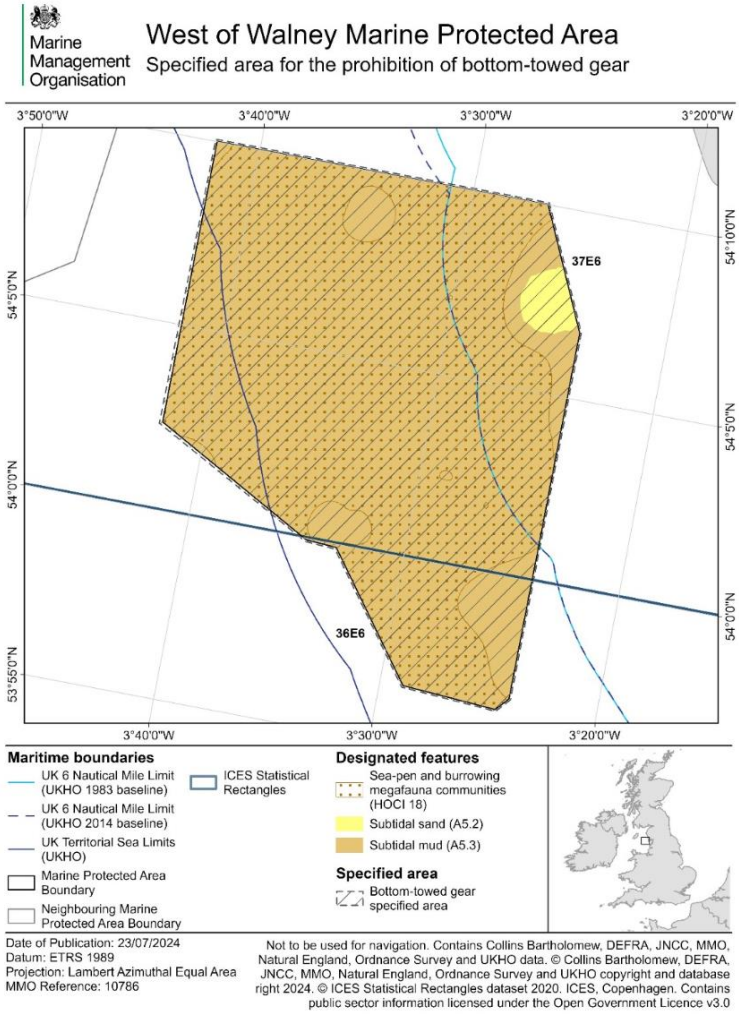
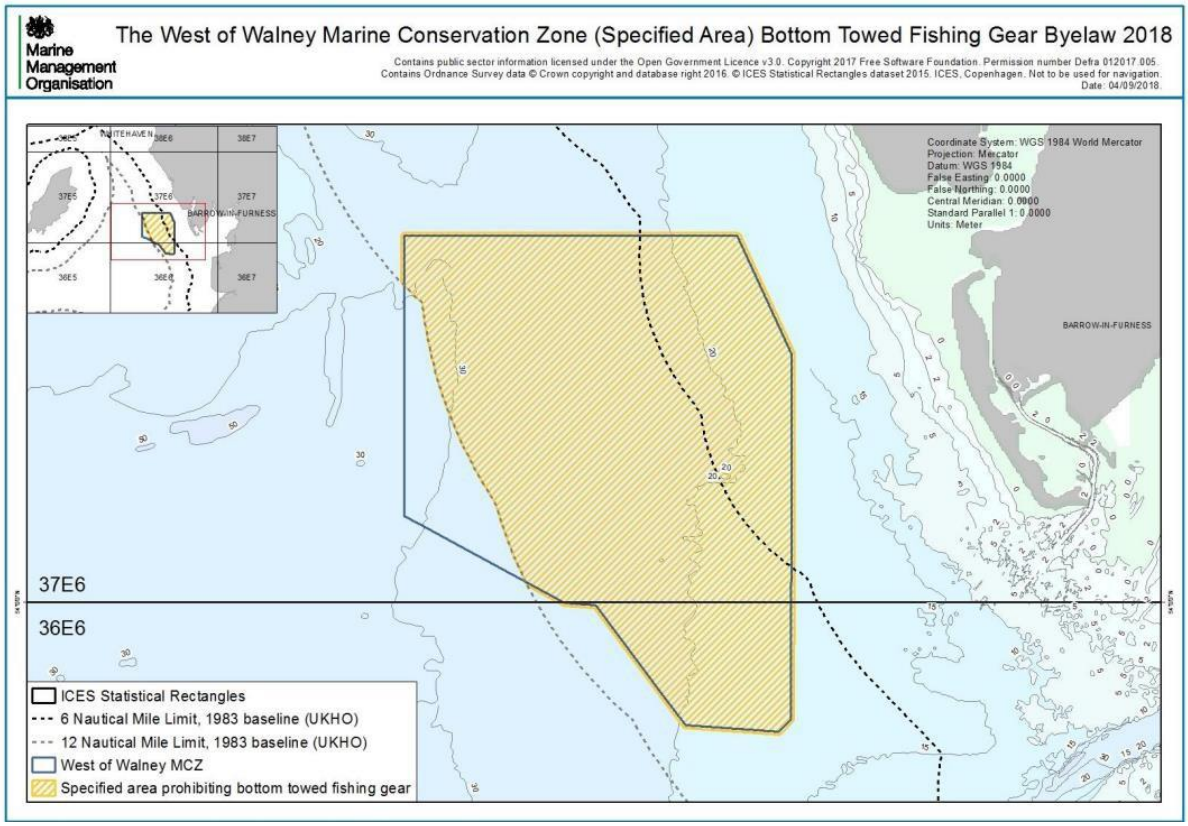


**Figure 3: West of Walney MCZ area of management (MMO, 2018a)**




The MMO West of Walney Fisheries Assessment (2018b) analysed the impact of anchored nets and lines, bottom-towed gears and traps on the designated features sea-pen and burrowing megafauna communities, subtidal sand and subtidal mud in the West of Walney MCZ, to determine whether a significant risk of hindering the achievement of the conservation objectives of the site could be excluded. The assessment sets out the evidence considered and analysed the quality of that evidence. The assessment found that the use of anchored nets and lines and traps would not result in a significant risk of hindering the achievement of the conservation objectives of the MPA. Management measures were therefore not implemented for anchored nets and lines and traps. However, the assessments identified a significant risk of ongoing use of bottom-towed gears hindering the achievement of the conservation objectives of the MPA. Therefore, management measures were proposed. MMO's West of Walney Marine Conservation Zone (Specified Area) Bottom Towed Fishing Gear Byelaw 2018 came into force on 4th July 2019.

### 3.3.2 Sources used for the assessment

Table 10 details the key literature, data and interview sources used for the impact evaluation of West of Walney MCZ.

**Table 10: West of Walney MCZ sources**

| Data reviewed | Key sources |
|---|---|
| Key literature | West of Walney Marine Conservation Zone (MCZ) Monitoring Report (Natural England, 2018a)<br>West of Walney MCZ Survey Report (Natural England, 2018b)<br>West of Walney Marine Conservation Zone MMO Fisheries Assessment (MMO, 2018b)<br>MMO Stage 3 Site Assessment: West of Walney MPA (Draft version) (MMO, 2024h)<br>MarLIN Habitat Sensitivity Review (Hill et al., 2023) |
| Data | MMO infringements data (MMO, 2024a)<br>NE Designated Sites View (Advice on Operations, Condition assessment, general site information) (Natural England, 2024)<br>Defra Magic Map (Defra, 2024) |
| Interviews (9 interviewees in total) | MMO Site Officers<br>MMO Coastal Officers<br>Fishing representatives: co-operatives; producer organisations; and owners/skippers<br>Interviews with key informants from MMO (n=4), and fishers/fishing organisation representatives (n=5) |

### 3.3.3 Impact evaluation trial case study results

Table 11 presents a summary of impact evaluation trial case study results, with further details then discussed after.

**Table 11: Impact evaluation summary for West of Walney MCZ case study**

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 1.1: Have MMO management measures been complied with? | **Good**<br>Good compliance, with five instances of non-compliance since July 2019. | **High confidence**<br>Robust sources point towards the same conclusion.<br>(MMO, 2024a); Interview evidence from MMO and fishing industry |
| EQ 1.2: How have activities occurring in (or near) the MPA changed because of the management? | **Decrease in prohibited fishing activity; possible increase in permitted gear activity**<br>Bottom trawling has reduced significantly within the site. Some possible increase in permitted fishing activity within the site. Uncertain changes in extent of activity outside the site. | **Medium confidence**<br>Multiple sources indicate a decrease in onsite activity. No definite consensus achieved and no clear data to support conclusions on other changes.<br><br>(MMO, 2018b); (MMO, 2024h); Interview evidence from MMO and fishing industry |
| EQ 1.3: What is the impact of pressures on the MPA? | **No impact**<br><br>Although activities occur externally to the site, there are no identified pathways by which these impact the site. | **Medium confidence**<br><br>Assessment based on generic assessments and understanding of pressure links to activity rather than direct monitoring.<br>(Natural England, 2024); (Defra, 2024); Interview evidence from MMO |
| EQ 1.4: To what extent have pressures that negatively affect the protected feature(s) been reduced? | **Mostly**<br><br>Bottom-towed gear pressures have been removed across the majority of the site (area within MMO jurisdiction). Other pressures from cables remain but are not quantified. | **High confidence**<br><br>Bottom-towed gear excluded, with good compliance. VMS data indicates pressure reduction.<br><br>(MMO, 2024h); (Natural England, 2024) |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 1.5: To what extent has the site conservation objective been achieved? And how did MMO management of the MPA contribute to this? | **Partial**<br><br>No site condition assessment by Natural England since MMO byelaw was introduced. Bottom-towed gear removal will support progress in recovering site features within the byelaw area. Areas outside of the byelaw will not be recovering and remain a risk to achieve favourable status in the site overall. | **Medium confidence**<br>Assessment based on Natural England (2014) and the vulnerability approach to assessment (adopted by Natural England and MMO for condition assessments) based on exposure to pressures and sensitivity.<br><br>(Hill et al., 2023); (Natural England, 2024); (MMO, 2024h) |
| EQ 1.6: What other environmental impacts in the MPA have occurred due to the MPA management? | **None**<br><br>Conceptually, pressure removal should not lead to adverse effects on natural features. | **Medium confidence**<br><br>No environmental impacts associated with site management were identified by MMO interviewees. Population dynamics and ecological change are poorly understood for these communities.<br><br>(Hill et al., 2023); Interview evidence from MMO |
| EQ 1.7: To what extent and how has MPA management affected other marine areas outside of the MPA? | **Some**<br><br>Decrease of target species (Nephrops) outside of MCZ as spatial squeeze causing concentrated fishing in smaller areas. | **Medium confidence**<br><br>Decrease of target species (Nephrops) outside of MCZ as spatial squeeze causing concentrated fishing in smaller areas.<br>Consensus from the fishing industry but not supported by any data.<br><br>Interview evidence from fishing industry |
| EQ 2.1: What have the impacts been on stakeholders directly affected by MMO management? | **Negative impacts**<br><br>Significant drop in demersal trawl landings from within the site. Examples of displaced activity not recouping landings, although multiple factors beyond the MPA may have | **Medium confidence**<br><br>No definite consensus achieved, though largely points towards negative impacts.<br><br>(MMO, 2024h); Interview evidence from MMO and fishing industry |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| | influenced this. | |
| EQ 2.2: What have the impacts been on stakeholders indirectly affected by MMO management? | **Possible positive impacts**<br><br>Fishing with permitted gears may have increased in the site. | **Low confidence**<br><br>Contradictory evidence from interviews and secondary data.<br><br>(MMO, 2024h); Interview evidence from fishing industry |
| EQ 2.3: What have the social and economic impacts been on the relevant local economy and community? | **Possible negative impacts**<br><br>Overall reduction in fishing landings and employment, with possible knock-on effects on the economy and society.<br>However, the change is attributed to multiple factors, not only the MPA. | **Low confidence**<br><br>Consensus from the fishing industry but not supported by any data.<br><br>Interview evidence from fishing industry |
| EQ 3.1: Considering the responses to EQ1, does the MPA management require any change? | **Yes**<br><br>Management required based on sensitivity of site designated features to bottom-towed gear. Management likely to be supporting recovery but may require extension to whole site to remove remaining bottom-towed gear activity. | **Medium confidence**<br><br>Assessment based on interviews and conservation objectives, presence of sensitive ecological features and sensitivity to bottom trawling. High confidence would require site monitoring and re-evaluation of condition assessment.<br><br>(MMO, 2024h); (Natural England, 2024); (Hill et al., 2023); Interview evidence |
| EQ 3.2: Are the intended objectives and outcomes still appropriate? If not, what change do they require? | **Yes**<br><br>Site designated features are still present and sensitive to bottom trawling. | **Medium confidence**<br>Assessment based on conservation objectives, presence of sensitive ecological features and sensitivity to bottom trawling. High confidence would require site monitoring and re-evaluation of condition assessment. |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| | | (Natural England, 2024); (Hill et al., 2023); Interview evidence from MMO |
| EQ 3.3: Could intended outcomes and impacts be reached while at the same time reducing negative impacts (incl. costs) on other stakeholders? | **No** | **Medium confidence**<br><br>Byelaw necessity supported by generic assessments of habitat sensitivity (from MarLIN) and literature review, detailed in the site assessment.<br><br>(MMO, 2024h); Impacts on fishing community based on interviews |

**EQ 1.1: There is generally good compliance with the byelaw.**
For the most part, the management measures have been complied with. There have been up to five infringements detected, all occurring in 2020, the year after the byelaw came into force, four of which resulted in enforcement action (MMO, 2024a):

- 13/4/20: Incursion resulting in Advisory Letter.
- 27/4/20 Incursion resulting in Advisory Letter.
- 13/5/20: Incursion resulting in Advisory Letter.
- 19/9/20: Incursion resulting in Verbal Rebrief.

**EQ 1.2: There has been a significant reduction in bottom trawling within the MPA.** Figure 4 shows that several years prior to the byelaw (2011 to 2015), fishing by over 12m vessels had reduced within the site. More recent analysis for the period 2016 to 2020 is available from the site assessment (MMO, 2024h), see Table 12 and Table 13. Estimated UK landings by demersal trawl over 12m vessels from within the MPA, were between 18 and 19 tonnes annually between 2017 and 2019, reducing to 2.35 tonnes in 2020, the year after the management was introduced. This indicates a significant reduction in fishing activity within the site after the introduction of the management. EU demersal trawl activity was significantly lower than UK activity. UK landings by over 12m vessels using traps increased significantly in 2019 when the byelaw was introduced.

UK under 12m vessel activity is primarily from demersal trawls and traps, both of which are estimated to have reduced over the period 2016 to 2020 (Table 14). The reduction around the point the byelaw was introduced is less pronounced than for the over 12m vessels. However, interview data indicated that fishing activity within the site since the introduction of the byelaw is limited.

Data for the period post 2020 was unavailable. No data was available to provide a meaningful indication of changes in fishing activity outside of the management area.

**Figure 4: VMS data for 2011 and 2015, indicating a reduction in fishing activity prior to the byelaw (MMO, 2018b)**

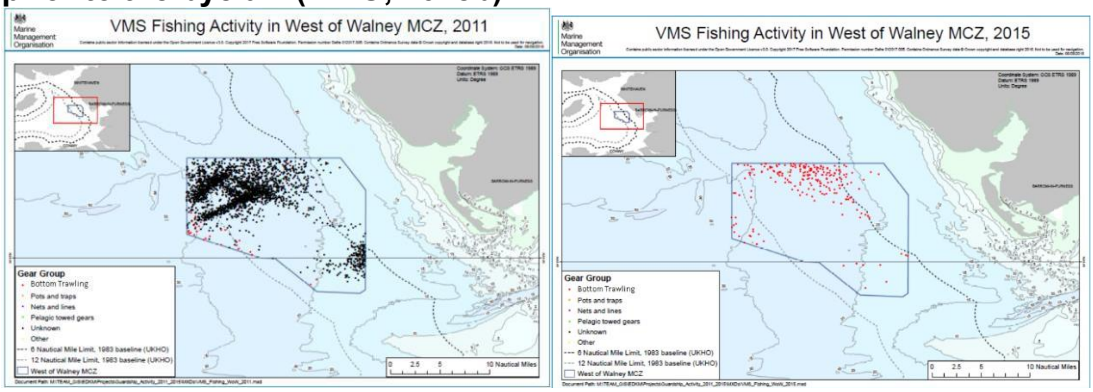



**Table 12: UK live weight landings tonnage (t) estimated by gear from vessels over 12m in length in the MMO section of West of Walney MPA (2016 to 2020) (MMO, 2024h)**

| Gear group | Gear code | 2016 | 2017 | 2018 | 2019 | 2020 | Total (2016 to 2020) | Average (2016 to 2020) |
|---|---|---|---|---|---|---|---|---|
| Demersal trawl | OTB | 2.61 | 18.12 | 17.92 | 17.23 | 1.39 | 57.28 | 11.46 |
| | OTT | 0.03 | 0.09 | 0.36 | 1.52 | 0 | 2.01 | 0.40 |
| | TBB | 0 | 0 | 0 | 0 | 0.96 | 0.96 | 0.19 |
| | TBN | 0.39 | 0.40 | 0 | 0 | 0 | 0.78 | 0.16 |
| **Demersal trawl total** | | **3.03** | **18.62** | **18.28** | **18.75** | **2.35** | **61.03** | **12.21** |
| Midwater trawl | OTM | 0.07 | 0 | 0 | 0 | 0 | 0.07 | 0.01 |
| **Midwater trawl total** | | **0.07** | **0** | **0** | **0** | **0** | **0.07** | **0.01** |
| Traps | FPO | 0 | 0 | 0.17 | 9.01 | 6.44 | 15.62 | 3.12 |
| **Traps total** | | **0** | **0** | **0.17** | **9.01** | **6.44** | **15.62** | **3.12** |
| **Grand total** | | **3.10** | **18.62** | **18.45** | **27.76** | **8.79** | **76.72** | **15.34** |

**Table 13: EU27 live weight landings tonnage (t) estimated by gear from vessels over 12m in length in the MMO section of West of Walney MPA (2016 to 2020) (MMO, 2024h)**

| Gear group | Gear code | 2016 | 2017 | 2018 | 2019 | 2020 | Total (2016 to 2020) | Average (2016 to 2020) |
|---|---|---|---|---|---|---|---|---|
| Demersal trawl | OTB | 0 | 0 | 0.07 | 0 | 0.22 | 0.28 | 0.06 |
| | TBB | 3.19 | 0 | 0 | 3.43 | 1.88 | 8.49 | 1.70 |
| **Demersal trawl total** | | **3.19** | **0** | **0.07** | **3.43** | **2.09** | **8.77** | **1.75** |
| **Grand total** | | **3.19** | **0** | **0.07** | **3.43** | **2.09** | **8.77** | **1.75** |

**Table 14: UK live weight landings tonnage (t) estimated by gear from vessels under 12m in length in the MMO section of West of Walney MPA (2016 to 2020) (MMO, 2024h)**

| Gear group | Gear code | 2016 | 2017 | 2018 | 2019 | 2020 | Total (2016 to 2020) | Average (2016 to 2020) |
|---|---|---|---|---|---|---|---|---|
| Anchored net/line | GN | 0.62 | 1.22 | 0.59 | 0.26 | 0.13 | 2.82 | 0.56 |
| | GNS | 0.01 | 0.04 | 0 | 0.01 | 0.05 | 0.12 | 0.02 |
| | GTR | 0.03 | 0.20 | 0.03 | 0.08 | 0 | 0.35 | 0.07 |
| | LL | 0 | 0.03 | 0.02 | 0.01 | 0 | 0.06 | 0.01 |
| **Anchored net/line total** | | **0.67** | **1.48** | **0.65** | **0.35** | **0.19** | **3.35** | **0.67** |
| Demersal trawl | OT | 1.45 | 1.80 | 0 | 0 | 0 | 3.26 | 0.65 |
| | OTB | 0.05 | 1.96 | 4.80 | 2.68 | 0.92 | 10.42 | 2.08 |
| | OTT | 0.42 | 0 | 0 | 0.01 | 0 | 0.43 | 0.09 |
| | TBB | 0.15 | 0.54 | 0.31 | 0.01 | 0.01 | 1.02 | 0.20 |
| | TBN | 9.47 | 4.62 | 5.92 | 4.93 | 4.28 | 29.23 | 5.85 |
| **Demersal trawl total** | | **11.55** | **8.92** | **11.04** | **7.63** | **5.21** | **44.35** | **8.87** |
| Dredge | DRB | 0.07 | 0.09 | 0 | 0.07 | 0 | 0.23 | 0.05 |
| **Dredge total** | | **0.07** | **0.09** | **0** | **0.07** | **0** | **0.23** | **0.05** |
| Midwater hook/lines | LHP | 0 | 0.01 | 0.01 | 0.01 | 0 | 0.03 | 0.01 |
| | LX | 0 | 0 | 0.03 | 0.02 | 0.34 | 0.39 | 0.08 |
| **Midwater hook/lines total** | | **0** | **0.01** | **0.04** | **0.02** | **0.34** | **0.42** | **0.08** |
| Traps | FPO | 16.45 | 23.03 | 8.92 | 9.63 | 5.17 | 63.19 | 12.64 |
| **Traps total** | | **16.45** | **23.03** | **8.92** | **9.63** | **5.17** | **63.19** | **12.64** |
| Unknown | MIS | 0.03 | 0 | 0 | 0 | 0 | 0.03 | 0.01 |
| **Unknown total** | | **0.03** | **0** | **0** | **0** | **0** | **0.03** | **0.01** |
| **Grand total** | | **28.78** | **33.53** | **20.65** | **17.71** | **10.91** | **111.58** | **22.32** |

**EQ 1.3: External pressures resulting from activities within the area are not considered significant.** A number of commercial shipping routes operate in the locality, providing links between north west England, the Isle of Man and Ireland. There are also eight gas platforms in the area. No direct or indirect pathways were identified by which these activities and the pressures associated with them would impact the site designated features.

The MCZ sits within an area subject to offshore wind farm development, with the site partially co-located with a collection of four wind farms: Walney 1 and 2, Ormonde, and Walney Extension. Collectively, these constitute one of the world's largest offshore wind farm areas. Relevant marine licenses for site activities and potential for in-combination effects are provided by an MMO site assessment (MMO, 2024h).

Natural England's advice to regulators and industry states that the consented footprint of windfarms does not count as qualifying MCZ habitat and therefore the footprint of the windfarms does not impact the extent of designated features (Natural England, 2024). There are potential impacts on designated features within the site, from pressures associated with power cable operation and maintenance, however these are likely to be temporary and limited in extent. Static gears (anchored nets and lines and traps) are not considered to be causing an adverse effect on the designated features due to limited effort (MMO, 2024h).

**EQ 1.4: The MMO byelaw has largely been complied with and therefore the key activity, and associated pressures affecting the site, has been mitigated.** Since July 2019, bottom-towed fishing has been prohibited across the site, except in the north western portion which sits outside of the 12nm limit. It is likely that in this area the sedimentary features are subject to ongoing abrasion and penetration pressures (MMO, 2024h). The site sits within an area subject to offshore wind farm

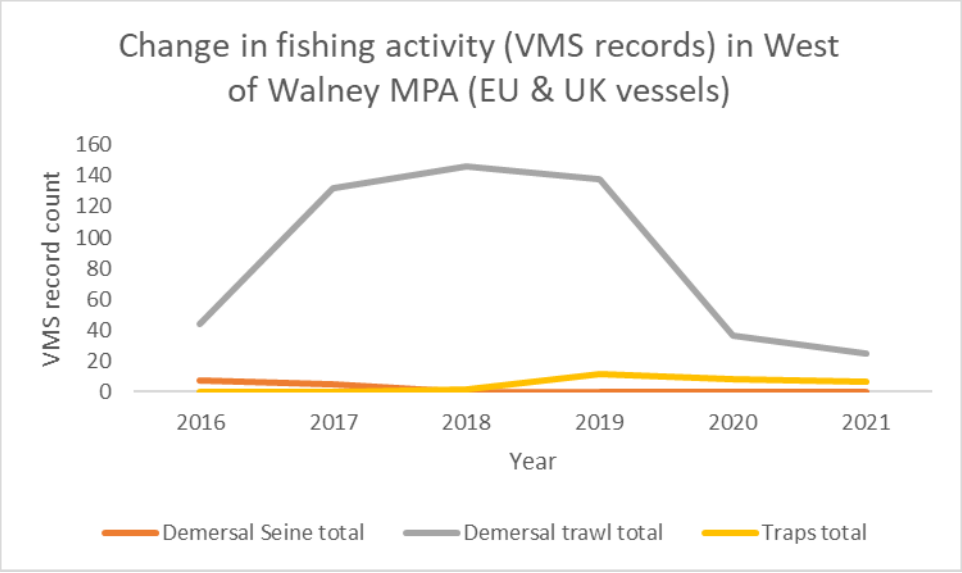
development and with co-located wind farms. As stated above, Natural England's advice to regulators and industry state that the consented footprint of windfarms does not count as qualifying MCZ habitat and therefore the footprint of the windfarms does not impact the extent of designated features. There are potential impacts on designated features within the site from pressures associated with power cable operation and maintenance, however these are likely to be temporary and limited in extent. Static gears (anchored nets and lines and traps) are not considered to be causing an adverse effect on the designated features at the current estimated level of effort (MMO, 2024h).

Pressures associated with bottom trawling to which the designated features are sensitive (MMO, 2024h) are:

- Abrasion
- Penetration

Figure 5 is based on data in the MMO draft site assessment (MMO, 2024h). It shows that the towed gear VMS activity count (demersal seines and trawls) has decreased since the byelaw was implemented, with the remaining activity presumed to be in the area outside of the byelaw (in the west of the site, outside of 12nm), although this cannot be determined from the data presented. MMO concluded that the remaining demersal trawl activity within the site presented a level of pressure that was a risk to the achievement of the site conservation objectives (MMO, 2024h). There has been a small increase fishing activity using traps.

**Figure 5: Activity levels within the West of Walney site based on count of VMS records (MMO, 2024h)**




MMO assessed in-combination potential effects between fishing activities and other licensed activities (MMO, 2024h). Operational works associated with the operation and/or maintenance of offshore wind farm cables or other operational submarine cables may cause abrasion, but the footprint of these is considered to be small and for a limited time (MMO, 2024h) and not to be a significant risk hindering the achievement of the site conservation objectives.

**EQ 1.5: Site condition has not been assessed against the conservation objective target ‘to recover’ since the byelaw was introduced, but removal of bottom-towed gear will support progress towards the recover objective for the three designated features within areas subject to the ban**.

Natural England’s advice to Defra set a recover target for the site’s designated features. Features in 2014 were considered to be at high risk, with fishing being the only pressure identified (Natural England, 2014).

There is no updated feature condition assessment by Natural England available for this site since the byelaw was implemented in 2019. On Natural England’s Designated Sites View, the supplementary advice on conservation objectives identifies the conservation attributes for each feature and where the target is to recover or maintain these (see Table 15, Table 16, and Table 17). For all attributes with the target to recover, Natural England identified that fishing within the sites was a key activity considered to have impacted the feature. The exclusion of bottom-towed gear is therefore likely to be supporting recovery of the site feature attributes by reducing abrasion and penetration of sediments and the removal of target and non-target species. However, MMO concluded that the remaining demersal trawl activity within the west of the site (outside 12nm) presented a level of pressure that may affect the ability to fully achieve the recover conservation objective (MMO, 2024h).

While elements of the ecosystem community – particularly those that are longer-lived – may not all have recovered, the byelaw will be supporting recovery. Sea-pens are the most sensitive of the site’s designated features to abrasion and penetration. Evidence from the MarLIN habitat sensitivity reviews (Hill et al., 2023) suggests that the mud shrimp and Nephrops component of the biotope would probably recover within 2-10 years. Sea-pens have a high dispersal potential and long-lived benthic larvae but larval recruitment is probably sporadic, patchy and growth is slow, suggesting that recovery will take many years. Therefore, resilience is assessed as 'Low' (more than 10 years).

**Table 15: Natural England Supplementary Advice on Conservation Objectives for sea-pens and burrowing megafauna communities (Last updated 9th May 2023). Attributes with a Maintain status are not shown, as these are considered to be unimpacted by anthropogenic activities within the site. Aligned with MMO Stage 3 Site Assessment (2024h).**

| Attribute | Target | Bottom-towed gears | Traps | Anchored nets and lines |
|---|---|---|---|---|
| Distribution: presence and spatial distribution of biological communities | **Recover** the presence and spatial distribution of sea pens and burrowing megafauna communities. | Impact (now reduced) | No impact | No impact |
| Structure: species composition of component communities | **Recover** the species composition of component communities. | Impact (now reduced) | No impact | No impact |

**Table 16: Natural England Supplementary Advice on Conservation Objectives for subtidal mud (Last updated, 9th May 2023). Attributes with a Maintain status are not shown, as these are considered to be unimpacted by anthropogenic activities within the site. Aligned with MMO Stage 3 Site Assessment (MMO, 2024h).**

| Attribute | Target | Bottom-towed gears | Traps | Anchored nets and lines |
|---|---|---|---|---|
| Distribution: presence and spatial distribution of biological communities | **Recover** the presence and spatial distribution of subtidal mud communities. | Impact (now reduced) | No impact | No impact |
| Structure: species composition of component communities | **Recover** the species composition of component communities. | Impact (now reduced) | No impact | No impact |

**Table 17: Natural England Supplementary Advice on Conservation Objectives for subtidal sand (Last updated 9th May 2023). Attributes with a Maintain status are not shown, as these are considered to be unimpacted by anthropogenic activities within the site. Aligned with MMO Stage 3 Site Assessment (MMO, 2024h)**

| Attribute | Target | Bottom-towed gears | Traps | Anchored nets and lines |
|---|---|---|---|---|
| Distribution: presence and spatial distribution of biological communities | **Recover** the presence and spatial distribution of subtidal sand communities. | Impact (now reduced) | No impact | No impact |
| Structure: species composition of component communities | **Recover** the species composition of component communities. | Impact (now reduced) | No impact | No impact |

**EQ 1.6: There is no evidence that other environmental impacts on-site have occurred because of the ban.** Direct monitoring information is not available for this site post-2019, the date of byelaw implementation. Natural England commissioned the Environment Agency to undertake site surveys in 2018 (section of the MCZ north of the Walney Wind Farm) using a grab sample (Pritchard, 2018). MMO was notified of this work and that it was licensing exempt. There was previous research sampling in the site from a number of studies by academics, but these pre-date the byelaw. No environmental impacts, benefits, or spillover effects that may be observed by fishers have been shared with MMO officers. The interviews confirmed this point with three Nephrops fishers representing wider fishing organisations who highlighted that the unique nature of prawn fishing in specific mud areas means there are no spillover effects. Interview evidence from another fisher now potting for Nephrops in the byelaw area, stated a perceived increase in lobster in the general area, which may show signs of environmental improvement.

**EQ 1.7: There have been some potential positive effects of the byelaw, and also potential negative effects.** As above. Additionally, there was concern from interviewed fishers regarding impacts on the area outside the MCZ, as continuous fishing in the limited fishing grounds left for them was thought to prevent the environment and the stock in that area from recovering. All interviewed fishermen reported that fishers regulate themselves better by moving their grounds periodically, which is not possible now due to the spatial squeeze (from a combination of MPAs and offshore wind farms).

**EQ 2.1: Significant demersal trawl activity has been displaced from the byelaw area. It is unclear whether fishing in alternative areas has compensated for the landings displaced from the site**. Analysis from the site assessment (MMO, 2024h) shows the value of UK demersal trawling landings from within the MPA fell in the period after the byelaw was introduced. Landings from UK over 12m demersal

trawl vessels within the MPA were estimated to have been between £43,000 and £54,000 annually between 2017-2019, dropping to £4,000 in 2020, the year after the management was introduced. UK under 12m demersal trawl landings from within the MPA were estimated to have been £17,000 and £16,000 in 2017 and 2018 respectively, falling to £10,000 in 2019 and £4,000 in 2020.

It was not possible to undertake an analysis of the landings of the vessels previously fishing in the MCZ to determine the extent to which any displaced activity has re-located and compensated the loss of landings from within the byelaw area. One interviewed fisher, mostly fishing for langoustine, reported moving slightly north of the byelaw area with no impact on landings. However, three interviewed Nephrops fishers representing wider fishing organisations said that the MCZ and its additional byelaws have had a negative impact on the fleet. They reported that the byelaw was in an important area for the viability of the vessels, and the restrictions have led to significant economic challenges for fishers due to reduced access to fishing grounds and spatial squeeze in conjunction with offshore wind farms. Further, it was reported that continuous fishing in the limited fishing grounds left was thought to prevent the stock in that area from recovering. The interview evidence highlighted that a combination of impacting factors (of which the byelaw was one) has caused approximately half of the vessels to cease fishing, estimated by an interviewee to equate to a reduction of approximately 72 out of 148 boats since 2015. Interviewees felt that fishers cannot diversify as they had done so in previous years, from white fish to prawns, because it is now not thought to be economically viable.

**EQ 2.2: There may have been minor benefits for fishers using gear permitted within the byelaw area.** The Site Assessment analysis estimated that over 12m landings using traps from within the site increased significantly, from £229 in 2019 to £16,000 and £12,000 2019 and 2020 respectively (MMO, 2024h). However, evidence from interviews suggests that such activity is very limited in the MPA. Interviewed fishers felt that using static gear targeting prawns would not work on a large scale as the site is too far offshore. It was explained that small boats cannot carry enough gear or are not able to always retrieve it from under the water, leading to gear loss. One fisher previously potting for lobster is now potting for Nephrops within the byelaw area as due to increased confidence to do so now that there is no bottom-towed gear that could tow pots away. However, the fisher reported low market value leading to questions around viability in the long term.

**EQ 2.3: There have been possible negative social and economic impacts on the relevant economy and community**. Three commercial fishing interviewees who have been negatively affected by the byelaw commented that the decline in fishing activity has affected community livelihoods and led to a reduction in wider employment opportunities, with many people who were once employed in the fishing industry having to find alternative employment or retire, as well as knock-on impacts on related industries (e.g., fish processing). It was said in these interviews that there used to be tight communities surrounding the industry and comradeship among fishers and surrounding communities, but that is no longer felt to be the case. While these issues cannot be solely attributed to the byelaw, it is the perception of a proportion of the fishing industry that the MCZ is having negative social and economic impacts.

**EQ 3.1: Management of bottom-towed gear may require extension to cover the whole site. Less damaging activities or those at low intensity (anchored lines and nets and traps) may continue at current levels.** The more damaging bottom towed gears are excluded, and the available information suggests that the site management is likely to be achieving its ecological objectives to some extent, particularly in terms of reducing pressures from bottom-towed fishing and supporting recovery of sensitive habitats. However, the demersal trawl activity remaining in the west of the site presents a risk to fully achieve the recover conservation objective. It is noted that there is no updated condition assessment or site monitoring to evaluate progress towards the recover conservation objectives.

**EQ 3.2: The intended outcomes and impacts are considered to still be appropriate.** The designated features are still present and sensitive to bottom-towed gear, with expectations that the byelaw is effective in the areas that it covers.

**EQ 3.3: No alternative management options are available to achieve the conservation objectives whilst mitigating potential negative economic and social impacts**. No other technological approach to mitigate impacts on the designated features and no technological fixes are known that would provide the same pressure removal outcome. The sea-pens and other longer-lived species recover too slowly to allow the same outcome (recovery) to be achieved via temporary closures.

# 3.4 Haisborough, Hammond and Winterton SAC

## 3.4.1 Site context and background

Haisborough, Hammond and Winterton (HHW) SAC is a site off the north east coast of Norfolk spanning 1,467.59km$^2$ of inshore and offshore waters (JNCC, 2017; JNCC and Natural England, 2010). The site was designated as an SAC in September 2017 (JNCC, 2017). The area of the site within MMO's jurisdiction is 1,330km$^2$. The relevant statutory nature conservation bodies for the site are Natural England (0-12nm) and JNCC (12nm to 200nm).

Haisborough, Hammond and Winterton (HHW) SAC is designated for:

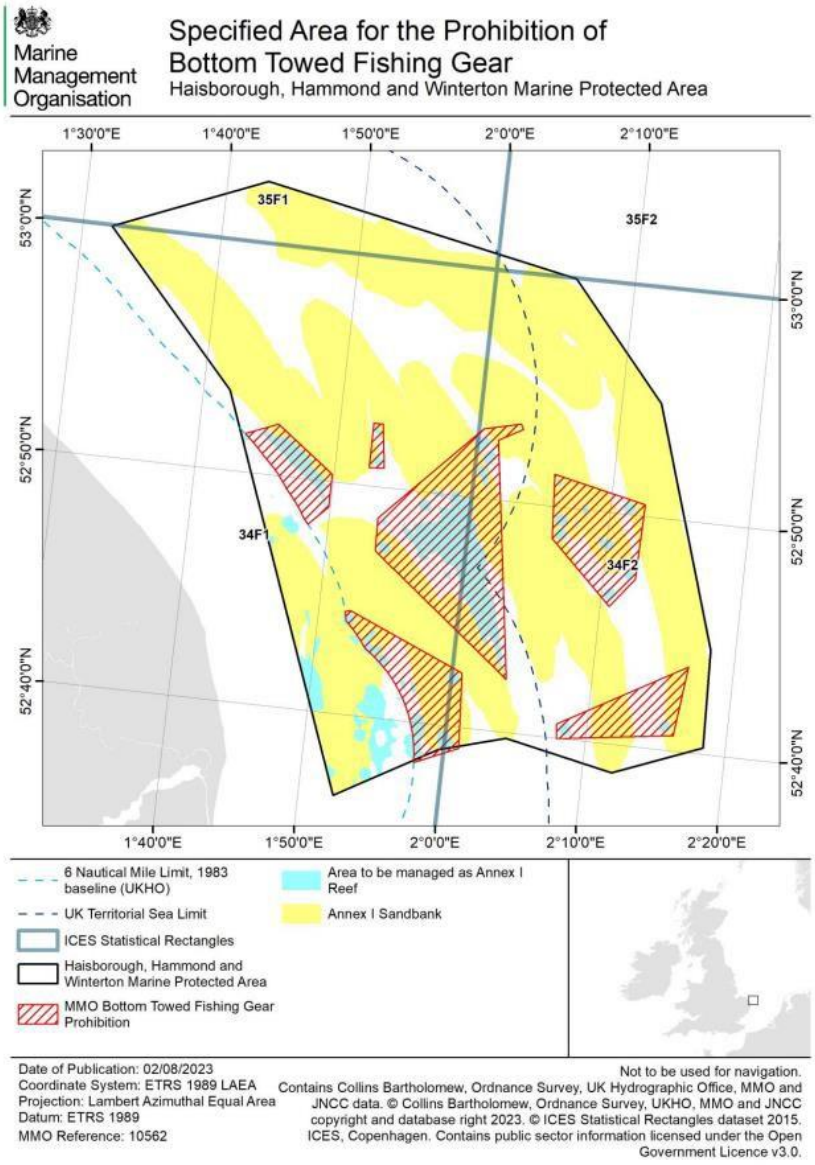
- Annex I Sandbanks
- Annex I Reef features- biogenic reef formed by the Ross worm (S*abellaria spinulos*a) (JNCC, 2017).

A more detailed description of habitats and associated species is provided by JNCC and Natural England (2010).

The Haisborough Hammond and Winterton European Marine Site (Specified Areas) Bottom Towed Fishing Gear Byelaw was made in December 2013 to protect areas of biogenic reef formed by the Ross worm (*The Haisborough Hammond and Winterton European Marine Site (Specified Areas) Bottom Towed Fishing Gear Byelaw*, 2013). The areas of management were expanded through the Marine Protected Areas Bottom Towed Fishing Gear Byelaw 2023 (*Marine Protected Areas Bottom Towed Fishing Gear Byelaw*, 2023). The latest byelaw expanded the no bottom towed gear zones.

Figure 6 shows the specified area for the prohibition of bottom-towed fishing gear (*Marine Protected Areas Bottom Towed Fishing Gear Byelaw*, 2023).

**Figure 6: Specified area for the prohibition of bottom-towed fishing gear: Haisborough, Hammond and Winterton MPA (from Marine Protected Areas Bottom Towed Fishing Gear Byelaw, 2023)**



### 3.4.2 Sources used for the assessment

Table 18 shows the key literature, data and interview sources used for the impact evaluation of Haisborough, Hammond and Winterton SAC.

**Table 18: Haisborough, Hammond and Winterton SAC sources**

| Data reviewed | Key sources |
|---|---|
| Key literature | MMO Impact Assessment (MMO, 2013a)<br>MMO Stage 3 Site Assessment: Haisborough, Hammond and Winterton MPA (Draft version) (MMO, 2024f)<br>MMO Stage 2 MPA Fisheries Assessment (MMO, 2023b) JNCC and Natural England Special Area of Conservation (SAC):<br>Haisborough, Hammond and Winterton. SAC Selection Assessment Version 6 (JNCC and Natural England, 2010) |
| Data | MMO infringements data (MMO, 2024a)<br>NE Designated Sites View (Advice on Operations, Condition assessment, general site information) (Natural England, 2024) The Crown Estate Data Portal (Crown Estate, 2024)<br>Defra Magic Map (Defra, 2024) |
| Interviews (6 interviewees in total) | MMO site officer<br>MMO coastal officers Natural England Eastern IFCA<br>Fisher (n = 1) |

### 3.4.3 Impact evaluation trial case study results

Table 19 presents a summary of impact evaluation trial case study results, with further details discussed afterwards.

**Table 19: Impact evaluation summary for Haisborough, Hammond and Winterton SAC case study**

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 1.1: Have MMO management measures been complied with? | **Yes**<br><br>High compliance with MMO management and limited bottom trawling activity in the area even before the management was put into place. | **High confidence**<br><br>Anecdotal and qualitative data supports infringements data from MMO.<br><br>(MMO, 2024a); Interviews |
| EQ 1.2: How have activities occurring in (or near) the MPA changed because of the management? | **Minor change**<br><br>Low level of bottom trawling activity in the area and no, or minimal, displacement due to the management. | **Medium confidence**<br><br>Conclusion is supported by multiple interviews, but it was not possible to speak with European vessel representatives.<br><br>Interview evidence from MMO coastal officers, Eastern IFCA, and fisher |
| EQ 1.3: What is the impact of pressures on the MPA? | **Some impact**<br><br>There are a number of activities within and outside the site, related to energy generation (petroleum pipelines) and offshore windfarm construction and operation, aggregate extraction and invasive species. | **Medium confidence**<br><br>Assessment based on numerous sources. Natural England describes the lack of knowledge on the footprint of cables and pipelines and therefore impact.<br><br>(Natural England, 2024); (Crown Estate, 2024); (Defra, 2024) |
| EQ 1.4: To what extent have pressures that negatively affect the protected feature(s) been reduced? | **Mostly reduced**<br><br>Habitat loss from pipelines not reduced within site and represent a permanent pressure.<br><br>Bottom trawls removed | **Medium confidence**<br><br>Assessment based on robust reports, but these acknowledge a key uncertainty around the extent of habitat impacted by pipelines and cables.<br><br>(Natural England, 2024); (MMO, 2024f) |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| | from sensitive areas of known (*Sabellaria* reef) but still impacting sandbanks. | |
| EQ 1.5: To what extent has the site conservation objective been achieved? And how did MMO management of the MPA contribute to this? | **Partial**<br><br>The latest condition assessment evaluates reefs (2018) and sandbanks (2019) as being in 100% unfavourable condition due to cables and pipelines and fishing. The MMO byelaw is now expanded to all reef areas within jurisdiction and more of the sandbanks, so that reef is likely to be recovering although still impacted by traps (pots) and sandbank conservation objectives are not achieved. | **Medium confidence**<br><br>Assessment based on Natural England condition assessment, (2018) with likely recovery based on the vulnerability approach to assessment (adopted by Natural England and MMO for condition assessments) based on exposure to pressures and sensitivity.<br><br>(Natural England, 2024); MarLIN sensitivity from (MMO, 2024f) |
| EQ 1.6: What other environmental impacts in the MPA have occurred due to the MPA management? | **Likely beneficial**<br><br>Recovery of *Sabellaria* reef is likely to increase the abundance of pink shrimp (*Pandalus* spp) and other associated species. | **Medium confidence**<br><br>None evidenced through survey and monitoring but based on known habitat associations.<br><br>IFCA Interview; (Pearce, 2011; Pearce et al., 2011) |
| EQ 1.7: To what extent and how has MPA management affected other marine areas outside of the MPA? | **No effect**<br><br>No evidence or interviews suggesting that MPA management has resulted in environmental impacts on areas outside the MPA. | **Medium confidence**<br><br>Multiple sources have reported the same conclusion. There would be greater confidence if it were possible to conduct analysis on areas outside of the MPA.<br><br>Interview evidence from interviews with MMO coastal officers, Eastern IFCA, and fisher. |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 2.1: What have the impacts been on stakeholders directly affected by MMO management? | **Minor negative impacts**<br><br>Minor negative effects for EU vessels with activity displaced from the site. | **Low confidence**<br><br>Conclusion is supported by multiple interviews, but confidence could be improved if direct evidence from EU fishers or representatives was gathered.<br><br>Interview evidence from MMO coastal officers, Eastern IFCA, and fisher |
| EQ 2.2: What have the impacts been on stakeholders indirectly affected by MMO management? | **Some limited positive impacts**<br><br>No changes in fishing activity but reassurance to fishers using potting equipment that their expensive gear will not be towed away by other fishers who are bottom trawling. | **Low confidence**<br><br>More confident if conclusion were to be backed up by multiple sources.<br><br>Interview evidence from fisher |
| EQ 2.3: What have the social and economic impacts been on the relevant local economy and community? | **Low to no impacts**<br><br>No identified impacts attributable to the management. | **Low confidence**<br><br>Interview evidence from MMO coastal officers and fisher |
| EQ 3.1: Considering the responses to EQ1, does the MPA management require any change? | **No**<br><br>Protection of sensitive features (*Sabellaria* reef) requires continued exclusion. | **High confidence**<br><br>Assessment based on interviews and well-evidenced sensitivity of designated feature to pressure.<br><br>MMO Interview; MarLIN sensitivity from (MMO 2024f) |
| EQ 3.2: Are the intended objectives and outcomes still appropriate? If not, what changes do they require? | **Yes**<br><br>Protection of reefs still appropriate, no change required. | **High confidence**<br><br>Assessment based on robust sources<br><br>(Natural England, 2024); sensitivity assessments for reefs cited in (MMO, 2013b) and (MMO, 2023b) |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 3.3: Could intended outcomes and impacts be reached while at the same time reducing negative impacts (incl. costs) on other stakeholders? | **No**<br><br>Impacts on stakeholders limited. Removal of bottom-towed gears required to meet conservation objectives for sensitive features *(Sabellaria reef).* | **Medium confidence**<br><br>Assessment based on well-evidenced sensitivity of designated feature to pressure. However, confidence is low regarding the absence of significant negative impacts on stakeholders.<br><br>MarLIN sensitivity from (MMO 2024f) |

**EQ 1.1: There is high compliance with MMO management.** There was very limited bottom-towed gear activity in the site prior to both the 2013 and the 2023 byelaw implementation: one fisher claimed to have not seen any such activity for the past 25 years. Interviewees suggested that the main bottom trawling activity in the MPA was from European vessels, but these vessels had already moved away by the time the byelaw was put into place. Since the 2023 byelaw was implemented, there have been no known infringements (MMO, 2024a).

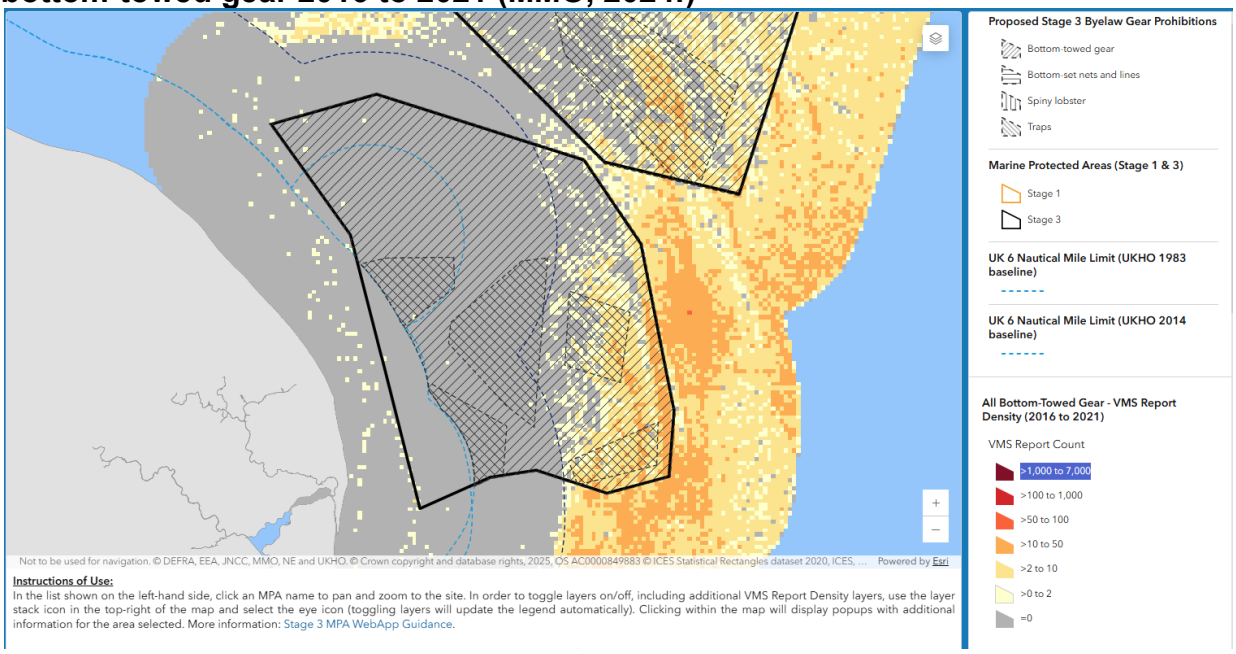
**EQ 1.2: There have been limited changes in activities occurring in (or near) the MPA due to the management.** The level of bottom trawling activity in the MPA was already low prior to the byelaw.

Prior to the byelaw area expansion in 2023, interviewees reported minimal bottom trawling activity, primarily by European vessels. Interviewees stated that prior to 2023, fishing activity by EU vessels had reduced to close to zero in the site and was mostly to the east and the south east of the MPA. Fishing activity data from the site assessment (MMO, 2024f) shows that in the period 2016 to 2020 in the area of HHW under MMO jurisdiction (Figure 7), there was an annual average of:

- 0.32t of live weight landings from UK vessels over 12m in length
- 1.07t of live weight landings from UK vessels under 12m in length
- 115.34t of live weight landings from EU27 vessels over 12m in length
- 0.06t of live weight landings from EU27 vessels under 12m in length.

Bottom-towed gear activity has remained low and relatively constant in this period, as shown in the answer to EQ1.5.

**Figure 7: Haisborough, Hammond and Winterton MPA - VMS activity from bottom-towed gear 2016 to 2021 (MMO, 2024f)**




No fisheries data was available for the post-2023 period. Interviewees indicated that there has been limited changes in activities as a result of the byelaw expansion: there has been limited displacement of fishers using bottom-towed gear within the MPA as activity in the MPA was already low prior to the new management. No interviews were conducted with representatives of European vessels, who had the higher level of activity within the MPA prior to the byelaw.

**EQ 1.3: The site is subject to ongoing external pressures but there is no evidence that these are impacting the site features through indirect or direct pathways.** There are a number of activities within and outside the site, related to aggregate extraction, energy generation (petroleum pipelines) and offshore windfarm construction and operation (Scroby sands windfarm externally and Norfolk Boreas). Commercial aggregate extraction takes place along the site boundary. Whilst none of the licence areas are co-incidental with the designated features, three licence areas and two application areas are located within the southern part of the site (JNCC and Natural England, 2010).).

The impacts of anthropogenic activities on the conservation objectives for the site are discussed for EQ1.5 but these relate to pressures within the site not external pressures. It should be noted that the pressures and the footprint associated with cables and pipelines that are present and those that are proposed are unclear, as are other factors such as scour protection type and the form of any maintenance and operation pressures.

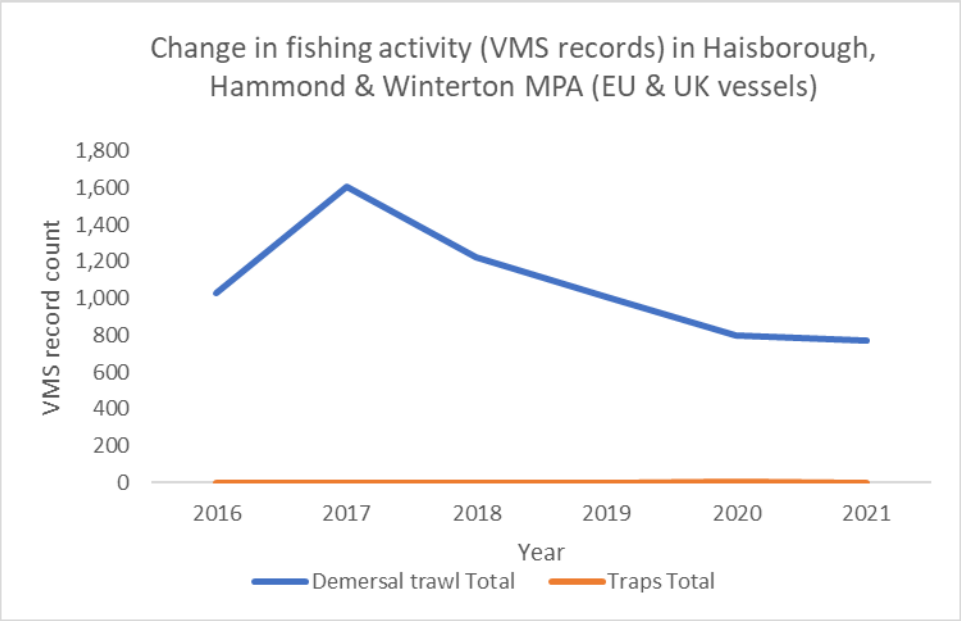
**EQ 1.4: The site is impacted by a range of activities with permanent/semi-permanent infrastructure including pipelines, these result in a permanent loss of, or change to, sediment habitat where these are armoured by rock and these have not been reduced. However, pressures associated with bottom trawling on areas of the sensitive *Sabellaria* reef have been removed.**
Within the site, there are several pipelines which are routed through the sandbank

feature, which have, in places, been rock armoured on a temporary basis (Crown Estate, 2024; Defra, 2024; Natural England, 2024).

Fisheries using bottom-towed gear may impact biological communities through habitat modification and/or catching of both target and non-target species. The MMO impact assessment for the introduction of the bottom-towed gear byelaw (MMO, 2013), identified the need to manage bottom-towed gear to protect the designated Annex I biogenic (*Sabellaria*) reef features. The interaction between bottom-towed gear and the *Sabellaria* reef had been assessed as red (high risk). The interaction between other fishing gears and the reef/sandbank features were identified as lower priority to be considered at a later date (MMO, 2013a); these have now been assessed through the MMO Stage 3 assessment.

Figure 8 is based on data in the MMO draft site assessment (MMO, 2024f), showing that except for a peak in 2017, demersal trawl related VMS vessels counts in the MPA were typically between 800 and 1200 per year between 2016 and 2021. The data does not cover the period before the first byelaw or the extension of the byelaw to wider areas to encompass a larger part of the *Sabellaria* reef habitat.

**Figure 8: Activity levels within the Haisborough, Hammond and Winterton MPA based on count of VMS records (MMO, 2024f)**




Although non-native species have been recorded as being present at low levels in the site, there is limited evidence regarding the establishment of non-native species populations within the site at this time. It is not currently considered feasible to reduce non-native species or pathogens in offshore sites. Further monitoring and research are required (Natural England, 2024).

From Natural England's Designated Sites Viewer, the Supplementary Advice on Conservation Objectives (last updated September 2024) identifies the following impacts of cables and pipelines on the designated features – a fuller description is provided on the website (Natural England, 2024):

- Multiple installations of protection for oil and gas pipelines on Annex I sandbank features have occurred since the protection of site features in 2010.
- Estimated area of impact from additional rock protection installed between 2016 and 2021 is a cumulative loss of approximately 3.6ha of Annex I sandbank habitat and its sub-features.
- Consent has been granted for the installation of cable protection within the site for the Norfolk Boreas and Norfolk Vanguard Offshore Wind Farm (OWF) projects, with a combined predicted habitat change/loss of 4.8ha of Annex I Sandbank habitat and its sub-features.
- Consent has been authorised for the installation of export cables for two Offshore Windfarms (OWFs), with a combined predicted impact of 5.9ha from damage/loss of Annex I *Sabellaria spinulosa* reef.
- The SNCBs advice is that additional reductions to the extent of the feature are likely to further compromise the ability of the site to fulfil its conservation objectives.
- Currently, there is insufficient evidence to determine if impacts to supporting habitats for Annex I reef have occurred through the placement of oil and gas pipeline protection within the site.
- A restore target for feature extent and distribution has been set to reflect the required trajectory of feature recovery, however it is currently impractical to

restore the impacted habitat through human intervention.
- With no guarantee that the protection will be/can be satisfactorily removed and/or the habitat will ever return to its original state, this may continue to be the case in the future. At this stage, no satisfactory measures or mechanisms to offset the habitat loss/predicted habitat loss have been put in place.

As a large site with limited monitoring, it is likely that there may be additional *Sabellaria* reefs that are present outside the byelaw boundary. Reef features may be relatively ephemeral with extent changing over time in favourable habitats. For the sandbank feature, the main concerns are pipeline and cable protection by rock which alter the habitat type and therefore the designated feature attribute of habitat extent.

**EQ 1.5: Conservation objectives have not been met.**
The latest available condition assessments (2018 and 2019) by Natural England are that the designated sandbanks and reefs are in 100% unfavourable condition. The whole of the features are currently considered by Natural England to be in unfavourable condition, based on a vulnerability assessment (see Table 20 and Table 21), as there is no direct evidence from monitoring. The 2023 byelaw implementation has been understood to remove fishing pressure from known areas of *Sabellaria* reef supporting recover/restore targets. Bottom-towed gear is understood to still be used within areas of designated sandbank where it will impact some of the feature attributes, as outlined below.

**Annex I Sandbanks**
Natural England identified that all sandbanks within the site may be negatively impacted by fisheries using bottom-towed gear and oil and gas pipelines with rock armouring (extent and distribution not quantified). The activities and pressures have led to Natural England setting the Conservation Objective targets to ‘restore’ for the following sandbank attributes (see Table 20 for further detail):
- Distribution: presence and spatial distribution of biological communities
- Extent and distribution
- Structure: sediment composition and distribution.

Fisheries on sandbanks continue in large areas of the site, although this will have been reduced by the expansion of the bottom-towed gear byelaw, and are considered to have impacted the following attributes for sandbanks:
- Distribution: presence and spatial distribution of biological communities
- Extent and distribution
- Structure: species composition of component communities.

**Annex I Reef (biogenic reef)**

Any reduction in the extent of *Sabellaria* reef within the site and impact to the presence and distribution of biological communities compromises the achievement of favourable conservation status for this feature.

Natural England identified (Designated Sites View, Supplementary Advice on Conservation Objectives) that the areas of reef may be negatively impacted by oil and gas pipelines with rock armouring (extent and distribution not quantified), which have led to restore targets for the following attributes:

- Restore the presence and spatial distribution of reef communities
- Distribution: presence and spatial distribution of biological communities
- Extent and distribution

Natural England reports (Designated Sites View, Supplementary Advice on Conservation Objectives) that fisheries on Annex I Reef habitat are considered to have impacted:

- Distribution: presence and spatial distribution of biological communities
- Extent and distribution
- Structure: species composition of component communities.

With the implementation of the 2023 Bottom Towed Fishing Gear Byelaw, these pressures have been removed from areas of known *Sabellaria* reef.

[2] Designated Sites View: Supplementary advice on conservation objectives

**Table 20: Natural England Supplementary Advice on Conservation Objectives for Annex I Sandbanks Habitat (Last updated, 23rd September 2024). Attributes with a Maintain status are not shown as these are considered to be unimpacted by anthropogenic activities within the site. Aligned with MMO Stage 3 site assessment (MMO, 2024f).**

| Attribute | Target | Bottom -towed gears | Traps | Anchored nets and lines |
|---|---|---|---|---|
| Distribution: presence and spatial distribution of biological communities | **Restore** the presence and spatial distribution of subtidal sandbank communities. | Impact | No impact | No impact |
| Extent and distribution | **Restore** the total extent and spatial distribution of subtidal sandbanks to ensure no loss of integrity, while allowing for natural change and succession. | Impact | No impact | No impact |
| Structure: species composition of component communities | **Restore** the species composition of component communities. | Impact | No impact | No impact |

**Table 21: Natural England Supplementary Advice on Conservation Objectives for Annex I Reef (*Sabellaria*) habitat (Last updated, 23rd September 2024). Attributes with a Maintain status are not shown as these are considered to be unimpacted by anthropogenic activities within the site. Aligned with MMO Stage 3 site assessment (MMO, 2024f).**

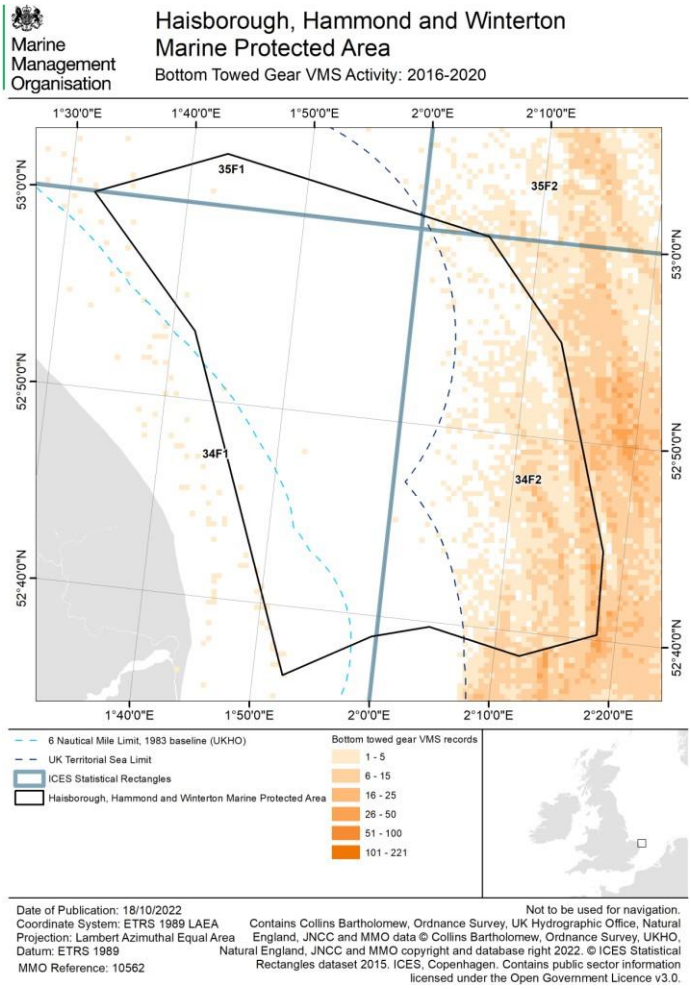
| Attribute | Target | Bottom -towed gears | Traps | Anchored nets and lines |
|---|---|---|---|---|
| Distribution: presence and spatial distribution of biological communities | **Restore** the presence and spatial distribution of reef communities. | Impact removed | Impact | No impact |
| Extent and distribution | **Restore** the total extent and spatial distribution and types of reef (and each of its sub features). | Impact removed | Impact | No impact |
| Structure: species composition of component communities | **Restore** the species composition of component communities. | Impact removed | Impact | No impact |

**EQ 1.6: Protection of *Sabellaria* reefs will benefit populations of associated species including the commercially targeted pink shrimp *(Pandalus* spp.) and provide a nursery area for juvenile flatfish.** Although not based on site assessment and observation or monitoring, it is likely that the *Sabellaria* reefs increase the diversity of macrofauna, enhance secondary production and support stocks of flatfish by providing nursery areas for juveniles (Pearce, 2011; Pearce et al., 2011).

**EQ 1.7: The management has had no observed effects on marine areas outside the MPA.** Previous assessments indicated that fishing activity with mobile gears was limited on the designated reef, hence displacement effects would be limited. There has been no observed displacement of fishers using bottom-towed gear to areas outside of the MPA and no reported effects on marine areas and subtidal habitats outside the MPA that could be attributable to MMO management.

**EQ 2.1: There are limited impacts on stakeholders directly affected by MMO management.** The stakeholders directly affected by MMO management include any fishers using bottom-towed gear. The level of affected activity was very low (see EQ 1.2). In 2020, prior to the byelaw expansion, UK vessels under and over 12m in length using bottom-towed gear in the area of HHW under MMO jurisdiction secured landings for UK vessels totalling £5387 with an operating profit of £1355 (MMO, 2024f.i). The site was predominantly used by EU vessels. Figure 9 shows continued demersal trawl activity within the MPA. There was no data available to conclude on the impact of displaced activity on the EU fleet (MMO, 2024f).

**Figure 9: Haisborough, Hammond and Winterton MPA - VMS activity from bottom-towed gear from 2016 to 2020 (MMO, 2024f)**




**EQ 2.2: There are some limited positive impacts on stakeholders indirectly affected by MMO management.** Interview evidence indicates that as a result of the MMO byelaw, lobster and crab fishers using pots in the MPA have experienced an increase in reassurance and safety. The byelaw has not resulted in changes in their fishing activity but has provided reassurance (and potential cost savings from reduced gear replacement) to fishers using pots that their gear will not be towed away by other fishers who are bottom trawling. One interviewed fisher noted that fishing gear is expensive and the byelaw has "taken [his] worry away".

**EQ 2.3: There are minimal social and economic impacts on the local economy and community.** Whilst interviewees reported that there has been a general decline in the fishing industry (not solely due to the MPA), knock-on economic impacts attributable to the management are low given that there has been no-to-limited displacement of UK vessels. There is some general conflict among fishers due to spatial squeeze, but this is not an issue solely attributable to this MPA. MMO works with regional fisheries groups and hold consultations to manage conflicts and ensure compliance.

**EQ 3.1: The management measures are deemed to be appropriate and do not require any change for the *Sabellaria* reef, further measures are identified to manage bottom traps and bottom-towed gear over the Sandbank feature.** The current management measures are still appropriate from an environmental perspective. The implemented byelaw is still considered appropriate to protect the reef features which are sensitive to fishing pressure and maintain conservation status. Traps are considered a risk to reef features and bottom-towed gear activity outside the existing management areas continue to pose a risk to the sandbank feature, that will be managed via further byelaws. The current byelaw that bans bottom-towed gear is still necessary for the *Sabellaria* reefs (MMO, 2024f).

**EQ 3.2: The intended outcomes and impacts are still appropriate.** The *Sabellaria* reef features are understood, based on previous surveys, to be present and a persistent feature within suitable areas, although there may be some spatial and temporal variation. The management objectives remain achievable and appropriate.

**EQ 3.3: The management objectives could not be reached in other ways.** Protection of areas of suitable habitat remains the only viable approach to meeting the Conservation Objectives. Negative social and economic impacts are concluded to be minimal and hence no further mitigation of such impacts are required.

# 3.5 Start Point to Plymouth Sound and Eddystone SAC

## 3.5.1 Background

Start Point to Plymouth Sound and Eddystone SAC is a site comprising three areas off the south coast of England that span 340.9km$^2$, extending across the Eddystone reefs, Plymouth Sound to Bigbury Bay reefs, and West Rutts to Start Point reefs (see Figure 10).
The site was designated as an SAC in 2011 for the **Annex I Reef features.**

The site holds particular importance as it 'represents some of the most biologically diverse reefs in the country and supports many locally distant and nationally rare or scarce species'. The inshore reefs (Start Point to West Rutts reefs) support large kelp forests and other algae (Natural England, 2011). The Eddystone part of the site lies between two administrative areas. An MMO bottom-towed fishing gear byelaw came into force in 2013. MMO management (Figure 11) applies to the part of the site between 6 and 12nm. The vast majority of the site is inside 6nm where fishing activity is managed by a Cornwall IFCA byelaw.

**Figure 10: Location overview of Start Point to Plymouth Sound and Eddystone MPA (MMO, 2024g)**

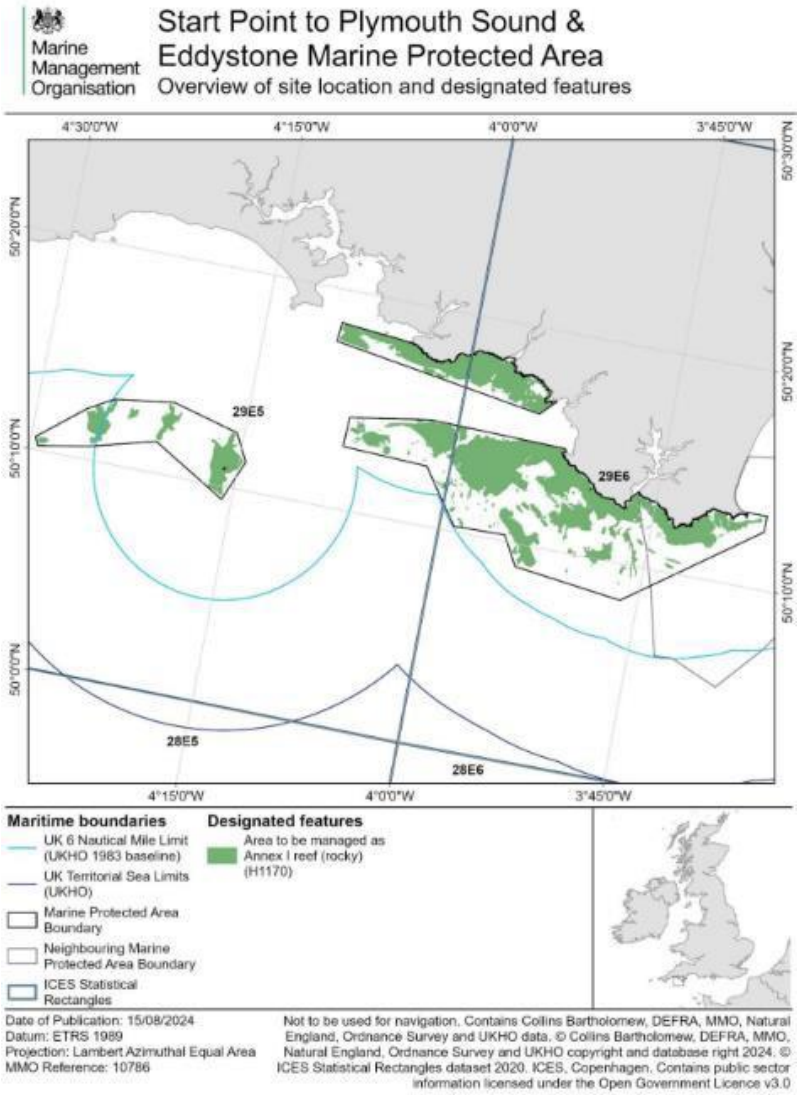
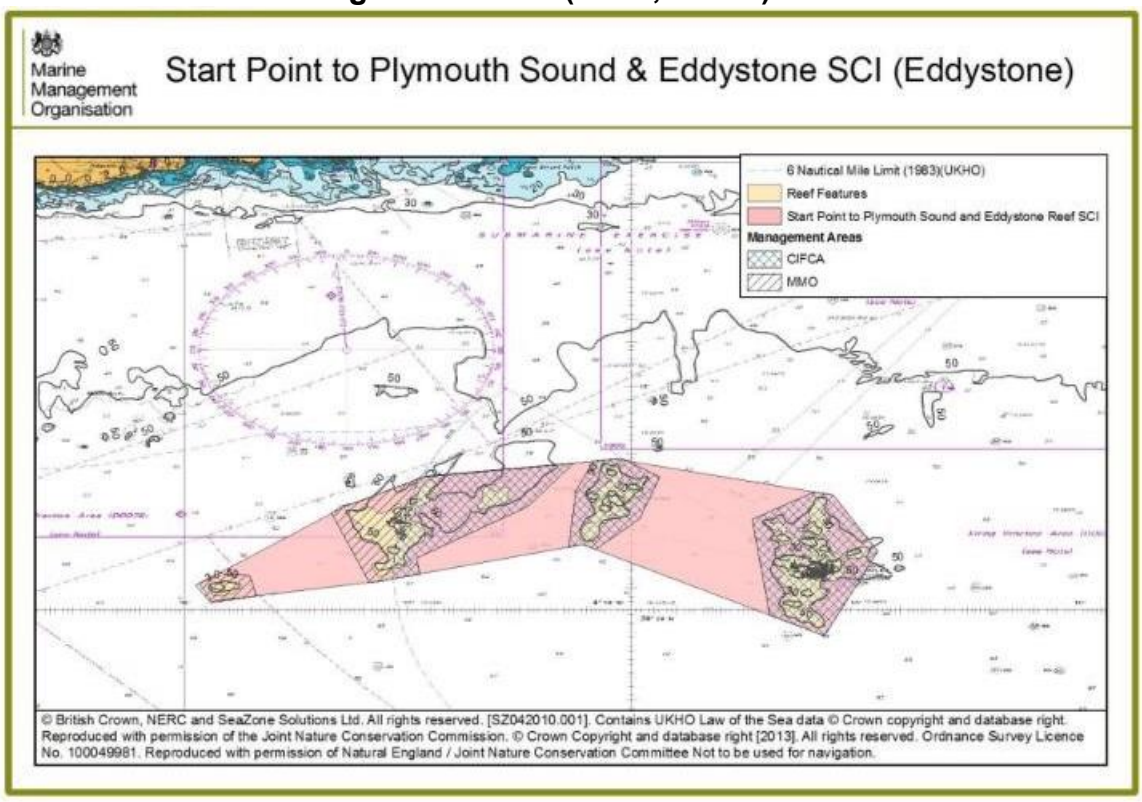


**Figure 11: Location of Start Point to Plymouth Sound and Eddystone showing reef structures and management areas (MMO, 2013b)**




## 3.5.2 Sources used for the assessment

Table 22 details the key literature, data and interview sources used for the impact evaluation of Start Point to Plymouth Sound and Eddystone SAC.

**Table 22: Start Point to Plymouth Sound and Eddystone SAC sources**

| Data reviewed | Key sources |
|---|---|
| Key literature | SAC Selection Assessment (Natural England, 2011) |
| Data | MMO infringements data (MMO, 2024a)<br>MMO Stage 3 Site Assessment: Start Point to Plymouth Sound and Eddystone MPA (Draft version) (MMO, 2024g)<br>Natural England Designated Sites View (Condition Assessment, Advice on Operations, General site information) (Natural England, 2024)<br>The Crown Estate Data Portal (Crown Estate, 2024) Defra Magic Map (Defra, 2024) |
| Interviews (3 interviewees in total) | MMO Case Officers IFCA<br><br>Interviews with key informants from MMO (n=2), and IFCA (n=1). |

### 3.5.3 Impact evaluation trial case study results

Table 23 presents a summary of impact evaluation trial case study results, with further details then discussed after.

**Table 23: Impact evaluation summary for Start Point to Plymouth Sound and Eddystone SAC case study**

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 1.1: Have MMO management measures been complied with? | **Good compliance**<br><br>No MMO documented infringements. | **High confidence**<br><br>Robust sources point towards the same conclusion.<br><br>(MMO, 2024a); Interview evidence from MMO and IFCA |
| EQ 1.2: How have activities occurring in (or near) the MPA changed because of the management? | **Reduction in prohibited gear, increase in permitted gear**<br><br>Low level of bottom-towed fishing activity has ceased within the management area. This activity continues within the wider MPA. Potting activity has increased within the MPA, including in the management area. | **Medium confidence**<br><br>Robust sources point towards the same conclusion, but confidence would be higher if there was evidence for the under 12m fleet.<br><br>Fisheries data from (MMO, 2024f) and (MMO, 2013b) |
| EQ 1.3: What is the impact of pressures on the MPA? | **No impact**<br><br>External pressures are limited to fishing on surrounding sediments. These are not impacting on the designated reef feature. No licensable activities identified. Submarine cables may be present but not affecting site. | **High confidence**<br><br>Assessment based on robust evidence for activity presence and generic but robust sources for pressure pathways and impacts on seabed habitats, supported by site monitoring.<br><br>(Natural England, 2024); (Crown Estate, 2024); (Defra, 2024) |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 1.4: To what extent have pressures that negatively affect the protected feature(s) been reduced? | **Majority**<br><br>Intensity of fishing activity with mobile gears was low, these have been removed across the site. Fishing with static gears still occurs, and increased in recent years, and this may impact reef features. Other activities are not impacting site. Some residual pressures may remain from other activities/pressure pathways, but none have been flagged or identified as significant. | **Medium confidence**<br><br>Intensity is low but there is not high confidence that pressures have been reduced because there are static gears from the under 12m fleet.<br><br>(MMO, 2024g) |
| EQ 1.5: To what extent has the site conservation objective been achieved? And how did MMO management of the MPA contribute to this? | **Achieved**<br><br>Site pressures were low, but removal maintains the favourable conservation status (FCS) of the site. The most recent condition assessment by Natural England indicates that 100% of the reef features are in favourable conditio.n | **Medium confidence**<br><br>Condition assessment undertaken using an exposure-condition assessment, rather than direct assessments based on monitoring of condition.<br><br>(Natural England, 2024); (MMO, 2024g) |
| EQ 1.6: What other environmental impacts in the MPA have occurred due to the MPA management? | **Likely beneficial**<br><br>Pressures have been removed. Theoretically, this should lead to positive effects on natural features. | **Low confidence**<br><br>No evidence for management impacts. No direct (survey) evidence for ecological change.<br><br>Assessment based on expert opinion |
| EQ 1.7 To what extent and how has MPA management affected other marine areas outside of the MPA? | **Unknown** | **N/A** |

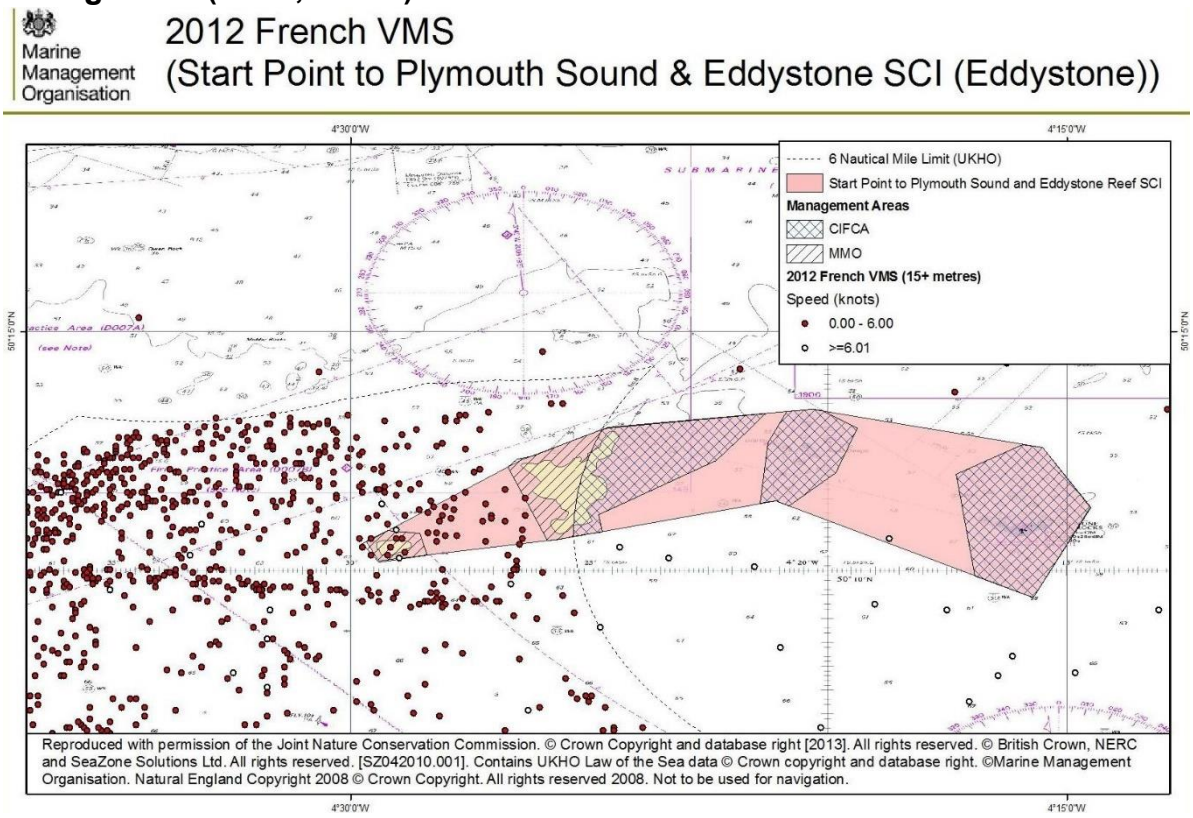
| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 2.1: What have the impacts been on stakeholders directly affected by MMO management? | **Minor negative impact**<br><br>Minor impact due to low level of historic displacement. | **Medium confidence**<br><br>Sources are robust but SAC and management have been in place for over 10 years, and interviewees were unable to provide opinion on the impact of the byelaw as fishers have long since adjusted their fishing routes.<br><br>Interview evidence with MMO and IFCA; (MMO 2024g); (MMO, 2013b) |
| EQ 2.2: What have the impacts been on stakeholders indirectly affected by MMO management? | **Possible positive impact**<br><br>Potting activity has increased in the MPA. It is not clear whether this is due to the MPA management or not. | **Medium confidence**<br><br>Interviews indicate an increase in potting activity but drivers underlying behaviour are not clear.<br><br>Interview evidence with MMO and IFCA; (MMO 2024g); (MMO, 2013b) |
| EQ 2.3: What have the social and economic impacts been on the relevant local economy and community? | **No significant impacts**<br><br>Given low impacts on directly and indirectly affected stakeholders, any knock-on effects on the local economy/community are not thought to be significant. | **Medium confidence**<br><br>Consensus among interviewees. Interview evidence with MMO and IFCA; (MMO 2024g); (MMO, 2013b) |
| EQ 3.1: Considering the responses to EQ1, does the MPA management require any change? | **Yes**<br><br>Increase in potting activity over reef feature presents an elevated risk to feature condition. | **Medium confidence**<br><br>Assessment based on small number of interviews and generic sources for activity/pressure pathways and robust evidence for impacts of bottom-towed gear on sensitive reef features.<br><br>Interview evidence with MMO and IFCA; MarLIN sensitivity supporting condition assessments and other site information (Natural England, 2024) |

| Evaluation question | Answer to evaluation question | Confidence in sources |
|---|---|---|
| EQ 3.2: Are the intended objectives and outcomes still appropriate? If not, what changes do they require? | **Yes**<br><br>Reef features remain at the site and the byelaw is still required to protect these. | **High confidence**<br><br>High confidence in presence of features and sensitivity – sources are aligned.<br><br>Interview evidence with MMO and IFCA; MarLIN sensitivity supporting condition assessments and other site information (Natural England, 2024) |
| EQ 3.3: Could intended outcomes and impacts be reached while at the same time reducing negative impacts (incl. costs) on other stakeholders? | **No**<br><br>While there may have been some initial costs to fishers, activity has adjusted and any ongoing impacts are minimal. | **Medium confidence**<br><br>Assessment based on interviews and well-evidenced sensitivity of designated feature to pressure. However, confidence regarding the absence of significant negative impacts on stakeholders is medium due to limited sample of fishers.<br><br>Interview evidence with MMO and IFCA; (MMO, 2024g); (MMO, 2013b) |

**EQ 1.1: There is high compliance with MMO management.** There was very limited bottom-towed gear activity in the management area prior to the byelaw implementation. Since the byelaw was implemented, there have been no known infringements (MMO, 2024g).

**EQ 1.2: Reduction in prohibited gear; increase in permitted gear**. The byelaw Impact Assessment reported that prior to the byelaw there was very little bottom trawl fishing activity by UK or EU vessels within the management area. UK vessels operating in the area were predominantly static gear vessels of under 10m in length (and hence unaffected by the byelaw). EU vessels operating bottom-towed gear were typically over 15m in length with very limited fishing activity, primarily by French vessels in the west of the site (see Figure 12). Bottom-towed gear activity was concentrated within the corridors between the bedrock features under management (MMO, 2013b). Displacement of fishing activity was expected from the buffer areas within the management area around the reef features (fishing was not thought to take place over the reef features), with alternative grounds readily accessible.

**Figure 12: French demersal trawl fishing activity prior to the introduction of MPA management (MMO, 2013b)**




Since the management came into force, there has been no known non-compliance, indicating that any bottom-towed fishing activity within the management area has ceased. The small amount displaced from the management area is likely to have moved to alternative, readily accessible fishing grounds. Three interviews, two with the MMO Coastal Officer and one with a representative from the IFCA, reported that as the SAC and byelaw have been in place for over 10 years, fishers have adjusted their routes, generally avoiding the management area and/or MPA. Bottom trawl and dredge activity continues within the MPA, outside the management area (see Figure 12).

Other fishing activity continues within the MPA, including within the management area. This includes midwater gears, anchored nets and lines, and traps. The MMO Site Assessment (MMO, 2024g) provides analysis of the available fisheries data for the period 2016 to 2021. There was no data available to enable additional analyses as part of this evaluation. In summary, the Site Assessment found that the level of anchored nets and lines activity within the site was low and does not appear to be focused on areas of known reef within the management area. VMS data indicates that potting within the site increased between 2016 to 2021. There was one VMS record in 2016, none in 2017 to 2019, and between 51 and 69 each year between 2019 and 2021, with activity focused on the protected reef areas. Further details are presented in the Site Assessment (MMO, 2024f)

**EQ 1.3: External pressures are limited and are not significantly impacting the MPA.** A number of activities which are not affected by the byelaw occur in the area but are not considered to impact the reef feature**.** Commercial and recreational shipping are present, linked to the ports and harbours of Plymouth. The designated reef features are not directly sensitive to pressures from these activities that affect the water column, such as noise, light changes, and risk of collision. Fishing using mid-water gears (gillnets, pole and link, hook and line, purse seines and mid-water trawls) occur in the site but these do not interact with the reef features. Similarly, shore-based activities also do not affect the reefs (MMO, 2024g).

The baseline site survey by Natural England commissioned in 2007 to identify Annex I features did not find any evidence of anthropogenic or natural disturbance, or damage to the structures of the habitats identified (PML Applications, 2008, cited from Natural England, 2011). Extensive side scan sonar surveying of the Eddystone Reefs area revealed evidence of trawl scars in the sediments (not designated features) from commercial fishing activity, particularly in the north, and some damage to reef habitat (Axelsson et al., 2006). The extent of any damage was, however, thought to be very limited and mainly restricted to outside the reef habitats and therefore the overall structure of the reef was well conserved.

The condition of the designated feature (reefs) was assessed by Natural England (Natural England, Designated Sites Viewer) as 100% favourable in the most recent condition assessment in 2022. For all attributes, targets are met, with the exception of contaminants. According to the Water Framework Directive (WFD) chemical status of the overlapping (by 25.9%) water bodies, they failed WFD chemical status in the 2019 classification due to measured/assumed elevated levels of polybrominated diphenyl ether (PBDE), mercury and its compounds. These new standards have been used in the 2019 WFD classification for the first time and therefore show failures where a water body may previously have been classified as good chemical status. This does not represent a decline in water quality, but rather, a result of the new, more stringent standards extrapolated in most instances from sampling sites in other waterbodies. Contaminants are therefore not understood to be a key external pressure for this site at present (NE Designated Sites Viewer).

**EQ 1.4: No external pressures significantly affect the site. Trawling damage was identified by previous surveys as damage to seafans and as trawl marks in sediment. Trawling has now been prohibited in the specific areas of the MPA that MMO manage. Fishing using traps (pots) is considered to represent an on-going risk to the site.**

Recent work by MMO has identified no licensable activities that are likely to impact the site (MMO, 2024g). Submarine cables may be present but as these are already in-situ, installation pressures are not occurring. Any maintenance and operation activity is considered to be temporary with limited seabed impacts (MMO, 2024g).

MMO has further assessed risks from static gear on the site (anchored nets and lines and traps) (MMO, 2024g). The assessment used Impact Evidence documents, site level information, sensitivity assessments (from MarLIN) and risk profiling of pressures and Natural England advice to assess the sensitivity of the designated site features to pressures from the static gear. The relevant pressures were identified as

abrasion/disturbance of the substrate on the surface of the seabed and removal of target and non-target species. These may impact the favourable condition targets for the feature attributes. Removal of target and non-target species pressures were scoped out by MMO as there are no designated species features for the site, only habitats, and key structural and influential species are yet to be fully defined. The assessments therefore considered only the abrasion pressure.

VMS data shows that the most prevalent gear types operated by over 12m vessels within the site are traps (pots) (MMO, 2024g). Landings data shows that the most prevalent gear operated by under 12m vessels are gillnets and pots. The use of static gear, specifically traps (pots), has increased in the area (based on VMS data, see Figure 13) and is considered to pose a risk to the designated reef features. An exclusion area has been proposed (Figure 14). This will overlap with and extend the current bottom-towed gear area.

**Figure 13: Change in fishing activity within the MPA from 2016 to 2021 (MMO, 2024g)**

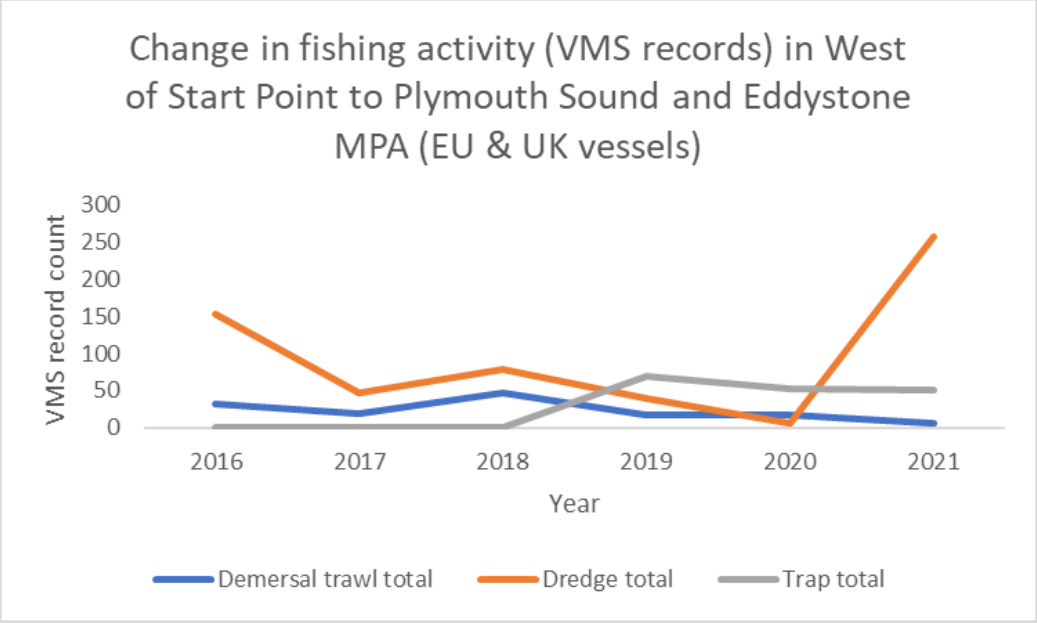
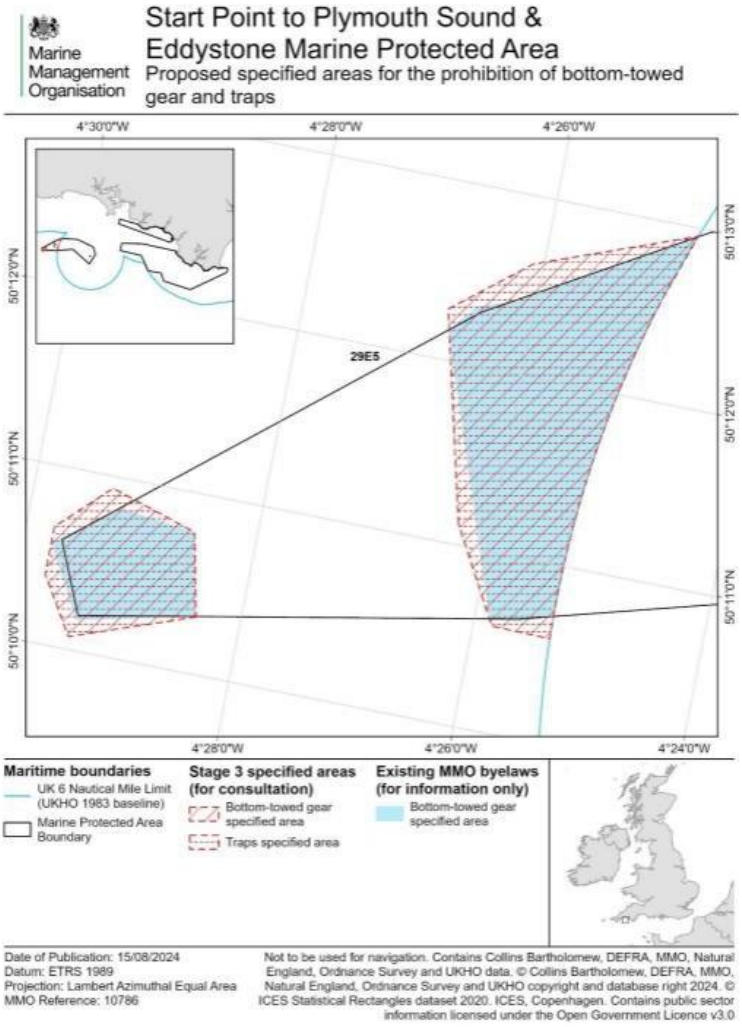


**Figure 14: Map of proposed management of bottom-towed gear and traps (MMO, 2024g)**




**EQ 1.5: The bottom-towed gear exclusion has supported the maintenance of favourable conservation status.** The most recent condition assessment by Natural England (2022), which post-dates the management of mobile gears, indicates that 100% of the reef features are in favourable condition. This was assessed using an exposure-condition assessment, which takes into account activities and pressures.

**EQ 1.6: There is no evidence on whether environmental impacts have occurred in the site due to management.** No evidence on environmental impacts, benefits or spillover effects that may be observed by fishers have been shared with MMO or IFCA officers. In any case, attributing these to specific locations would be challenging. Reef habitats may provide complex habitats that shelter juvenile fish and support stocks but there is no evidence available.

**EQ 1.7: The extent to which MPA management affected other marine areas outside of the MPA is largely unknown, and there is likely to have been some initial displacement.** There is likely to have been a low level of displacement which

may have affected other areas, however there is insufficient evidence on where such activity has been displaced to, what difference this has made to fishing pressure in those areas, and how sensitive any features in those areas are to that change in pressure. There is no evidence from the interviews of any positive spillover effect in terms of fish stock improvements or increased catch in adjacent areas.

**EQ 2.1: There are minor costs from low level displaced bottom-towed fishing activity.** Given the SAC and management has been in place for over 10 years, interviewees were unable to provide opinion on the impact of the byelaw, noting that fishers have long since adjusted their fishing routes. It was suggested that this management may have increased transit costs for some fishers, particularly those based in Plymouth, if they now need to travel further to fishable areas (noting the IFCA management also present in the east of the site). However, fisheries data indicates that the volume of displaced activity will have been minimal (see EQ 1.2). The value of landings displaced from the management area was estimated in the 2012 Impact Assessment to be low, at £1,428 annually[2] (MMO, 2013b).

**EQ 2.2: There are possible benefits from increased potting activity.** Interviews indicate an increase in potting activity within the MPA, including in the management area. It is not clear whether the MPA management has contributed to this increase. There was no evidence that fishers have intentionally diversified their gear as a direct result of the byelaw. The risk of gear conflict may have been marginally reduced within the management area (noting there was a low level of bottom-towed activity in the buffer areas prior to management, but this activity has continued elsewhere in the site). There is no evidence on whether this increase in potting activity has supported a net improvement in economic performance for those vessels.

**EQ 2.3: There are no significant social and economic impacts on the relevant local economy and community.** Two interviewees reported that no wider impacts were likely to have occurred due to the effects of the management on fishing activity. However, one interviewee noted that the MPA management was one of several pressures on the fishing industry that may have contributed to the 2024 closure of Plymouth fish market and the resulting impacts on employment, logistical challenges and costs for fishers previously landing fish into Plymouth.

**EQ 3.1: Features are in favourable condition, but further management may be required.** The existing management is concluded to have maintained the protected features in favourable status. However, additional management of static gear (traps) may be required due to an indicated increase in activity over the protected reef features and resultant risk to their condition.

**EQ 3.2: The intended outcomes and impacts remain appropriate.** The features are present and require continued management.

**EQ 3.3: No changes required.** While there may have been some initial cost to fishers who needed to change their fishing patterns, the SAC has been in place for

[2] Details on the methodology used to estimate the value of landings from the management area are available in the Impact Assessment report. Confidence in the estimate is low.

some time and fishing activity has adjusted to the existing management with minimal ongoing costs.

# 4. Lessons learned and recommendations

Applying the evaluation approach to the four case studies generated learning about challenges, limitations and efficiencies for conducting MPA management impact evaluation. Key lessons learned are reported below and have been drawn upon (where feasible) to refine the evaluation guidance (introduced in Section 5 and included as an Annex).

## 4.1 Lessons learned through applying the guidance to the case studies

**Evaluation questions should be targeted and clear.** Some revision of the evaluation framework was considered as a result of the testing to ensure that evaluation questions are logical, easily interpreted and avoid duplication. For example, the original EQ 1.3 read 'What is the impact of external pressures on the MPA?', but this was understood, via testing, to result in a gap in the framework regarding other internal site pressures not targeted by the management. The question was reworded to include all pressures; these were recorded under EQ 1.3 and the continuing presence or removal of these then assessed in EQ 1.4. The other change was that EQ 3.2 'Are the intended outcomes and impacts still appropriate? If not, what changes do they require?' was reworded to 'Are the intended objectives and outcomes still appropriate? If not, what changes do they require?' in order to remove ambiguity.

**Clear articulation of an MPA evaluation's confidence in any given question response is necessary to support future decision making**. Given the significant limitations regarding monitoring and quantitative data for MPA impact evaluation, there is a high reliance on proxy assessments (e.g., using pressure assessments to judge feature condition) and small sample interview data. The evaluation must work with the best available evidence. Confidence in the evidence and conclusions reached should be clearly and consistently presented.

**Adherence to a simple system for summarising impacts and confidence is not always easy but is necessary**. A consistent approach to judging and reporting is necessary to ensure that MMO is able to make consistent and justified decisions on management using evaluation evidence and clearly present conclusions. The case study evaluations tested different options for summarising impacts and confidence. Particularly for summarising impacts, different approaches are necessary for different evaluation questions: some will require different key words and different levels of text response.

**The evaluation draws on a theory-based approach. There is insufficient monitoring data, or suitable comparison sites, to enable counterfactual-based evaluation.** In the absence of sufficient monitoring data, the proposed evaluation takes a theory-based approach. While this allows for the assessment of impacts, it presents challenges for attributing observed changes to MPA management. Research with stakeholders can provide evidence to support causal claims, however the confidence in such conclusions will vary depending on multiple factors (including

length of time since the management was introduced, a range of other issues potentially affecting site features and activities, and the extent of primary research).

**MPAs cannot be considered in isolation of other local factors which may be contributing to observable or perceived impacts**. This was observed in the West of Walney case study area as multiple contributing factors to the decline in fishing around the MCZ were brought up, particularly in the fishing representative interviews. For example, there are multiple offshore wind farms in the Irish Sea that also affect the fishing industry. If, for example, data shows a reduction in landings after the implementation of the management, it is important to look at the extent to which other factors may have contributed to this change.

**Where MPA management has been in place for a long time, it may not be possible to articulate the economic or social impact, or whether that impact may have been accommodated into a new 'normal'**. During the case study research, it was found that stakeholders could not recall how the MPA management had affected commercial fishing activity in cases where management had been in place for a long time. In such cases, any impact may be considered historic and not felt to be having an ongoing impact on stakeholders and therefore, be less relevant in considering whether MPA management needs to change in the future.

Timing (of the designation) and relevance (to people's lives) will impact the extent to which stakeholders, particularly the fishing community, want to engage. This was observed in the Start Point to Plymouth Sound and Eddystone case study as although effort was made to talk to the fishing community, there was no response. This may in part be attributable to the length of time the MPA and byelaw had been in place. It was also found that the key informants were not working in their roles when the MPA was implemented, therefore interviewees could only provide anecdotal evidence.

## 4.2 Operational lessons for MMO to take forward in the short-term

**Forward planning will be essential for planning Marine Conservation Team capacity, given the aim to complete 47 MPA impact evaluations.** Based on the time it took to complete each case study, estimates have been provided on the expected length of time it will take to complete each stage in one evaluation. It is important to note that the time required will depend on a variety of factors, including the expected impacts of the MPA management measures, availability and accessibility of data and documents, availability of stakeholders, evaluators' knowledge of the MPA and data sources, and the extent of internal MMO QA and approvals required at any given stage of the work. It is important that efforts are proportionate to the expected impact of the management measures. For example, where impacts are more significant, a greater number of interviews may be expected. The table below estimates the number of days it could take to complete stages of the evaluation for one MPA. There will likely be efficiencies and time savings if several MPA management measure impact evaluations are completed at the same time.

**Table 24: Estimated MMO time it would take to complete stages of an MPA management measures impact evaluation**

| Stage of the evaluation | Number of days (range, estimate) |
|---|---|
| Phase 1 Scoping | 1 to 2 days |
| Phase 2 Plan the approach | 1 to 4 days |
| Phase 2 Design and deliver data collection | 3 to 10 days |
| Phase 2 Data analysis[3] | 2 to 4 days |
| Phase 3 Reporting | 3 to 6 days |

**Forward planning and prioritisation are necessary to ensure analysis of MMO commercial fisheries data can be factored into MMO statistics and spatial data teams' work plans, where it is required.** MMO holds spatial and landings data for commercial fisheries which can be used to generate evidence on changes in the extent of fishing activity and pressures (within an MPA or offsite as a result of displacement) and/or economic performance. MMO data teams have a high level of demand for conducting analyses. It was not possible during the case study period of this project to secure resource in these teams to conduct the desired analysis; however, it was confirmed that the intended analysis is feasible to do. To ensure analysis of fishing activity data can be conducted to support future impact evaluation, the following actions are likely to be needed:

(i) Early communication of analysis needs, and appropriate indication of its importance, so that MMO spatial/data teams can factor the analysis into their work plans.

(ii) Decisions on whether the analysis is necessary to support robust conclusions on impact and whether the resource required to conduct the analysis is proportionate given anticipated significance of impacts, i.e., ensure that analysis is only requested for sites where it is helpful and proportionate to do so.

(iii) Given limitations in the spatial and landings data, consider whether the analysis will be meaningful at the scale under consideration or for the site under consideration. Early discussions with MMO data teams will support this.

**An iterative approach should be taken to stakeholder interviews, starting with MMO internal stakeholders and ending with local stakeholders.** The broad range of stakeholders who could contribute to the impact evaluation and provide evidence to support conclusions include MMO site officers, MMO coastal teams, MMO data teams, IFCAs, Natural England site officers, fishers, and industry representatives. An iterative approach is suggested to contact these stakeholders, beginning with approaching MMO teams, then other government officials and the IFCAs, then stakeholder/sector representatives, and finally individual stakeholders. Specifically:

- Initial scoping interviews should be conducted with MMO staff to support refinement of the evaluation approach and focus resources on the sites and impacts expected to be of most significance.

[3] This excludes time required to undertake any detailed analysis of fisheries data, which would be undertaken by MMO data teams.

- The views of stakeholder representatives may provide sufficient evidence on impacts for the purposes of the impact evaluation. Primary research with a suitable sample of individual stakeholders may only be necessary in cases where impacts are particularly significant or the nature of impacts is complex or uncertain. A proportionate approach to engaging stakeholders should be adopted.

**Especially in MPAs where there is expected to be more conflict around MPA management measures, it is advised that interviews are conducted by a third party rather than MMO.** In the case of Studland Bay MCZ, there are well documented issues regarding stakeholder resistance to the MCZ and its management approach. During case study research, dissatisfaction was voiced from some interviewees who felt more should be done by MMO to support eco-moorings and that the importance of the eco-moorings for the VNAZ was being undervalued. Points such as these are important to capture in the impact evaluation but may be raised less freely during primary research if the researcher is from MMO. Research conducted by third parties may give a fuller picture of the impact on stakeholders by allowing stakeholders the space and opportunity to talk more freely.

## 4.3 Longer term reflections and recommendations on governance

**Monitoring data should be improved and better funded, so that high quality long-term monitoring data is available for analysis.** The Studland Bay MCZ case study demonstrated the value of having bespoke monitoring data collected over multiple years. The data provided a robust understanding of the effects on patterns of activity, management compliance, human pressures on the site, designated features and changes in these (reported in interviews), and social and economic impacts on relevant stakeholder groups.

Environmental monitoring within MPAs, and environmental data collection for areas outside of MPAs, is patchy, covers small scales, and, if collected for commercial purposes, unavailable. As a result, there is limited monitoring data on which to establish environmental indicators (e.g., on the condition of designated features) and associated impact analysis. A long-term environmental monitoring plan for MPAs that can better support environmental assessment is needed. A new MPA monitoring programme will be delivered by JNCC and NE. They are developing a programme using Sentinel. It will focus on a small number of carefully selected sites and undertake surveys on a regular (5-yearly) basis to monitor progress at these sites. The intention is that the evidence from these sites can be used as proxies to support assessment of likely condition in other sites. Data and monitoring plan details were not available to input into this project.

Monitoring of social and economic impacts is limited to national level monitoring of commercial fishing activity. Such data can be used to support assessment of the impact on commercial fishing activity and economic performance, although there are significant limitations (e.g., (i) for vessels without VMS data, and (ii) in apportioning economic value to small spatial areas).

When management is implemented, MMO should consider whether bespoke site-

level monitoring should be established (as it was for Studland Bay MCZ) on activity, environmental, social and economic impacts. This may be more important for (i) sites with management of activities such as recreation, for which no other monitoring activities take place, (ii) sites known to be socially or politically contentious and may therefore demand a higher evidence bar in the future, (iii) sites for which management impact assessments indicate there may be significant impacts.

**MMO should liaise and coordinate timing with other relevant bodies to form a joined-up approach to areas analysed in assessments (e.g., site assessments, condition assessments, and impact assessments) to enable more accurate impact evaluation.** Full condition assessments and detailed considerations and methodology used by Natural England are not publicly available. The assessment guidance (Natural England, 2020) suggests that there is a need for a level of subjective judgment, which is understandable, given data availability, uncertainty and complexity of marine systems. However, this means that the details around the basis of the assessment are not available. It is, for example, unclear whether spatial extent thresholds might be used in an assessment to determine whether the designated feature is achieving the target for each attribute. When assessing whether a site was likely to achieve the Conservation Objectives, the target extent was therefore unknown and whether any exposure would result in failure to meet the target.

Condition data for sites is limited, which typically means that Natural England condition assessments are based on vulnerability assessments that take into account the exposure of features to pressures to which they are sensitive. As fishing is only a single activity, the degree to which associated pressures have been reduced is uncertain. In the absence of recent condition assessments that relate to post-byelaw introduction, it is unclear how Natural England would quantify condition for the features.

Aligning the timing of MMO Byelaw impact evaluations with Natural England condition updates (which are intended to be updated on a 6-year cycle – Natural England, 2020) would be desirable to ensure changes in fishing pressure and resulting updates to condition assessments can be checked. Provision of data to Natural England on site activity would ensure that condition assessments can more accurately evaluate fishing pressures to inform the vulnerability assessment approach. Clearly communicating where activity occurs (e.g., whether VMS pings are counted within the entire MPA or within just the area under MMO jurisdiction), will allow more accurate evaluation of impacts. A joined-up approach is recommended, with communication between MMO, Natural England, and the Crown Estate.

# 5. Introduction to the impact evaluation framework guidance

Learnings from the case studies were used to refine an impact evaluation framework and produce guidance for MMO. The guidance is intended to be used by MMO to conduct impact evaluations of MPA management as part of the 5-yearly review of management.

The guidance is split into three phases:

- **Phase 1: Scoping.** Review and refine the evaluation focus.
- **Phase 2: Evaluation.** Collect and analyse secondary and primary data to answer each evaluation question, using questions tailored to the MPA.
- **Phase 3: Reporting.** Present impact evaluation findings.

There are four annexes to the guidance, covering: MPA management Theory of Change, mapping evaluation questions to post-implementation review questions, primary and secondary data suggestions, and bespoke fisheries data analysis.

The guidance identifies key stakeholders to contact and key sources to use. It walks through each evaluation question and sub-questions and key indicators.

The guidance is provided as a PowerPoint (Annex A) alongside this report.

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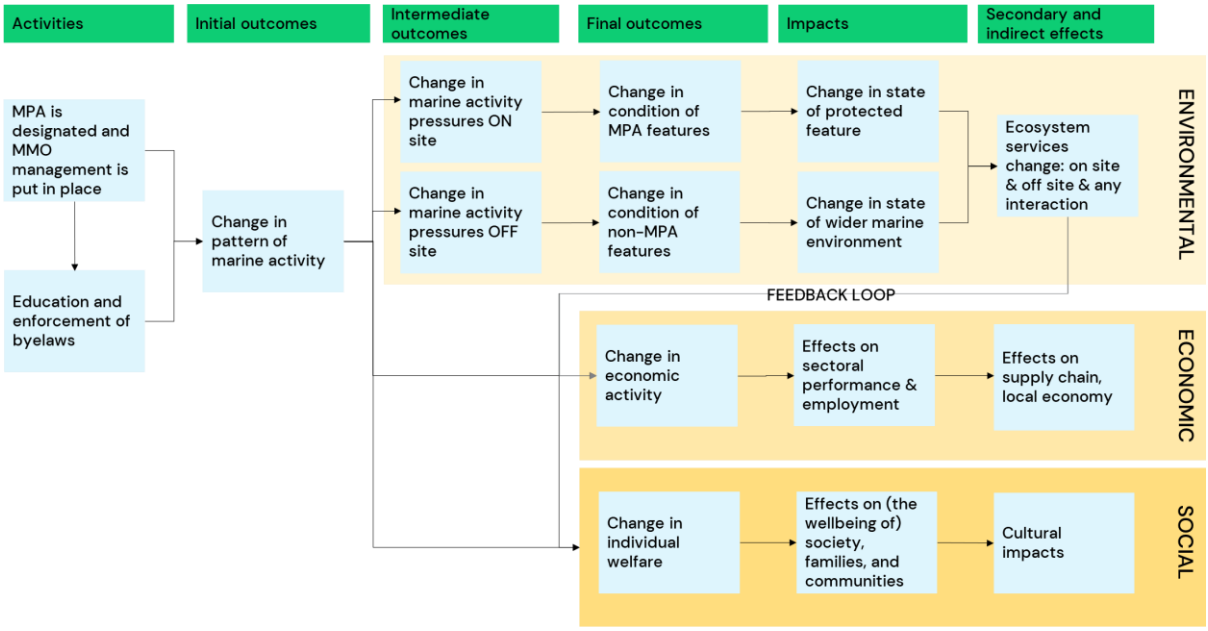
# Appendix A: Theory of Change

This appendix includes the Theory of Change provided in the Evaluation Framework report produced from this project.

The Theory of Change describes the causal pathways through which MPA management measures are expected to deliver on conservation objectives and generate other impacts that are relevant to the MPA five-year review. Figure 15 presents a Theory of Change (ToC) that describes the activities, outcomes, impacts, and secondary and indirect effects that may occur as a result of the management measures.

**Figure 1: MPA management Theory of Change**




The MPA management Theory of Change considers the questions:

- **Activities:** What is MMO doing? What are the management activities?
- **Initial outcomes:** How does this affect the behaviour of marine users/activities?
- **Intermediate outcomes:** What follow-on changes occur?
- **Final outcomes:** What is the result of these changes on the targeted environmental features, activities and individuals?
- **Impacts:** What is the longer-term effect of the change on the environment, economic sectors and society? Who is affected and how?

The activities column of the Theory of Change diagram shows the management activities that MMO (and other Government departments and agencies) may implement. When an MPA is designated, MMO may put management in place (most often in the form of byelaws), which will be most effective when accompanied by education and enforcement.

Once management is put in place, it is expected that there will be a change in marine activity as marine users adjust the nature or location of their activities to comply with the management requirements. Education and enforcement of the

management encourages compliance. For example, a byelaw banning bottom trawled fishing gear use within an MPA, accompanied with education and enforcement of said byelaw, will mean fishers using bottom-towed fishing gear are expected to cease trawling within the prohibited area. This fishing activity may be displaced to other areas, to other permitted gear types, or non-fishing activities. The extent of compliance and displacement activity will be influenced by multiple factors including the availability of other fishing grounds, other fisheries management, economic incentives and fisher decision making behaviours.

**Environmental effects of MPA management**

MMO implements its activities with the aim of enabling the achievement of MPA conservation objectives. The uppermost section of the ToC, following the arrows left to right, describes the logic through which this is expected to occur.

Following a change in the nature/pattern of marine activity, the pressures[4] affecting the MPA features will change. Management is targeted at activities thought to be detrimental to the condition of the environmental features protected by an MPA. The removal or reduction of these pressures is therefore expected to result in a change (improvement) in the condition of the protected MPA feature. Over time, this change in feature condition will impact the state of the protected feature e.g., change it from unfavourable to favourable condition. The nature and rate of change is dependent on the adequacy of the management (i.e., whether it sufficiently addresses the pressures affecting feature condition) and the baseline and response characteristics of the feature. It is also dependent on whether other pressures not targeted by MPA management change (e.g., permitted types of fishing within the MPA, natural rather than human pressures including storms and climate change).

A change in the pattern of marine activity may also lead to a change in pressures outside the MPA (i.e., off-site). For example, fishers prohibited from operating within an MPA may target alternative areas outside the MPA. This may lead to a change (degradation) in the condition of features outside the MPA, and over time the state of the wider marine environment. The effect of displacement on the environment depends on the sensitivity of the habitat/species where activity is displaced to, the pressures caused by the activity, and their significance compared to other pre-existing human and natural pressures.

Both changes in the state of MPA protected features and changes in the state of the wider marine environment are expected to lead to ecosystem service changes, which affects the flow of economic and social benefits, for example through positive impacts on fish stocks (MMO, 2024b), protection of habitats that lessen the impacts of storm surges/coastal erosion (Marine Protected Area Advisory Group, 2020), and protection of plants and calcifying organisms that lead to increased carbon sequestration (Marine Protected Area Advisory Group, 2020).

**Economic effects of MPA management**

A change in the pattern of marine activity may lead to a change in the economic performance of those activities. For example, a fisher displaced from an MPA may increase fishing effort in an alternative area which may change the degree of competition between vessels, their catch rates/composition and ultimately their fishing

[4] Pressures are the stresses that human activities put on the environment.

costs and/or landings and revenues. This may have wider impacts on sectoral performance and employment. There may be indirect effects on the supply chain and local economy, the significance of which will depend on the supply chain/local economy's dependence on the affected activity.

Environmental changes as a result of MPA management may affect the performance of economic activities reliant on ecosystem services. For example, spillover benefits may support improved fishing performance.

**Social effects of MPA management**

Changes in the nature/pattern of marine activity may also affect individual welfare and have societal effects, both positive and negative. For example, if fishers must relocate, leave the industry, or find themselves in conflict with other fishers or with MMO (MMO, 2024b), this may affect individual welfare and impact wellbeing within society, families, and communities.

Environmental changes because of MPA management may affect societal use and non-use benefits from ecosystem services. This may include, for example, the quality of recreational activities, opportunities for research and education, and existence and bequest values (marine area protected for the use and enjoyment of future generations) (Marine Protected Area Advisory Group, 2020).

# Annex A: Guidance to MMO on conducting MPA impact evaluations

Provided as a separate PowerPoint presentation document.