Marine Management Organisation

MMO Stage 3 Site Assessment: South of the Isles of Scilly MPA (DRAFT)

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Title: MMO Stage 3 Site Assessment: South of the Isles of Scilly MPA DRAFT

Contents

Executive Summary

This assessment analyses the impact of anchored nets and lines, bottom towed gear, and traps on the designated features fan mussel (*Atrina fragilis*), subtidal coarse sediment / subtidal mixed sediments mosaic habitat and subtidal sand in South of the Isles of Scilly Marine Protected Area (MPA), to determine whether a significant risk of hindering the conservation objectives of the site can be excluded. The assessment sets out the evidence considered and analyses the quality of that evidence.

The assessment finds that the use of anchored nets and lines and traps does not pose a significant risk of hindering the achievement of the conservation objectives of the MPA. However, bottom towed gears pose a significant risk of hindering the achievement of the conservation objectives of the MPA, and therefore, management measures should be implemented for bottom towed gears for the South of the Isles of Scilly MPA.

1 Introduction

This assessment considers whether fishing activities are compatible with the conservation objectives of South of the Isles of Scilly MPA.

This site is designated as a marine conservation zone (MCZ). This assessment uses the best available evidence to review site characteristics and fishing activity and determine if there is a significant risk of fishing activities hindering the conservation objectives of the site. If so, the Marine Management Organisation (MMO) will develop and introduce suitable management measures, such as MMO byelaws. If MMO byelaws are required, then these will be subject to public consultation and will require confirmation from the Secretary of State to come into force.

2 Site information

2.1 Overview

The following Joint Nature Conservation Committee (JNCC) site information, Natural England and JNCC conservation advice package and Department for Environment Food and Rural Affairs (Defra) factsheet were used for background on site geography, designations, features, for conservation objectives and general management approaches:

- JNCC Site Information - South of the Isles of Scilly MCZ[1]
- Defra Factsheet - South of the Isles of Scilly MCZ[2]

South of the Isles of Scilly MPA is located approximately 15 km south of the Isles of Scilly in the Western Channel and Celtic Sea region and covers an area of approximately 132 km^2 (**Figure 1**). The site straddles the 12 nautical mile (nm) limits. Fishing activity in the site is regulated by MMO. Natural England (0 to 12 nm) and JNCC (beyond 12 nm) are the relevant Statutory Nature Conservation bodies for the site.

South of the Isles of Scilly MPA was designated as a MCZ in 2019.

The seabed in the site is characterised by subtidal sand, interspersed with ribbons of mosaic habitat comprised of subtidal coarse sediment and subtidal mixed sediments. These habitats support a varied assemblage of species, in and on the sediment, including worms, bivalve molluscs, anemones, sea firs and starfish. These habitats also support numerous fish species including sandy dogfish, megrim, sole and three bearded rockling. This site is also designated to protect Fan mussels *Atrina fragilis*, a Feature of Conservation Importance (FOCI).

[1] https://jncc.gov.uk/our-work/south-of-the-isles-of-scilly-mpa/ (last accessed 3 July 2023)

[2] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915697/mcz-south-scilly-2019.pdf (last accessed 3 July 2023)

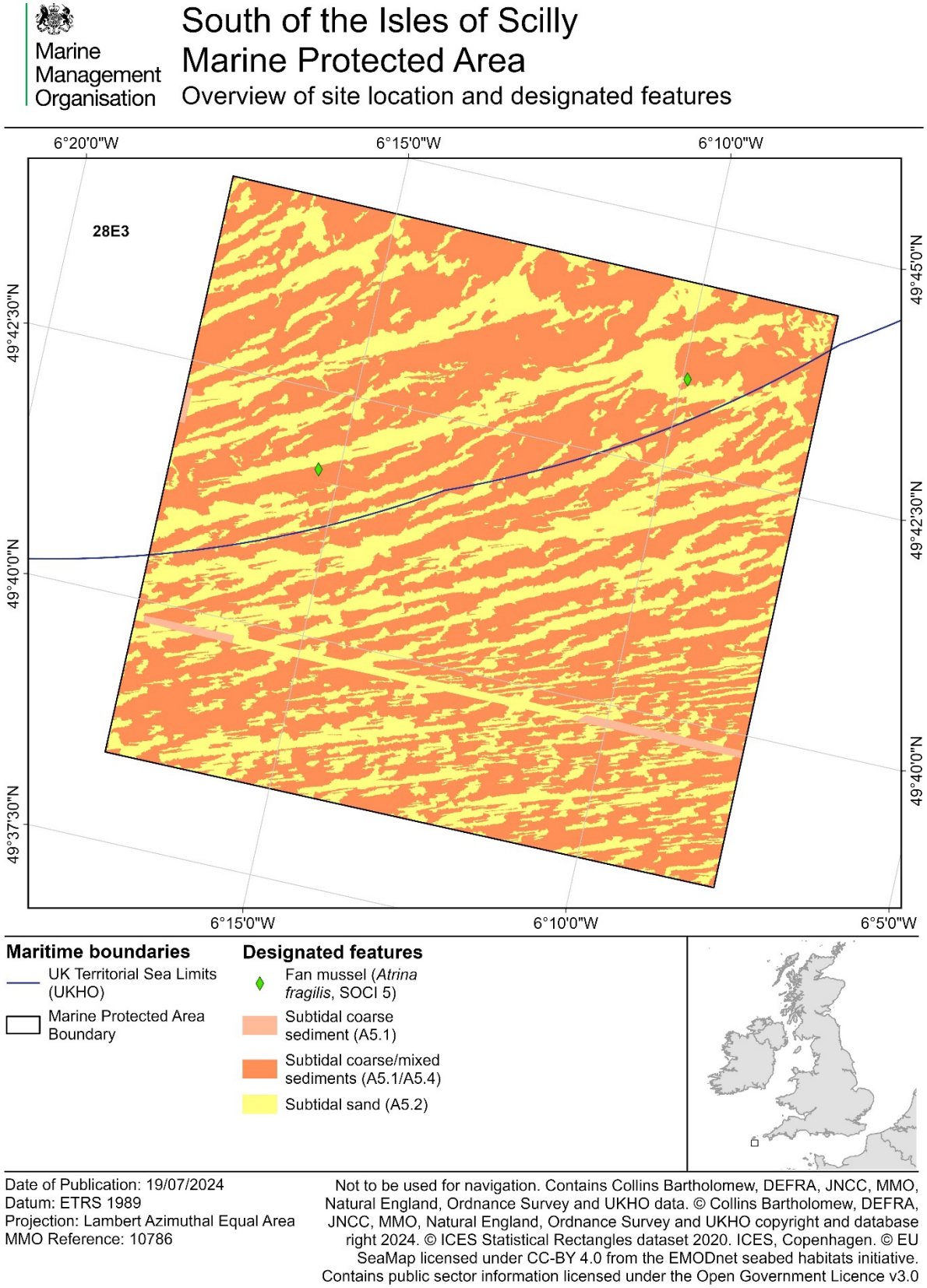

Figure 1: Site overview map.

The designated features and their general management approaches are set out below in **Table 1.**

The general management approaches for the features of South of the Isles of Scilly MPA have been set based on a vulnerability assessment.

Table 1: Designated features and general management approaches.

Designated feature	General management approach
Fan mussel (*Atrina fragilis*)	**Recover to favourable condition** With respect to Subtidal coarse sediment, Subtidal sand, Subtidal mud, Subtidal mixed sediments and Fan mussel: • extent is stable or increasing; and • structures and functions, quality, and the composition of characteristic biological communities (which includes a reference to the diversity and abundance of species forming part of or inhabiting each habitat) are such as to ensure that they remain in a condition which is healthy and not deteriorating. • supporting processes; water and sediment quality.
Subtidal coarse sediment / subtidal mixed sediments mosaic habitat	
Subtidal sand	

Natural England and JNCC are currently in the process of developing a conservation advice package for South of the Isles of Scilly MPA. Since there is no package currently available, Natural England and JNCC has advised using a proxy from within the same bioregion. Therefore, the South-West Deeps (West) MPA conservation advice package has been used to help identify pressures, sensitivities and attributes of relevance to the features within South of the Isles of Scilly MPA.

A proxy package cannot be used as a substitute for condition assessment, nor for attribute target information. MMO has therefore sought advice from Natural England and JNCC when writing this assessment, as well as referring to the vulnerability assessment produced at the time of site designation.

2.2 Scope of this assessment

The scope of this assessment covers fishing activities alone, and relevant activities in combination with fishing.

3 Part A - Identified pressures on the MPA

Part A of this assessment was carried out in a manner that is consistent with the 'capable of affecting (other than insignificantly)' test required by section 126 of the Marine and Coastal Access Act 2009[3].

Part A assesses the interactions between pressures from fishing gears and the designated features of this site, screening for interactions that require further consideration. Assessment of interactions not screened out in Part A will form Part B of the assessment. For each activity assessed in Part A, there are two possible outcomes for each identified pressure-feature interaction:

1. The pressure-feature interactions **are not** included for assessment in Part B and screened out:
    a. if the feature is not exposed to the pressure, and is not likely to be in the future;
    b. the pressure is not capable of affecting the feature, other than insignificantly; or
    c. if MMO has information that the activity or pressure is not occurring in the site and/or does not need to be considered further.
2. The pressure-feature interactions **are** included for assessment in Part B:
    a. if the feature is exposed to the pressure, or is likely to be in the future;
    b. the pressure is capable of affecting the feature, other than insignificantly;
    c. if it is not possible to determine whether the pressure is capable of affecting the feature, other than insignificantly; or
    d. if MMO has information that the activity or pressure is occurring in the site and/or does need to be considered further.

Consideration of a pressure on a protected feature in an MPA includes consideration of the pressure's exposure to, or effect on, any ecological or geomorphological process on which the conservation of the protected feature is wholly or in part dependent.

3.1 Activities taking place

Table 2 lists all commercial fishing gears included for assessment. All other gears have been screened out of further assessment as they do not take place and are not likely to take place in the future, as there are no vessel monitoring system (VMS) records present within the site linked to these gear codes, nor do they appear in landings data for International Council for the Exploration of the Sea (ICES) statistical rectangles that overlap the site.

[3] www.legislation.gov.uk/ukpga/2009/23/section/126

To determine fishing activity occurring within the site, the following evidence sources were used:

- VMS data;
- fisheries landings data (logbooks and sales records);
- MMO catch recording project data;
- ICES rectangle level fishing effort data in days (reference: MMO1264);
- swept area ratio (SAR) data.

For more information about the above evidence sources, please see the Stage 3 MPA Site Assessment Methodology document[4], which describes each type of fishing activity evidence and summarises the strengths and limitations of each source.

Table 2. Fishing activities covered by this assessment present in VMS records (2016 to 2021) and landings data (2016 to 2020) for South of the Isles of Scilly MPA.

Gear type	Gear name	Gear code	Justification
Anchored nets and lines	Trammel net	GTR	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Set gillnet (anchored)	GNS	
	Gill nets (not specified)	GN	
	Longline (unspecified)	LL	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Gillnets and entangling nets	GEN	
Bottom towed gear	Twin bottom otter trawl	OTT	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Towed dredge	DRB	
	Bottom otter trawl	OTB	

[4] Stage 3 MPA Site Assessment Methodology document: www.gov.uk/government/publications/stage-3-site-assessments (last accessed 05 September 2024).

Gear type	Gear name	Gear code	Justification
	Otter trawls (unspecified)	OT	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Beam trawl	TBB	Present in VMS data.
Midwater gear	Midwater otter trawl	OTM	Present in VMS data.
	Hand-operated pole-and-line	LHP	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Drift gillnet	GND	
Traps	Trap	FIX	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Pot/Creel	FPO	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.

3.2 Pressures, features and activities screened out

This section identifies activities or pressures that are **occurring but do not need to be considered** for South of the Isles of Scilly MPA.

The gear types and pressures screened out on this basis are listed below:

- **Midwater gears:** although the use of midwater gears does occur within South of the Isles of Scilly MPA, there is no feasible pathway for gears of this type to interact with benthic designated features as part of normal operation not considering gear failure or net loss. These gears are not designed to operate on or near the seabed and are deployed entirely within the water column. Therefore, the use of midwater gear within South of the Isles of Scilly MPA is not considered to be capable of affecting the designated features other than insignificantly and is not considered further within this assessment.
- **Unknown gear**: 'other gear' has been declared as having been used to land fish from this ICES statistical rectangle. The gear code used to report these landings does not provide any further information relating to the fishing method used. It is therefore not possible to assess the likelihood of this fishing

method interacting with the seabed and it is not considered further within this assessment.

3.3 Pressures to be taken forward to Part B

The Stage 3 Fishing Gear MPA Impacts Evidence documents detail all pressures created by fishing activity on features of interest. The documents justify which pressures should be taken forward for consideration for each feature. This is documented in Table A1.2 in the anchored nets and lines, bottom towed gear and traps Impacts Evidence documents:

- Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines[5];
- Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear[6]; and
- Stage 3 Fishing Gear MPA Impacts Evidence Traps[7].

To determine whether a pressure should be taken forward for this particular site, **Table 3** uses the information from the Impacts Evidence documents, alongside site level information, including sensitivity assessments, risk profiling of pressures from conservation advice packages, and Natural England and JNCC advice to assess the sensitivities of pressures on the designated features of the site.

Table 3 details the pressures for each gear type - anchored nets and lines (A), bottom towed gear (B) and traps (T) - to be assessed in Part B, taking into account the pressures screened in and out in **sections 3.1 and 3.2.**

[5] Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 05 September 2024).
[6] Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 05 September 2024).
[7] Stage 3 Fishing Gear MPA Impacts Evidence Traps: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 05 September 2024).

Key	
	Dark blue highlighting indicates that the feature is sensitive to this pressure from the gear type in this site, and that the interaction should be taken forward for consideration.
	Light blue highlighting indicates that feature is sensitive to the pressure in general, but the gear type is unlikely to exert this pressure to an extent where impacts are of concern in the site.
	Grey highlighting indicates that there is insufficient evidence to make sensitivity conclusions, or that a sensitivity assessment has not been made for this feature to this pressure from the gear type.
	If there is no highlighting within a cell, this indicates that the pressure from the gear type is not relevant to the feature.

Table 3. Summary of pressures on designated features of South of the Isles of Scilly MPA to be taken forward to Part B.

Potential pressures	Designated features								
	Fan mussel			Subtidal coarse sediment/Subtidal mixed sediments mosaic			Subtidal sand		
	A	B	T	A	B	T	A	B	T
Abrasion or disturbance of the substrate on the surface of the seabed									
Changes in suspended solids (water clarity)									
Deoxygenation									
Hydrocarbon and polycyclic aromatic hydrocarbon (PAH) contamination									
Introduction of light									
Introduction of microbial pathogens									
Introduction or spread of invasive non-indigenous species									
Litter									
Nutrient enrichment									
Organic enrichment									
Penetration and/or disturbance of the substrate below the surface of the seabed, incl. abrasion									
Physical change (to another seabed type)									
Physical change (to another sediment type)									
Removal of non-target species									
Removal of target species									
Smothering and siltation rate changes									
Synthetic compound contamination									
Transition elements and organo-metal contamination									

4 Part B - Fishing activity assessment

Part B of this assessment was carried out in a manner that is consistent with the 'significant risk of hindering the achievement of the conservation objectives' test required by section 126 of the Marine and Coastal Access Act 2009[8].

Table 3 shows the fishing activities and pressures identified in Part A which have been included for assessment in Part B. JNCC is currently in the process of developing a conservation advice package for South of the Isles of Scilly MPA. In its absence, JNCC has advised the use of the conservation advice package for South-West Deeps (West) MPA as a proxy, due to the similarity between site features and location within the same bioregion. The most relevant attributes of the designated features that could be compromised by fishing pressures were identified using the South-West Deeps MPA conservation advice package and are shown **Table 4**.

Table 4. Relevant favourable condition targets for identified pressures.

Features	Attribute	Target	Relevant pressures
Fan mussel (*Atrina fragilis*) Subtidal coarse sediment / subtidal mixed sediments mosaic habitat Subtidal sand	Extent and distribution: presence and spatial distribution of biological communities Structure and function: presence and abundance of key structural and influential species Supporting processes: sedimentation rate	Recover to favourable condition	Relevant to: • abrasion or disturbance of the substrate on the surface of the seabed • changes in suspended solids (water clarity) • smothering and siltation rate changes • penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion • removal of non-target species • removal of target species

4.1 Fisheries access and existing management

Non-UK vessels can operate within South of the Isles of Scilly MPA, provided that they have a licence issued by the UK to do so. Nationalities which fished within the

[8] www.legislation.gov.uk/ukpga/2009/23/section/126

MPA from 2016 to 2021 include vessels from the UK, Belgium, Germany, France, Ireland and Netherlands. VMS records indicate that UK and French vessels were the most prevalent.

More information on non-UK vessel access to UK waters can be found on MMO's Single Issuing Authority page[9].

4.2 Fishing activity summary

Table A1. 1 to **Table A1. 8** in Annex 1 display a detailed breakdown of fishing activity within South of the Isles of Scilly MPA. When discussing weights from landings in this section, figures used are total weights from UK and EU member states.

Of the fishing activities not screened out in Part A of this assessment, the most prevalent gears operating within the site are bottom otter trawl and beam trawl, followed by pot/creel, and to a lesser extent twin bottom otter trawl. Minimal activity has also been identified in the site for towed dredge, gill nets and trammel nets.

Anchored nets and lines:

According to VMS and landings data for over 12 m vessels, the use of anchored nets and lines in the site appears to be minimal with an annual average of one count between 2016 and 2021 and approximately 0.41 tonnes (t) landed on average between 2016 and 2020 across gill nets (not specified), gill nets (anchored) and trammel net. Under 12 m vessels using anchored nets and lines landed approximately 0.72 tonnes per year on average between 2016 and 2020.

Under 12 m landings have been recorded by ICES rectangle level and for the purpose of this assessment have been attributed to the MPA based on the proportion of the ICES rectangle it overlays. Average fishing effort recorded by UK vessels under 12 m in length using anchored nets and lines between 2016 and 2021 for the area of South of the Isles of Scilly MPA that intersects ICES rectangle 28E3 was 3.11 days. South of the Isles of Scilly MPA covers 3.3 % of ICES rectangle 28E3. Fishing effort days are derived from logbooks and are collected at ICES rectangle and apportioned accordingly.

Bottom Towed Gear:

Demersal Trawls
According to VMS data, bottom otter trawls are the most prevalent type of fishing gear deployed in South of the Isles of Scilly MPA. Between 2016 and 2021 there were 228 VMS records on average of this gear type per year. Beam trawl activity also occurs within the site. Between 2016 and 2021 there were 103 VMS records on

[9] The UK Single Issuing Authority: www.gov.uk/guidance/united-kingdom-single-issuing-authority-uksia (last accessed 26 July 2023).

average of this gear type per year. All vessels over 12 m in length using demersal trawls landed approximately 33.4 tonnes per year, whereas all vessels under 12 m in length landed approximately 0.08 tonnes between 2016 and 2020. Under 12 m landings are recorded by ICES rectangle level and for the purpose of assessment have been attributed to the MPA based on the proportion of the ICES rectangle it overlays.

Average fishing effort recorded by UK vessels under 12 m in length using demersal trawls between 2016 and 2021 for the area of South of the Isles of Scilly MPA that intersects the ICES Rectangle 28E3 was 0.43 days. The South of the Isles of Scilly MPA covers 3.3 % of ICES rectangle 28E3. Fishing effort days are derived from logbooks and is collected at ICES rectangle and then apportioned accordingly. Mean annual surface SAR values for demersal trawl activity for C-squares intersecting South of the Isles of Scilly MPA increased from 1.83 in 2016 to 2.27 in 2017 and then steadily decreased to 1.31 in 2020. Mean sub surface values increased from 0.33 in 2016 to 0.50 in 2020 in the same reporting period.

Dredges

According to VMS and landings data for over 12 m vessels, towed dredge activity was minimal with one VMS record on average annually between 2016 and 2021. All vessels over 12 m in length using towed dredges landed approximately 0.12 tonnes per year, whereas all vessels under 12 m in length landed approximately 0.003 tonnes between 2016 and 2020. Under 12 m landings are recorded at ICES rectangle level and have been attributed to the MPA based on the proportion of the ICES rectangle it overlays. Average fishing effort recorded by UK vessels under 12 m in length using towed dredges between 2016 and 2021 for the area of South of the Isles of Scilly MPA that intersects the ICES Rectangle 28E3 was 0.01 days. Mean annual surface and sub surface swept area ratio (SAR) values for towed dredge activity for C-squares intersecting the site were 0.05 and 0.04 respectively.

Traps:

Pots/creels are not frequently deployed in the site according to VMS data. Between 2016 and 2021, there were 16 pots/creels VMS records on average per year. Vessels over 12 m in length using pots/creels landed approximately 3.49 tonnes on average per year between 2016 and 2020. Under 12 m vessels using pots/creels landed approximately 2.23 tonnes per year on average between 2016 and 2020. Under 12 m landings are recorded at ICES rectangle level and have been attributed to the MPA based on the proportion of the ICES rectangle it overlays. Average fishing effort recorded by UK vessels under 12 m in length using all traps between 2016 and 2021 for the area of South of the Isles of Scilly MPA that intersects ICES rectangle 28E3 was 14.01 days.

4.3 Pressures by gear type

The Stage 3 Fishing Gear MPA Impacts Evidence documents for anchored nets and lines, bottom towed gear and traps collate and analyse the best available evidence on the impacts of different fishing gears on MPA features. This section summarises the analyses and conclusions of those documents, and considers these alongside site level information, including the nature and condition of the habitats and species present, the general management approaches for designated features, intensity of fishing activity taking place and exposure to natural disturbance.

In the context of MPA assessment, the pressures removal of target and non-target species refer to any damage, loss, or removal of species defined as a designated feature or integral to the integrity of a designated feature (for example key structural or influential species). This may occur through intentional or unintentional catch associated with the act of commercial fishing.

Impacts from target/non-target removal pressures have been scoped out from this assessment in most cases, as the detail of key structural and influential species is yet to be fully defined and they are assessed more completely within the abrasion and penetration pressures. These pressures may require consideration as a result of any future evidence review, in conjunction with updated conservation advice from JNCC and/or Natural England. Where separate consideration of these pressures is required, this has been stated but generally includes the following:

MPAs with certain designated species features or designated features that may contain key commercially targeted species have been highlighted as requiring separate consideration of the removal pressures. This includes MPAs with an active Nephrops fishery**,** where the habitat sea-pen and burrowing megafauna communities is a designated feature, or where fan mussels, ocean quahog, spiny lobster and pink sea-fan are a designated species feature.

The designated feature in this site, fan mussel, may be sensitive to removal of non-target species pressures. However, fan mussels are not considered sensitive to removal pressures via static gear types, as removal of bivalves is highly unlikely through the use of static gear. As such, this feature is more fully assessed within the abrasion and penetration pressures.

4.3.1 Anchored nets and lines

The following features of South of the Isles of Scilly MPA have been considered in relation to pressures from anchored nets and lines.

Subtidal coarse sediment; subtidal mixed sediments; **subtidal sand; fan mussel (*Atrina fragilis).***

The relevant pressures on the features of South of the Isles of Scilly MPA (outlined above) from anchored nets and lines were identified in **Table 3** and are:

- abrasion or disturbance of the substrate on the surface of the seabed.

Section 4.2 describes fishing activity within South of the Isles of Scilly and indicates that, according to VMS records and landings data, the use of anchored nets and lines appears minimal. However, fishing effort data for under 12 m UK fleet indicates that anchored nets and lines may be used, although there is limited confidence as to whether this fishing activity is occurring at site.

Impacts on these features relating to abrasion or disturbance of the substrate on the surface of the seabed occur primarily during setting and retrieval of nets and the associated ground lines and anchors, as well as by their movement over the seabed during rough weather.

Subtidal coarse sediment; subtidal mixed sediments; subtidal sand

Biotope data for South of the Isles of Scilly MPA, a JNCC and Natural England site, at bioregion level is consolidated in the JNCC Biotope Databases. Biotope data for the Western Channel and Celtic Sea was extracted from the Biotope Presence Absence Database[10] to determine the number of biotopes that are likely to be present at the site. Biotope sensitivity data was then extracted from The Marine Life Information Network (MarLIN, 2018) to outline biotopes sensitivity for the appropriate pressure. **Table A2. 1** to **Table A2. 3** of Annex 2 details the list of biotopes that may be found within the sediment features of the site.

For the subtidal coarse sediment feature, 13 biotopes have been identified which could be present in the site. As outlined in **Table A2. 1** in Annex 2, nine of these have low sensitivity to abrasion pressures and three are not sensitive to this pressure. One biotope does not have an assessment available on MarLIN. Therefore, these have not been considered further within this section.

For the subtidal mixed sediments feature, seven biotopes have been identified which could be present in the site. Four of these biotopes, shown in **Table A2. 2** in Annex 2, were identified as having medium sensitivity to abrasion. For the subtidal sand feature, 14 biotopes have been identified which could be present in the site, four of which have medium sensitivity, shown in **Table A2. 3** in Annex 2.

The JNCC commissioned a range of research to collect information on the marine environment within offshore marine conservation zones (MCZs) to underpin the designation of the site. Surveys were undertaken to characterise the seabed habitats and their associated communities and enable broad-scale mapping to inform

[10] JNCC report 647: Biotope Presence-Absence spreadsheet (revised July 2020). Available online: Assigning the EUNIS classifications to UK's Offshore Regional Seas | JNCC Resource Hub (last accessed 3 July 2023).

decisions for marine nature conservation. South of the Isles of Scilly MPA Community Analysis report [11] summarises the characterising species and communities of the site. Of the two survey stations characterised by deep slightly gravelly sand contained, one station was described as impoverished, containing only one individual of each of the species *Aphelochaeta* sp. *Capitella* sp. and *Mediomastus fragilis*. The second station included *Glycera unicornis*, *Ophelia borealis, Bathyporeia elegans* and *Goniadella gracilis*. Two further survey stations were characterised by slightly gravelly sand and contained *Moerella pygmaea*, *Nemertea, Pisione remota* and *Protodorvillea kefersteini*. Presence data indicates that the most frequently surveyed species on all survey stations in deep, gravelly sand or muddy sandy gravel *were Lumbrineris cingulata, Aponuphis bilineata, Echinocyamus pusillus, Cerianthus lloydii, Medoimastus fragilis* and *Glycera lapidum.*

Generally, subtidal sediments are less sensitive and likely to recover more quickly from fishing activity impacts than more fragile habitats such as biogenic reefs, however fishing activity still has the potential to negatively impact these habitats and hinder the conservation objectives of the sites in which they are protected, particularly with regard to the structure and function of the biological communities present. These habitats usually contain populations of sessile epifauna, physical damage, disturbance or removal of such species usually leads to slow recovery rates. Studies indicate that slow growing branching species and erect branching species are considered particularly sensitive to damage from netting. Repeated netting activity could damage communities associated with this feature through cumulative impacts. However, it should be noted that sensitivity to removal via abrasion was predominantly linked to studies using bottom towed gears rather than static gears such as anchored nets and lines.

Section 9.4 of the anchored nets and lines Impacts Evidence document[5] indicates that these fishing methods are unlikely to negatively impact the extent or distribution of any sediment feature or structure and function of the ecosystem in a significant manner due to the static nature and relatively small footprint of the gear. Subtidal sediment habitats are considered resilient to all but intense fishing activity using anchored nets and lines on species rich sediment habitats or those with long-lived bivalves. Potential impacts of abrasion or disturbance of the substrate on the surface of the seabed on the features of the site are more likely to occur during the hauling of gear or the movement of gear along the seabed due to strong tides, currents, or storm activity.

[11] South of the Isles of Scilly MPA Community Analysis report: https://data.jncc.gov.uk/data/1093cb52-7bdb-456d-86b5-3fb96d19168f/JNCC-Report-595-FINAL-WEB.pdf (last accessed 3 July 2023)

As described in section 9.4 of the anchored nets and lines Impacts Evidence document[5], there is limited information on the impacts of static gears on sand habitats, however available literature suggests that static gears such as anchored nets and lines have a relatively low impact on benthic communities in comparison to towed gears and are likely to be of limited concern to subtidal sand habitats.

The impact of demersal nets and lines will likely be greatest on any epifauna present with resistance varying by species. The potential for impact will be dependent on the intensity of fishing activity taking place with increasing activity increasing the likelihood of weights and ropes associated with nets and lines damaging, entangling or removing epifaunal species. Abrasion of the seabed is particularly apparent during hauling of gear or the movement of gear along the seabed when subject to strong tides, currents or storm activity. However, interaction of lines and associated anchors with the seabed is likely to be minimal.

Overarchingly, the conclusion from the literature available is that subtidal sediments are estimated to have no or low sensitivity to all but heavy levels of fishing intensity from static fishing on stable species rich sediments or sand and gravel with long-lived bivalves. According to VMS and landings data for over 12 m vessels, the use of anchored nets and lines in the site appears to be minimal with an average of one count between 2016 and 2021 and approximately 0.41 tonnes landed on average between 2016 and 2020.

Overall, given the low levels of anchored nets and lines activity undertaken in the site coupled with the good rates of resilience and recoverability of the biotopes present on the feature and the likelihood that these biotopes already have some resilience to described levels of anchored nets and lines in the site, there is a low risk of impacts to this feature at described levels of activity relating to abrasion or disturbance of the substrate on the surface of the seabed. The site is also subject to moderate hydrodynamic energy of the Western Channel and Celtic Sea, so it is likely that these biological communities are acclimatised to some level of natural disturbance. It is unlikely that the ongoing use of anchored nets and lines will pose a significant risk of hindering the achievement of the conservation objective of South of the Isles of Scilly MPA.

Fan Mussel (*Atrina fragilis)*

Fan mussel is a designated feature of the South of the Isles of Scilly MPA, however as a Species of Conservation Importance, it does not have biotopes directly associated. Fan mussel typically live in the sublittoral fringe, in subtidal mud, sandy mud or gravel habitats.

Abrasion towards sediment habitats will be more significant for bottom towed gears; however, impacts from anchored nets and lines are still possible through interactions between the seabed and the gear itself including associated lines and anchors. Surface abrasion and disturbance to the seabed could be caused during the setting

and retrieval of nets/lines and their associated ground lines and anchors, as well as by their movement over the seabed during rough weather. This is more likely to occur if the gear moves across the seabed during hauling of gear or when the gear is subject to strong tides, currents or storm activity.

There is limited direct evidence of the impacts of static gears on subtidal sediments; however, research has shown that no static gears are considered to be a 'major concern' for subtidal sediments and estimated no or low sensitivity to all but heavy levels of fishing intensity on stable species on rich sediments or sand and gravel with long-lived bivalves. As interactions with the associated seabed are likely to be minimal, anchored lines and net are unlikely to significantly impact the physical structure of subtidal mud, sandy mud or gravel habitats. Fan mussel is shown to have high sensitivity to abrasion impacts, however, studies indicate that the anchored nets and lines gear type is unlikely to have significant impacts on fan mussel, as interactions with the associated seabed are likely to be minimal.

Overall, there is a low risk of impacts to this feature at the described levels of activity. The site is also subject to moderate hydrodynamic energy of the Western Channel and Celtic Sea, so it is likely that these biological communities are acclimatised to some level of natural disturbance. It is unlikely that the ongoing use of anchored nets and lines will pose a significant risk of hindering the achievement of the conservation objective of South of the Isles of Scilly MPA.

Therefore, MMO conclude that the ongoing use of anchored nets and lines at the levels described does not pose a significant risk of hindering the achievement of the conservation objectives of South of the Isles of Scilly MPA.

4.3.2 Bottom towed gear

The following features of South of the Isles of Scilly MPA have been considered in relation to pressures from bottom towed gear.

Subtidal coarse sediment; subtidal mixed sediments; subtidal sand

The relevant pressures on the subtidal sediment features of South of the Isles of Scilly MPA (outlined above) from bottom towed gear were identified in **Table 4** and are:

- abrasion or disturbance of the substrate on the surface of the seabed*;
- penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion*;
- changes in suspended solids (water clarity)^;
- smothering and siltation rate changes^.

Fan mussel (*Atrina fragilis)*

The relevant pressures on the fan mussel feature of South of the Isles of Scilly MPA (outlined above) from bottom towed gear were identified in **Table 4** and are:

- abrasion or disturbance of the substrate on the surface of the seabed*;
- penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion*;
- smothering and siltation rate changes;
- removal of non-target species.

Pressures marked with matching superscript symbols (* and ^) have been consolidated in this review to avoid repetition, due to the similar nature of their impacts on sediment habitats.

Subtidal coarse sediment; subtidal mixed sediments; subtidal sand

- Abrasion or disturbance and penetration of the substrate on the surface of the seabed.

As outlined in **Table A2. 1** in Annex 2, three subtidal coarse sediment biotopes have been identified as having medium sensitivity to penetration pressures. The four subtidal mixed sediments biotopes identified in the anchored nets and lines section as having medium sensitivity to abrasion, have also been identified as having medium sensitivity to penetration, as outlined in **Table A2. 2** in Annex 2. For the subtidal sand biotopes, five biotopes have been identified as having medium sensitivity to penetration, as outlined in **Table A2. 3** in Annex 2, with four being the same biotopes identified as having medium sensitivity to abrasion pressures in **section 4.3.1.** However, the *Echinocardium cordatum* and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand biotope is unlikely to be present within the site and has therefore been screened out (JNCC pers. comms, 2023).

As described in section 8.4.1 of the bottom towed gear Impacts Evidence document[6], abrasion and penetration pressures from bottom towed gear can result in both physical and biological impacts on subtidal sediment features. Physical impacts include the creation of furrows and berms in the sediment from the trawl doors associated with bottom otter trawls; and the flattening of bottom features such as ripples and irregular topography by beam trawls and demersal seines. Physical impacts are unlikely, however, to significantly impact the large-scale topography of sediment features. Of more concern are the impacts to the biological structure of sediment habitats. Impacts on biological communities through damage and mortality of flora and fauna via surface and subsurface abrasion and penetration varies based on the levels of fishing activity and intensity, however the first pass of bottom towed gear over the seabed will remove the most sensitive components of the feature. This

can lead to long term shifts in biological communities towards smaller, short-lived, opportunistic species that exhibit greater resilience to anthropogenic activity.

Demersal trawls can cause collision, crushing and uprooting as animals encounter or pass under the gear. Initial reductions in biomass, species richness and diversity, as well as changes in community structure are considered likely to be greatest on subtidal coarse sediments compared to subtidal sand. As outlined in section 8.5.1 of the bottom towed gear Impacts Evidence document[6], the first pass of a trawl has the largest initial impact on biomass and production in sediments whereas in areas of high trawling intensity, further increasing trawling intensity can have smaller additional effects on biomass and production (Hiddink *et al.*, 2006). Direct mortality due to otter trawling is considerable but has been found to be lower than that caused by beam trawling for a number of burrowing species, however research has shown that otter trawls remove, on average, around 6 % of faunal biomass per pass with the first trawl pass having the most significant impact.

Based on the rationale above, bottom towed gears operating within South of the Isles of Scilly MPA have the potential to impact biological communities and the overall ecosystem function of the subtidal sediment features found in the site from abrasion, penetration, or disturbance of the substrate on the surface of the seabed pressures. Given the medium sensitivity of biotopes identified within the subtidal sediment habitats in the site, low resistance to this type of fishing activity and slow recoverability, it is likely that the ongoing use of bottom towed gear over the sediment features will pose a significant risk of hindering the achievement of the conservation objective of South of the Isles of Scilly MPA.

- Changes in suspended solids (water clarity) and smothering and siltation rate changes (light).

Table A2. 1 to **Table A2. 3** of Annex 2 details the list of biotopes that may be found within the sediment features which may be sensitive to the changes in suspended solids (water clarity) and smothering and siltation rate changes pressures. One subtidal coarse sediment biotope was identified as having medium sensitivity to changes in suspended solids (water clarity). Three subtidal mixed sediments' biotopes were identified as having medium sensitivity to smothering and siltation rate changes (light).

As described in **section 4.2**, the majority of bottom towed gear activity in the site is being undertaken by vessels deploying bottom otter trawls. Research on the effects of sediment suspension by otter trawls used to inform the bottom towed gear Impacts Evidence document[6] demonstrated that activity over sandy substrates can cause a sediment concentration increase behind the gear of up to 0.43 cm^3 per litre and an estimated 41.3 kg of sediment can be suspended by all otter trawl components (ground gear and trawl doors) per metre. Further research used to inform the Impacts Evidence document on the effects of otter trawling on mud

sediments found that a single trawling event by an otter trawl resulted in suspension of approximately 9.5 tonnes of sediment, including tens to hundreds of kilograms of associated particulate elements, per kilometre of track. The sediment plume in the near-bottom water was transported more than 1 km away over the following three to four days and elevated levels of re-suspended fine mud sediment were recorded for up to 5 days after their trawl disturbance event.

As described in section 8.4.2 of the bottom towed gear Impacts Evidence document[6], the degree of suspension and therefore the likely degree of impact varies between gear types and sediment type, however it is likely that the extent of impact will vary in line with the degree of resuspension, the larger the amount of entrainment of sediment, the greater the impact on vulnerable biological communities. More compacted substrates with higher mud fractions generate more sediment resuspension than those which are naturally cleaner. Resuspended sediment and the resulting increase in turbidity may be a risk to organisms that are vulnerable to increased levels of sediment particles in the water column and creates the potential for impacts via smothering. Changes in suspended sediment in the water column may have a range of biological effects on different species within the habitat, affecting their ability to feed or breathe. Furthermore, section 8.4.2 of the bottom towed gear Impacts Evidence document[6] describes the impacts on the biological communities of sediment habitats from smothering and siltation as variable depending on the species present. Research used to inform the Impacts Evidence document indicates that sedentary, filter or suspension feeders, such as bivalves, had low resistance to smothering, whereas mobile epifauna appear highly resilient and resistant.

Given the low resistance of subtidal coarse sediment/subtidal mixed sediments mosaic and subtidal sand biotopes to bottom towed gear and slow recoverability, it is likely that the ongoing use of bottom towed gear over the sediment features will pose a significant risk of hindering the achievement of the conservation objective of South of the Isles of Scilly MPA.

Therefore, MMO conclude that there is a significant risk of the ongoing use of bottom towed gear hindering the achievement of the conservation objectives of South of the Isles of Scilly MPA.

Fan Mussel (*Atrina fragilis)*

- Abrasion or disturbance and penetration of the substrate on the surface of the seabed.

Section 5.1 of the bottom towed gear Impacts Evidence document[6] outlines the sensitivity of fan mussels to this fishing type, and they are considered very fragile and sensitive to physical and mechanical damage. Their recovery from impacts is considered low given their long lifespan, slow growth and low gamete production, however, primary evidence relating to impacts from these fishing methods is limited.

This species is generally found in mud, sandy mud and fine gravel habitats, particularly in full salinity sheltered areas with weak to moderately strong tidal flows. Their distribution has been linked to several environmental variables including depth, seabed topography, current speed, and percentage of mud and gravel. Up to 70 % of the shell lengths of fan mussel can be buried below the surface of sediments, with the posterior portion projecting above, making fan mussel sensitive to gear types which interact with the seabed, particularly dredges. Despite fan mussel being able to withdraw into their shells and repair damage to the posterior edge of the shell, they cannot survive being uprooted from the seabed.

Fan mussel is known to be negatively affected by the use of benthic fishing gear as it can dislodge or remove individuals, cause damage to emergent portions of the shell and potentially cause mortality. Furthermore, fan mussel is a slow growing, erect epifauna with slow recoverability and is assessed to have high sensitivity to bottom towed mobile gear. Research has shown that fan mussel is likely to have a ‘very low’ resilience and ‘high’ sensitivity to removal by a fishery that does not target it, and a ‘low’ resilience and ‘medium’ sensitivity to abrasion pressures.

Therefore, given the low resistance and high sensitivity of this species to bottom towed gear fishing activity coupled with the level of activity currently taking place in the site, it is likely that the ongoing use of bottom towed gear at the levels described will pose a significant risk of hindering the achievement of the conservation objective of ‘recover to favourable condition’ of this feature of South of the Isles of Scilly MPA.

- Smothering and siltation rate changes (light).

Section 5.3.3 of the bottom towed gear Impacts Evidence document[6] describes the sensitivity of fan mussel to smothering and siltation rate changes. Although there is limited evidence on impacts of siltation rate changes on fan mussel, sediment plumes resulting from bottom towed gear will reduce light levels reaching the substrate, release nutrients and possible pollutants into the water column, and increase the total suspended sediment load. The deposition of suspended sediments may cause smothering of feeding and respiratory organs of sessile benthos.

Fan mussels are adapted to sedimentary lifestyles and have ciliated waste canals to remove sediment from the mantle. One third to one half of a fan mussel can protrude above the sediment surface (up to 10 to 15 cm for adults) which means that adult individuals may not be affected by smothering of up to 5 cm of fine sediment. However, small or juvenile individuals may be smothered by this amount of sediment and cases of higher sediment loads (for example, 30 cm) are also likely to smother adult individuals. In addition, increased siltation results in a higher metabolic demand, leading to a likely decrease in growth and reproductive capacity.

Fan mussels are assessed to have ‘low’ resilience and ‘medium’ sensitivity to smothering and siltation rate changes. The impact of this pressure will depend on the intensity of bottom towed gear use and the proximity to fan mussel. Given the

medium sensitivity of this species to bottom towed gear fishing activity coupled with the level of activity currently taking place in the site, it is likely that the ongoing use of bottom towed gear at the levels described will pose a significant risk of hindering the achievement of the conservation objective of South of the Isles of Scilly MPA.

- Removal of non-target species.

As described in section 5.3.2 in the bottom towed gear Impacts Evidence document[6], fan mussels are fragile and are particularly sensitive to damage or disturbance as they are unable to re-burrow once removed from the sediment as they are unable to right themselves. Dredges are the most efficient method used to target the removal of bivalves and although there is no known fishery for this species, scallop dredging has been implicated in the decline in populations of the fan mussel. Section 4.2 discusses the fishing activity within South of the Isles of Scilly MPA, records and landings data indicate that dredging activity rarely occurred within the site except in 2019 when there were 5 VMS records and 0.58 t landed by over 12 m vessels. However, demersal trawling also can remove organisms from the top layers of sediment indiscriminately. Research within the Marine Life Information Network (Tyler-Walters and Wilding, 2022) has shown that the density of fan mussels is reduced after trawling, specimens have been found to be speared on trawl teeth and pulled from the sediment. Demersal trawling is the most common type of gear used within South of the Isle of Scilly MPA.

Therefore, MMO conclude that the there is a significant risk of the ongoing use of bottom towed gear hindering the achievement of the conservation objectives of South of the Isles of Scilly MPA.

4.3.3 Traps

The following features of South of the Isles of Scilly MPA have been considered in relation to pressures from traps.

Subtidal coarse sediment; subtidal mixed sediments; **subtidal sand; fan mussel *(Atrina fragilis).***

The relevant pressures on the features of South of the Isles of Scilly MPA (outlined above) from traps were identified in **Table 4** and are:

- abrasion or disturbance of the substrate on the surface of the seabed

Impacts on these features relating to abrasion or disturbance of the substrate on the surface of the seabed occur primarily during the setting and retrieval of traps and their associated ropes, weights and anchors, as well as by their movement over the seabed during rough weather.

Subtidal coarse sediment; subtidal mixed sediments; **subtidal sand**

Traps and anchored nets and lines fishing gear exert similar pressures on the biotopes associated with the sediment features of the site, therefore the biotopes identified as having medium sensitivity to abrasion in the anchored nets and lines section (**section 4.3.1**) also apply here for the traps section.

As described in section 9.4 of the traps Impacts Evidence document[7], abrasion impacts from this gear type are unlikely to be a concern unless they occur where particularly sensitive species are present or when fishing occurs at damaging levels of intensity. **Section 4.2** describes fishing activity within the South of the Isles of Scilly MPA and indicates that, according to VMS records and landings data, the use of traps are not frequently deployed in the site according to VMS data. Between 2016 and 2021, there were 16 traps VMS records on average per year. Given the limited traps fishing activity being undertaken at the site, any interaction between traps and the feature is likely to be minimal at the described levels.

There is limited primary evidence to indicate lasting impacts on sediment features from traps, however traps are considered of limited concern due to the generally high energy environments where these subtidal sediment features occur and the likely greater impact of natural disturbance in these environments compared with potting. Overall, traps are unlikely to adversely affect these features outlined in this section and therefore are unlikely to pose a significant risk of hindering the conservation objectives of South of the Isles of Scilly MPA.

Fan mussel (*Atrina fragilis*)

Traps and anchored nets and lines fishing gear exert similar pressures on the fan mussel feature, therefore the narrative in the anchored nets and lines section (**section 4.3.1**) also applies here for the traps section.

As described in section 5.3.1 of the traps Impacts Evidence document[7], traps are not generally considered a fishing activity that penetrates the seabed, and abrasion and penetration towards sediment habitats will be more significant in bottom towed gears. Traps are unlikely to have lasting and detrimental impacts on fan mussel and given the limited traps fishing activity being undertaken at the site, any interaction between traps and the feature is likely to be minimal. Overall, there is a low risk of impacts to this feature at the described levels of activity.

The site is also subject to moderate hydrodynamic energy of the Western Channel and Celtic Sea, so it is likely that these biological communities are acclimatised to some level of natural disturbance. It is unlikely that the ongoing use of traps will pose a significant risk of hindering the achievement of the conservation objective of South of the Isles of Scilly MPA.

Therefore, MMO conclude that the ongoing use of traps at the levels described does not pose a significant risk of hindering the achievement of the conservation objectives of South of the Isles of Scilly MPA.

4.4 Part B conclusion

The assessment of anchored nets and lines, bottom towed gears, and traps on the subtidal coarse sediment / subtidal mixed sediments mosaic and subtidal sand and fan mussel features of South of the Isles of Scilly MPA has concluded that:

- the ongoing use of anchored nets and lines and traps does not pose a significant risk of hindering the achievement of the conservation objectives of the MPA;
- there is a significant risk of the ongoing use of bottom towed gears hindering the achievement of the conservation objectives of the MPA.

Management measures will therefore be implemented for bottom towed gears. **Section 6** contains further details of these measures.

5 Part C – In-combination assessment

This section assesses the impacts of fishing activities in-combination with relevant activities taking place. This includes the following:

- fishing interactions assessed in Part B but which were not considered, alone, to pose a significant risk of hindering the achievement of the conservation objectives; and
- other activities: such as marine development infrastructure plans and projects that occur in the MPA.

ArcGIS software has been used to check relevant activities that occur within, or adjacent to, the assessed site where there could be a pathway for impact. To determine relevant activities to be included in this part of the assessment, a distance of 5 km was selected as suitable to capture any potential way in which the activity could impact the site in-combination effects with those of the fishing activities assessed. A 5 km buffer was therefore applied to the site boundary to identify relevant activities. This assessment considers the in-combination impacts of marine licensable activities that are ongoing or upcoming, with the same medium to high-risk pressure impact pathways as permitted fishing activity. As the models were run using ArcGIS in August 2023, any licences that ended before this date were screened out of the assessment.

The North Sea Transition Authority (NSTA) is responsible for regulating the oil, gas and carbon storage industries, and as such these activities fall outside of MMO's marine licensing remit. Oil, gas and carbon storage industry activities are not currently considered in this draft assessment, as information on the potential pressures exerted by associated activities is currently under review, and the likelihood of these activities resulting in an in-combination significant risk of hindering the achievement of the site's conservation objectives with fishing is expected to be very low. Following formal consultation, relevant oil, gas and carbon storage industry activities that could impact the site in combination with the effects of assessed fishing activities will be included before finalising this assessment, alongside marine licence applications submitted after August 2023.

There may be operational submarine cables within this MPA, these cables are already in-situ and are unlikely to have any residual abrasion/removal pressure in-combination with the assessed fishing activity. Any abrasion/removal pressure from submarine cable operation and maintenance activity will be temporary with limited seabed impacts and is therefore unlikely to have significant in-combination effects with assessed fishing.

Bottom towed gears were identified in Part B as requiring management to avoid posing a significant risk of hindering the achievement of the site conservation

objectives. Anchored nets and lines and traps are the only remaining fishing activities occurring within South of the Isles of Scilly MPA that interact with the seabed. In-combination effects of these fishing activities as well as these activities in-combination with other relevant activities will be assessed in this section.

In accordance with the methodology detailed above, ArcGIS identified no other relevant activities occurring within or adjacent to the South of the Isles of Scilly MPA, within the 5 km buffer applied. Therefore, only fishing in-combination with other fishing activities are considered hereafter.

Table 3 from **section 3.3**, was used to identify medium-high risk pressures exerted by fishing which require in-combination assessment (**Table 5**).

Table 5 summarises the pressures exerted by fishing and identifies those pressures exerted by all gears (Y: pressure exerted). Activity-pressure interactions are highlighted dark blue to indicate an in-combination effect. Only fishing activity with no proposed or current fisheries management in place are considered.

Table 5: Pressures exerted by fishing.

	Fishing activities	
Potential pressures	**Anchored nets and lines**	**Traps**
Abrasion or disturbance of the substrate on the surface of the seabed	Y	Y
Removal of non-target species	Y	Y
Removal of target species	Y	Y

5.1 In-combination pressure sections

The fishing pressures exerted by anchored nets and lines and traps will be considered in this section.

5.2 Fishing vs Fishing in-combination pressures

5.2.1 Abrasion and disturbance of the substrate on the surface of the seabed and removal of target and non-target species

As noted in Part B (**Section 4.3.1** nets and lines and **Section 4.3.3** traps), impacts from the removal of target and non-target species pressure is not being considered in detail in this assessment. In-combination impacts from the removal of target and non-target species pressures are more fully assessed under the pressure abrasion, as the fan mussel feature is considered not to be at significant risk from these

pressures via static gear use in this site (**Section 4.3**). Therefore, the removal pressures are not considered further in this in-combination assessment. The pressures may require further consideration as future evidence becomes available, in conjunction with updated conservation advice from JNCC and Natural England.

The annual average VMS records for over 12 m vessels within the MPA totalled 17 (16 for traps and 1 for anchored nets and lines). For under 12 m vessels, between 2016 and 2020, the annual average fishing effort estimated to have been derived from the MPA via traps and anchored nets and lines was 7.13 days (14.01 days for traps, 3.11 days for anchored nets and lines, Annex 1, calculated from **Table A1. 8**). For the same period (2016-2020), the total fishing effort (under 12s) estimated to have been derived from the MPA were 102.75 days (84.07 days for traps, 18.68 days for anchored nets and lines (Annex 1, calculated from **Table A1. 8**). The fishing effort data is further supported by the estimated live weight landings for under 12 m vessels that equal an annual average of 3.05 tonnes, 2.33 tonnes for traps and 0.72 tonnes for anchored nets and lines, between 2016 and 2020 (**Section 4.2**).

The combined impacts from anchored nets and lines and traps could potentially increase the risk of negative effects from the pressure abrasion and disturbance of the substrate on the surface of the seabed. However, anchored nets and lines activity within the site is minimal. Annual average under 12 m anchored nets and lines effort is low (3.11 days) landing an annual average of 0.72 tonnes, in addition to the low landings for the over 12 m fleet of this gear type (0.41 tonnes). Trap VMS records are concentrated around the north and northeastern portions of the site and may potentially overlap with anchored nets and lines activity, which is shown to occur sparsely around the centre of MPA. However, due to the limited anchored nets and lines activity and the scale of the site, overlap of these gears is unlikely. The low level of trap activity alone (annual average effort of 14.01 days) has also been assessed as not resulting in a significant risk to the conservation objectives, as such the addition of such low levels of anchored nets and lines activity is unlikely to result in significant in-combination impacts. Any areas of potential spatial overlap between the gear types occur over subtidal coarse sediment, subtidal mixed sediments and subtidal sand features with fan mussels potentially being present. Subtidal sediments are considered to be resilient to all but intense fishing activity, and fan mussel interactions with anchored nets and lines and traps are considered unlikely. Considering the low-level of both trap and anchored nets and lines activity, the low probability of spatial overlap between the gear types and the resilience of the features of the site to these pressures, any in-combination impact is considered insignificant.

Therefore, MMO concludes that the combined pressures from anchored nets and lines and traps will not result in a significant risk of hindering the achievement of the conservation objectives for the South of the Isles of Scilly MPA at the levels described.

5.3 Part C conclusion

MMO concludes that fishing interactions in-combination will not result in a significant risk of hindering the achievement of the conservation objectives for South of the Isles of Scilly MPA.

Further management measures will not therefore be implemented for fishing activities currently occurring within the MPA.

6 Conclusion and proposed management

Part A of this assessment concluded that bottom towed gear, anchored nets and lines and traps are capable of affecting (other than insignificantly) the designated features of South of the Isles of Scilly MPA.

Part B of this assessment concluded that ongoing use of bottom towed gear on the sedimentary features and fan mussels feature of South of Isles of Scilly MPA may result in a significant risk of hindering the achievement of the conservation objectives of the MPA. Part B also concluded that the ongoing use of anchored nets and lines and traps at the described levels does not pose a significant risk of hindering the achievement of the conservation objectives.

Part C of this assessment concluded that combined pressures from anchored nets and lines and traps and other relevant activities do not pose a significant risk of hindering the achievement of the conservation objectives of the MPA.

To ensure that fishing activities do not result in a significant risk of hindering the conservation objectives, MMO propose to implement a byelaw to prohibit the use of bottom towed gear on the sedimentary features and fan mussel feature of South of the Isles of Scilly MPA.

Figure 2 shows the proposed management area in line with the conclusions set out above.

The boundaries of the proposed management area include an appropriate buffer zone to prevent direct damaging physical interactions between fishing activities and the designated features to be protected. The rationale for determining buffer size can be found in in Annex 2 of the Stage 3 MPA Site Assessment Methodology document[4].

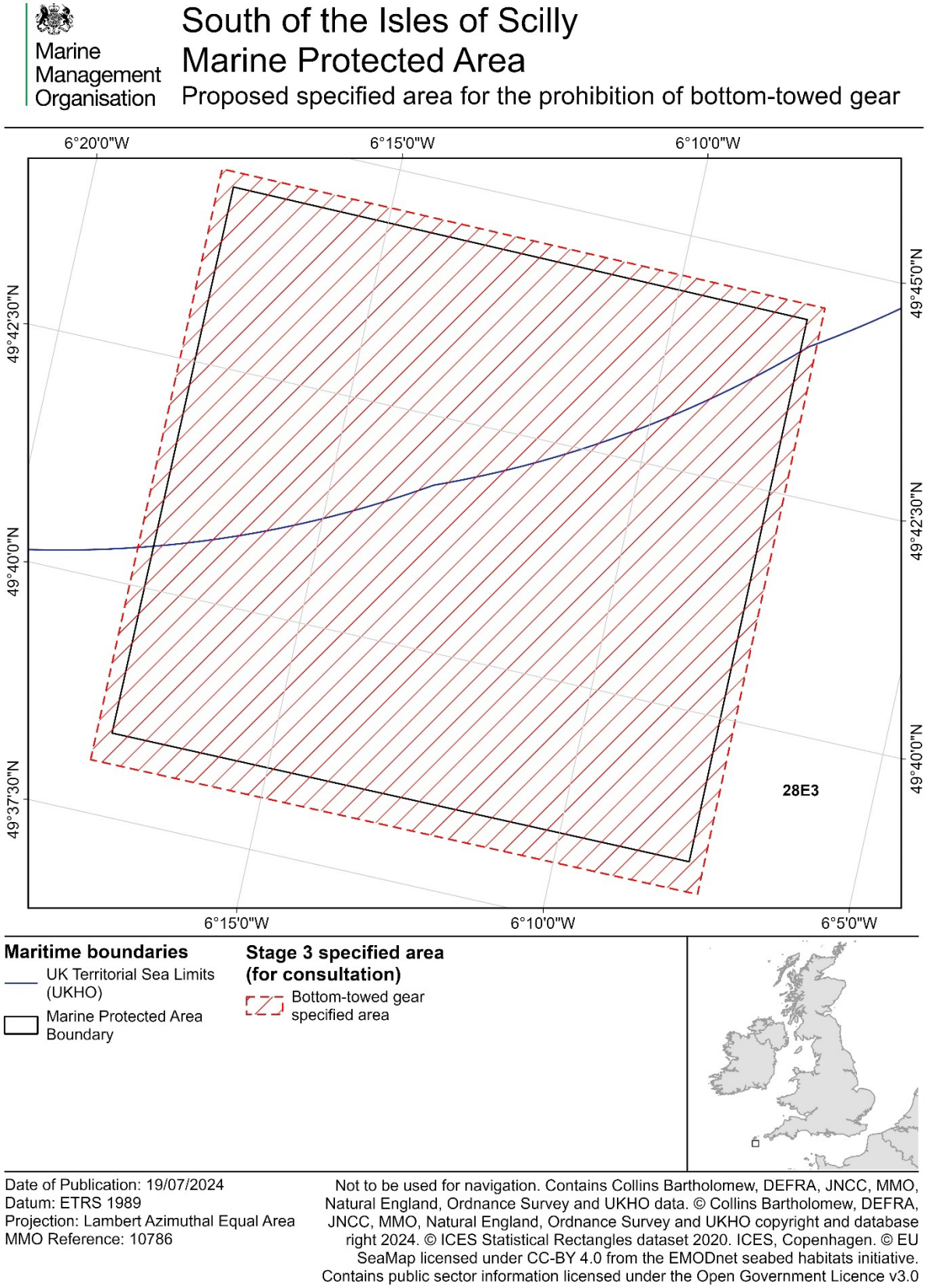

Figure 2: Map of proposed management.

7 Review of this assessment

MMO will review this assessment every five years, or earlier if significant new information is received. Such information could include:

- updated conservation advice;
- updated advice on the condition of the site's feature(s);
- significant increase in activity levels.

To coordinate the collection and analysis of information regarding activity levels, and to ensure that any required management is implemented in a timely manner, a monitoring and control plan will be implemented for this site. This plan will be developed in line with MMO's Monitoring and Control Plan framework.

References

Ashley, M. (2016) ‘Maldanid polychaetes and Eudorellopsis deformis in offshore circalittoral sand or muddy sand’, in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1105.

De-Bastos, E. (2023) ‘Owenia fusiformis and Amphiura filiformis in offshore circalittoral sand or muddy sand’, in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/381.

De-Bastos, E.S.R., Hill, J.M., Garrard, S.L. and Watson, A. (2023) ‘Ophiothrix fragilis and/or Ophiocomina nigra brittlestar beds on sublittoral mixed sediment’, in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1068.

De-Bastos, E.S.R., Lloyd, K.A. and Watson, A. (2023) ‘Acrocnida brachiata with Astropecten irregularis and other echinoderms in circalittoral muddy sand’, in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1079.

De-Bastos, E.S.R., Marshall, C.E. and Watson, A. (2023) ‘Kurtiella bidentata and Thyasira spp. in circalittoral muddy mixed sediment’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/374.

Hiddink, J.G., Jennings, S., Kaiser, M.J., Queirós, A.M., Duplisea, D.E. and Piet, G.J. (2006) ‘Cumulative impacts of seabed trawl disturbance on benthic biomass, production, and species richness in different habitats’, *Canadian Journal of Fisheries and Aquatic Sciences*, 63(4), pp. 721–736.

MarLIN (2018) *Marine Evidence Based Sensitivity Assessment (MarESA)*.

Marshall, C., Ashley, M. and Watson, A. (2023) ‘Hesionura elongata and Microphthalmus similis with other interstitial polychaetes in infralittoral mobile coarse sand’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/379.

McQuillan, R.M., Tillin, H.M. and Watson, A. (2023) ‘Dense Lanice conchilega and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/116.

Perry, F. and Watson, A. (2023) ‘Cerianthus lloydii with Nemertesia spp. and other hydroids in circalittoral muddy mixed sediment’, in Tyler-Walters, H. (ed.) *Marine Life*

Information Network: Biology and Sensitivity Key Information Reviews. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1092.

Perry, F. and Watson, A. (2024) 'Cerianthus lloydii and other burrowing anemones in circalittoral muddy mixed sediment', in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1091.

Readman, J.A.J. and Watson, A. (2024) 'Flustra foliacea and Hydrallmania falcata on tide-swept circalittoral mixed sediment', in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/74.

Sotheran, I., Welch, R., Benson, A. and Jones, L. (2016) *Marine Conservation Zone Benthic Community Analysis Phase 1. A report by Envision Mapping Ltd to JNCC*, *JNCC Report No. 595*. Peterborough.

Tillin, H.M. (2022) 'Echinocyamus pusillus, Ophelia borealis and Abra prismatica in circalittoral fine sand', in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1131.

Tillin, H.M. (2023) 'Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles)', in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1080.

Tillin, H.M. and Ashley, M. (2016) 'Hesionura elongata and Protodorvillea kefersteini in offshore coarse sand', in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1113.

Tillin, H.M., Rayment, W.J. and Watson, A. (2023) 'Venerupis corrugata, Amphipholis squamata and Apseudes holthuisi in infralittoral mixed sediment', in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/354.

Tillin, H.M. and Watson, A. (2023a) 'Branchiostoma lanceolatum in circalittoral coarse sand with shell gravel', in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/244.

Tillin, H.M. and Watson, A. (2023b) 'Glycera lapidum, Thyasira spp. and Amythasides macroglossus in offshore gravelly sand', in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1136.

Tillin, H.M. and Watson, A. (2023c) ‘Glycera lapidum in impoverished infralittoral mobile gravel and sand’, in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1137.

Tillin, H.M. and Watson, A. (2023d) ‘Mediomastus fragilis, Lumbrineris spp. and venerid bivalves in circalittoral coarse sand or gravel’, in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/382.

Tillin, H.M. and Watson, A. (2023e) ‘Moerella spp. with venerid bivalves in infralittoral gravelly sand’, in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1111.

Tillin, H.M. and Watson, A. (2023f) ‘Polychaete-rich deep Venus community in offshore gravelly muddy sand’, in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1117.

Tillin, H.M. and Watson, A. (2023g) ‘Protodorvillea kefersteini and other polychaetes in impoverished circalittoral mixed gravelly sand’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1115.

Tyler-Walters, H., Durkin, O.C. and Watson, A. (2023) ‘Neopentadactyla mixta in circalittoral shell gravel or coarse sand’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/389.

Tyler-Walters, H. and Tillin, H.M. (2023) ‘Spirobranchus triqueter with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/177.

Tyler-Walters, H. and Wilding, C.M. (2022) ‘Atrina fragilis: Fan mussel’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/species/detail/1157.

Annexes

Annex 1: Fishing activity data

Table A1. 1: VMS record count per nation group (UK and EU Member State) and proportional activity (%), per gear, per gear group, per year (2016 to 2021), totals and annual average (2016 to 2021). All numbers are rounded to the nearest whole number.

			2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
Gear group	**Gear code**	**Nation group**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**
Anchored Net/Line	**GN**	UK	0	0	0	0	0	0	1	100	0	0	0	0	1	100	0
	GN Total		**0**	**0**	**0**	**0**	**0**	**0**	**1**	**20**	**0**	**0**	**0**	**0**	**1**	**14**	**0**
	GNS	UK	1	100	0	0	0	0	4	100	0	0	0	0	5	100	1
	GNS Total		**1**	**50**	**0**	**0**	**0**	**0**	**4**	**80**	**0**	**0**	**0**	**0**	**5**	**71**	**1**
	GTR	UK	1	100	0	0	0	0	0	0	0	0	0	0	1	100	0
	GTR Total		**1**	**50**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**14**	**0**
Anchored Net/Line Total			**2**	**0**	**0**	**0**	**0**	**0**	**5**	**2**	**0**	**0**	**0**	**0**	**7**	**0**	**1**

			2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
Gear group	**Gear code**	**Nation group**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**
Demersal trawl	**OTB**	EU Member State	195	87	199	75	200	78	182	78	84	82	251	87	1,111	81	185
	OTB	UK	30	13	66	25	55	22	50	22	18	18	38	13	257	19	43
	OTB Total		**225**	**64**	**265**	**90**	**255**	**81**	**232**	**87**	**102**	**33**	**289**	**61**	**1,368**	**68**	**228**
	OTT	EU Member State	0	0	2	50	2	15	0	0	0	0	1	100	5	19	1
	OTT	UK	8	100	2	50	11	85	0	0	0	0	0	0	21	81	4
	OTT Total		**8**	**2**	**4**	**1**	**13**	**4**	**0**	**0**	**0**	**0**	**1**	**0**	**26**	**1**	**4**
	TBB	EU Member State	6	5	1	4	7	15	5	14	134	66	155	85	308	50	51
	TBB	UK	115	95	25	96	39	85	31	86	69	34	28	15	307	50	51
	TBB Total		**121**	**34**	**26**	**9**	**46**	**15**	**36**	**13**	**203**	**67**	**183**	**39**	**615**	**31**	**103**
Demersal trawl Total			**354**	**85**	**295**	**89**	**314**	**100**	**268**	**96**	**305**	**99**	**473**	**98**	**2,009**	**94**	**335**

			2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
Gear group	**Gear code**	**Nation group**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**
Dredge	**DRB**	EU Member State	1	100	0	0	0	0	0	0	0	0	2	100	3	38	1
	DRB	UK	0	0	0	0	0	0	5	100	0	0	0	0	5	63	1
	DRB Total		**1**	**100**	**0**	**0**	**0**	**0**	**5**	**100**	**0**	**0**	**2**	**100**	**8**	**100**	**1**
Dredge Total			**1**	**0**	**0**	**0**	**0**	**0**	**5**	**2**	**0**	**0**	**2**	**0**	**8**	**0**	**1**
Midwater Trawl	**OTM**	EU Member State	1	100	8	100	1	100	0	0	0	0	4	100	14	100	2
	OTM Total		**1**	**100**	**8**	**100**	**1**	**100**	**0**	**0**	**0**	**0**	**4**	**100**	**14**	**100**	**2**
Midwater Trawl Total			**1**	**0**	**8**	**2**	**1**	**0**	**0**	**0**	**0**	**0**	**4**	**1**	**14**	**1**	**2**
Traps	**FPO**	EU Member State	23	40	9	33	0	0	1	100	0	0	2	33	35	38	6
	FPO	UK	34	60	18	67	0	0	0	0	2	100	4	67	58	62	10
	FPO Total		**57**	**100**	**27**	**100**	**0**	**0**	**1**	**100**	**2**	**100**	**6**	**100**	**93**	**100**	**16**

			2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
Gear group	Gear code	Nation group	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Traps Total			57	14	27	8	0	0	1	0	2	1	6	1	93	4	16
Grand Total			415	1	330	0	315	0	279	0	307	0	485	1	2,131	1	355

Table A1. 2: UK live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of South of the Isles of Scilly MPA (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Anchored Net/Line	GN	0	0	0	0.30	0	0.30	0.06
	GNS	0.05	0	0	1.59	0	1.64	0.33
	GTR	0.10	0	0	0	0	0.10	0.02
Anchored Net/Line Total		**0.15**	**0**	**0**	**1.89**	**0**	**2.04**	**0.41**
Demersal trawl	OT	0	0	0	0	0	0	0
	OTB	6.22	12.82	14.01	8.96	6.02	48.04	9.61
	OTT	1.57	0.16	0.71	0	0	2.45	0.49
	TBB	20.91	4.69	5.72	5.90	8.43	45.64	9.13
Demersal trawl Total		**28.70**	**17.67**	**20.44**	**14.86**	**14.45**	**96.13**	**19.23**
Dredge	DRB	0	0	0	0.58	0	0.58	0.12
	HMD	0	0	0	0	0	0	0
Dredge Total		**0**	**0**	**0**	**0.58**	**0**	**0.58**	**0.12**
Traps	FPO	5.77	10.96	0	0	0.74	17.47	3.49
Traps Total		**5.77**	**10.96**	**0**	**0**	**0.74**	**17.47**	**3.49**
Grand Total		**34.62**	**28.64**	**20.44**	**17.33**	**15.19**	**116.22**	**23.24**

Table A1. 3: EU27 live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of South of the Isles of Scilly MPA (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016-2020)	Average (2016-2020)
Demersal trawl	OTB	12.70	12.81	11.66	10.89	4.16	52.21	10.44
	OTT	0	0.39	0.55	0	0	0.93	0.19
	TBB	1.29	0.25	0.94	0.32	14.92	17.71	3.54
Demersal trawl Total		**13.98**	**13.45**	**13.15**	**11.20**	**19.08**	**70.86**	**14.17**
Midwater Trawl	OTM	0	49.82	5.70	0	0	55.52	11.10
Midwater Trawl Total		**0**	**49.82**	**5.70**	**0**	**0**	**55.52**	**11.10**
Traps	FPO	1.64	0.80	0	0.03	0	2.48	0.50
Traps Total		**1.64**	**0.80**	**0**	**0.03**	**0**	**2.48**	**0.50**
Grand Total		**15.63**	**64.06**	**18.86**	**11.24**	**19.08**	**128.86**	**25.77**

Table A1. 4: Percentage of each ICES rectangle intersected by the MMO section of South of the Isles of Scilly MPA.

ICES rectangle	Percentage overlap (%)
28E3	3.30

Table A1. 5: UK live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the MMO section of South of the Isles of Scilly MPA (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016-2020)	Average (2016-2020)
Anchored Net/Line	GEN	<0.01	0	0	0	0	<0.01	<0.01
	GN	0.30	0.71	0.72	0.63	0.87	3.23	0.65
	GNS	0.05	0.03	0.10	0.08	0.01	0.27	0.05
	GTR	0	0.09	0	0	0	0.09	0.02
	LL	0	0	0.01	0	0	0.01	<0.01
Anchored Net/Line Total		**0.35**	**0.83**	**0.82**	**0.71**	**0.89**	**3.59**	**0.72**
Demersal trawl	OT	0.01	0	0	0	0	0.01	<0.01
	OTB	0	0	0.05	0.06	0.01	0.12	0.02
	OTT	0.20	0.07	0	0	0	0.26	0.05
Demersal trawl Total		**0.20**	**0.07**	**0.05**	**0.06**	**0.01**	**0.38**	**0.08**
Dredge	DRB	0.01	0	0	<0.01	0	0.01	<0.01
Dredge Total		**0.01**	**0**	**0**	**<0.01**	**0**	**0.01**	**<0.01**
Midwater - Gill Drift	GND	0.02	0	0	0	0	0.02	<0.01
Midwater - Gill Drift Total		**0.02**	**0**	**0**	**0**	**0**	**0.02**	**<0.01**
Midwater Hook/Lines	LHP	0.19	0.66	0.30	0.24	0.18	1.57	0.31
Midwater Hook/Lines Total		**0.19**	**0.66**	**0.30**	**0.24**	**0.18**	**1.57**	**0.31**
Traps	FIX	0.01	0	0	0	0	0.01	<0.01
	FPO	4.11	2.10	2.20	1.41	1.30	11.12	2.22
Traps Total		**4.12**	**2.10**	**2.20**	**1.41**	**1.30**	**11.13**	**2.23**
Grand Total		**4.89**	**3.65**	**3.36**	**2.41**	**2.38**	**16.70**	**3.34**

Table A1. 6: EU27 live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the MMO section of South of the Isles of Scilly MPA (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016-2020)	Average (2016-2020)
Anchored Net/Line	GTR	0	0	0	0	0	0	0
	GNS	0	0	0	0	0	0	0
Anchored Net/Line Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Dredge	HMD	0	0	0	0	0	0	0
Dredge Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Midwater Hook/Lines	LTL	0	0	0	0	0	0	0
Midwater Hook/Lines Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Traps	FPO	0	0	0	0.01	0	0.01	<0.01
Traps Total		**0**	**0**	**0**	**0.01**	**0**	**0.01**	**<0.01**
Grand Total		**0**	**0**	**0**	**0.01**	**0**	**0.01**	**<0.01**

Table A1. 7: Mean annual surface and subsurface SAR values for C-squares intersecting the MMO section of South of the Isles of Scilly MPA (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	SAR category	2016	2017	2018	2019	2020
Demersal Seines	Surface	0	0	0	<0.01	0
	Subsurface	0	0	0	0	0
Dredges	Surface	<0.01	0.01	0.01	0.03	0
	Subsurface	<0.01	0.01	0.01	0.03	0
Demersal Trawls	Surface	1.83	2.27	2.14	2.00	1.31
	Subsurface	0.33	0.25	0.29	0.26	0.50
Bottom Towed Gear	Surface	1.83	2.28	2.15	2.04	1.31
	Subsurface	0.33	0.26	0.29	0.29	0.50

Table A1. 8: Fishing effort (days) recorded by UK vessels under 12 m in length, separated by gear type for the area of South of the Isles of Scilly MPA that intersects the marine portion of ICES rectangle 28E3 (2016 to 2021). ICES rectangle level data has been apportioned to the MPA based on the percentage area of the ICES rectangle that intersects the MPA (Table A1. 4).

Gear group	Fishing effort (days at sea)							
	2016	2017	2018	2019	2020	2021	Total (2016 to 2021)	Annual average (2016 to 2021)
Demersal trawl	1.22	0.26	0.20	0.86	0.03	0	2.58	0.43
Dredge	0.03	0	0	0.03	0	0	0.07	0.01
Bottom towed gear total	**1.26**	**0.26**	**0.20**	**0.89**	**0.03**	**0**	**2.64**	**0.44**
Midwater gill drift	0.07	0	0	0	0	0	0.07	0.01
Midwater hooks and lines	1.62	1.50	1.45	0.96	0.46	0.59	6.59	1.10
Midwater gear total	**1.69**	**1.50**	**1.45**	**0.96**	**0.46**	**0.59**	**6.66**	**1.11**
Traps	20.50	15.40	15.53	12.17	8.84	11.63	84.07	14.01
Anchored nets and lines	2.16	5.08	4.08	3.44	1.82	2.10	18.68	3.11
Static gear total	**22.67**	**20.48**	**19.61**	**15.61**	**10.66**	**13.73**	**102.75**	**17.13**
MPA total	**25.61**	**22.25**	**21.26**	**17.46**	**11.15**	**14.32**	**112.05**	**18.68**

Annex 2: Biotope information

Table A2. 1: Subtidal coarse sediment biotopes that may be found within South of the Isles of Scilly MPA with sensitivity to the abrasion / disturbance and penetration of the substrate on the surface of the seabed, smothering and siltation rate changes (light) and changes in suspended solids (water clarity).

Biotope	Sensitivity
Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles) (Tillin, 2023)	Abrasion: Not sensitive Penetration: Not sensitive Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Not sensitive
Moerella spp. with venerid bivalves in infralittoral gravelly sand (Tillin and Watson, 2023e)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Low Smothering and siltation rate changes (light): Low Removal of target species: Medium
Hesionura elongata and [*Microphthalmus similis*] with other interstitial polychaetes in infralittoral mobile coarse sand (Marshall, Ashley and Watson, 2023)	Abrasion: Low Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Low
Glycera lapidum in impoverished infralittoral mobile gravel and sand (Tillin and Watson, 2023c)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Low Removal of target species: Medium
Dense *Lanice conchilega* and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand (McQuillan, Tillin and Watson, 2023)	Abrasion: Not sensitive Penetration: Not sensitive Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Not sensitive
Pomatoceros triqueter with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles (Tyler-Walters and Tillin, 2023)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Not sensitive

Biotope	Sensitivity
	Smothering and siltation rate changes (light): Not sensitive
Mediomastus fragilis, *Lumbrineris* spp. and venerid bivalves in circalittoral coarse sand or gravel (Tillin and Watson, 2023d)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Low Smothering and siltation rate changes (light): Low
Protodorvillea kefersteini and other polychaetes in impoverished circalittoral mixed gravelly sand (Tillin and Watson, 2023g)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): No evidence (NEv)
Neopentadactyla mixta in circalittoral shell gravel or coarse sand (Tyler-Walters, Durkin and Watson, 2023)	Abrasion: Not sensitive Penetration: Medium Changes in suspended solids (water clarity): Medium Smothering and siltation rate changes (light): Not sensitive Removal of non-target species: Medium
Branchiostoma lanceolatum in circalittoral coarse sand with shell gravel (Tillin and Watson, 2023a)	Abrasion: Low Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Low
Glycera lapidum, *Thyasira* spp. and *Amythasides macroglossus* in offshore gravelly sand (Tillin and Watson, 2023b)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Low
Hesionura elongata and *Protodorvillea kefersteini* in offshore coarse sand (Tillin and Ashley, 2016)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): No evidence (NEv) Smothering and siltation rate changes (light): No evidence (NEv)

Table A2. 2: Subtidal mixed sediments biotopes that may be found within South of the Isles of Scilly MPA with sensitivity to the abrasion / disturbance and penetration of the substrate on the surface of the seabed, smothering and siltation rate changes (light) and changes in suspended solids (water clarity).

Biotope	Sensitivity
Venerupis senegalensis, *Amphipholis squamata* and *Apseudes latreilli* in infralittoral mixed sediment (Tillin, Rayment and Watson, 2023)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Low Smothering and siltation rate changes (light): Low
Cerianthus lloydii and other burrowing anemones in circalittoral muddy mixed sediment (Perry and Watson, 2024)	Abrasion: Medium Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Medium
Cerianthus lloydii with *Nemertesia* spp. and other hydroids in circalittoral muddy mixed sediment (Perry and Watson, 2023)	Abrasion: Medium Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Medium
Mysella bidentata and *Thyasira* spp. in circalittoral muddy mixed sediment (De-Bastos, Marshall and Watson, 2023)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Not sensitive
Flustra foliacea and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment (Readman and Watson, 2024)	Abrasion: Medium Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Not sensitive
Ophiothrix fragilis and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment (De-Bastos *et al.*, 2023)	Abrasion: Medium Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Medium
Polychaete-rich deep *Venus* community in offshore mixed sediments (Tillin and Watson, 2023f)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Low

Biotope	Sensitivity
	Smothering and siltation rate changes (light): Low

Table A2. 3: Subtidal sand biotopes that may be found within South of the Isles of Scilly MPA with sensitivity to the abrasion / disturbance and penetration of the substrate on the surface of the seabed, smothering and siltation rate changes (light) and changes in suspended solids (water clarity).

Biotope	Sensitivity
Amphiura brachiate with *Astropecten irregularis* and other echinoderms in circalittoral muddy sand (De-Bastos, Lloyd and Watson, 2023)	Abrasion: Medium Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Low
Maldanid polychaetes and *Eudorellopsis deformis* in deep circalittoral sand or muddy sand (Ashley, 2016)	Abrasion: Medium Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Not sensitive
Owenia fusiformis and *Amphiura filiformis* in deep circalittoral sand or muddy sand (De-Bastos, 2023)	Abrasion: Medium Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Low
Semi-permanent tube-building amphipods and polychaetes in sublittoral sand	Abrasion: Low Penetration: Medium Changes in suspended solids (water clarity): Low Smothering and siltation rate changes (light): Low
Echinocyamus pusillus, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand (Sotheran *et al.*, 2016; Tillin, 2022)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity):Low Smothering and siltation rate changes (light): Low