Marine Management Organisation

MMO Stage 3 Site Assessment: South West Approaches to the Bristol Channel MPA (Draft)






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Contents

Executive Summary

This assessment analyses the impact of anchored nets and lines, bottom towed gear, and traps on the designated features subtidal coarse sediment and subtidal sand in South West Approaches to Bristol Channel 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 bottom towed gears at the activity levels described poses a significant risk of hindering the achievement of the conservation objectives of South West Approaches to the Bristol Channel MPA. Management measures will therefore be implemented for bottom towed gears for the South-West Approaches to the Bristol Channel MPA.

1 Introduction

This assessment considers whether fishing activities are compatible with the conservation objectives of South-West Approaches to the Bristol Channel 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) and Natural England site information and Department for Environment Food and Rural Affairs (Defra) factsheet were used for background on site geography, designations, features, conservation objectives and general management approaches:

- JNCC and Natural England Site Information – South West Approaches to the Bristol Channel MCZ[1]
- Defra Factsheet – South West Approaches to the Bristol Channel MCZ[2]

South West Approaches to the Bristol Channel MPA is located in the Western Channel and Celtic Sea region to the north of Land's End and covers an area of approximately 1,128 km^2 **(Figure 1)**. The site straddles the 12 nautical mile (nm) limit. 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 West Approaches to the Bristol Channel MPA was designated as a MCZ in 2019. The site is designated for subtidal coarse sediment and subtidal sand. Subtidal coarse sediment characterises the site and comprises a mixture of shell fragments, gravels, shingles and cobbles. Smaller areas of subtidal sand can be found in the south-eastern end and central area of the site. These habitats support a broad diversity of species including polychaete worms, anemones, sea urchins, sea cucumbers and razor clams. Broad scale habitat mapping data also indicate small, scattered patches of moderate energy circalittoral rock within the site, however this feature has not been confirmed by ground-truthing and has therefore not been identified as a designated feature of the site and is not included within this assessment.

[1]JNCC and Natural England Site Information – South West Approaches to the Bristol Channel MPA: jncc.gov.uk/our-work/south-west-approaches-to-the-bristol-channel-mpa/ (last accessed 14 July 2023)
[2]Defra Factsheet – South West Approaches to the Bristol Channel MCZ: www.gov.uk/government/publications/marine-conservation-zones-south-west-approaches-to-the-bristol-channel
(last accessed 14 July 2023)

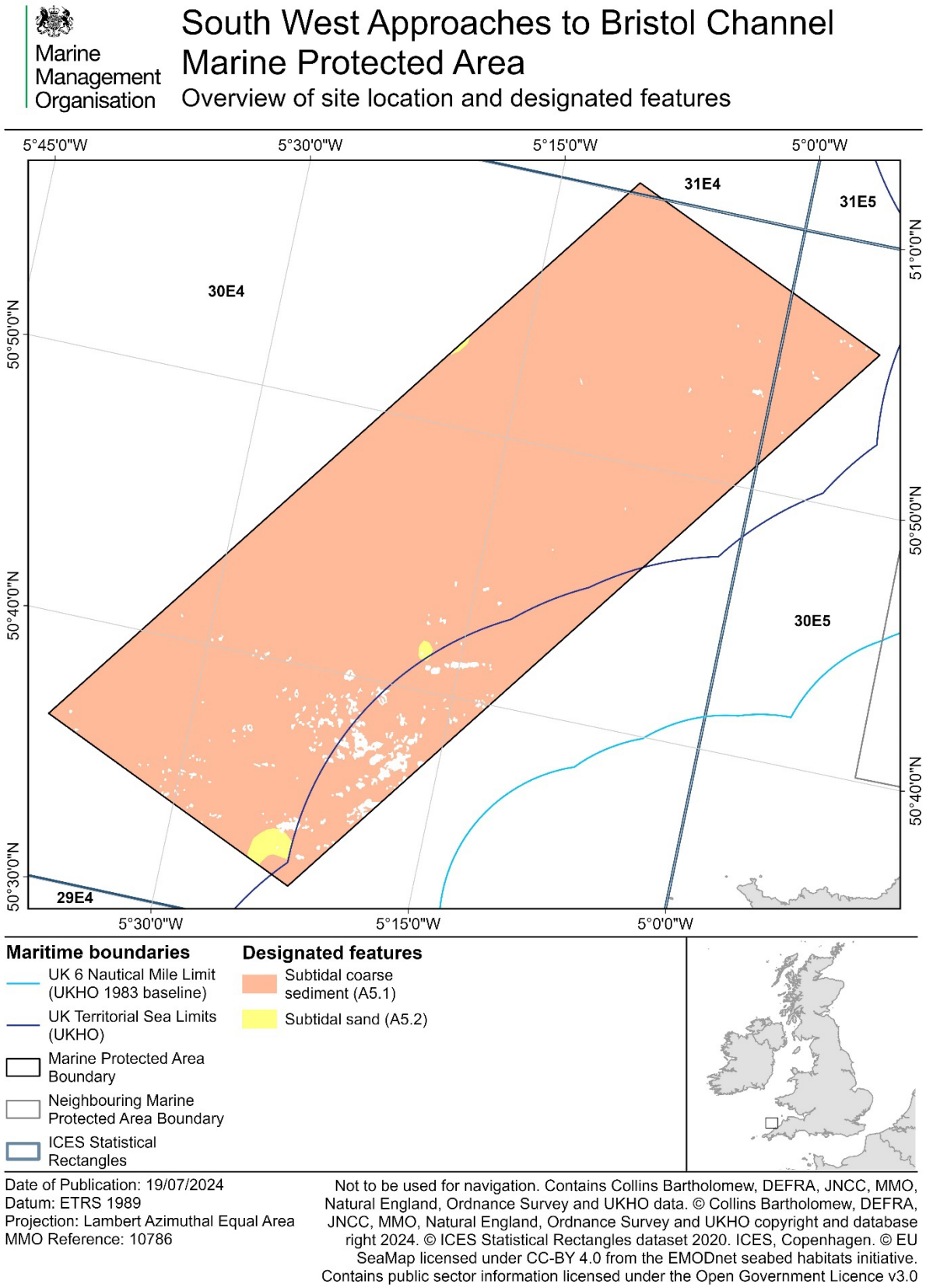

Figure 1: Site overview map.

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

The general management approaches for the features of South West Approaches to the Bristol Channel MPA have been set based on a vulnerability assessment.

Table 1: Designated features and general management approaches.

Designated feature	General management approach
Subtidal coarse sediment	**Recover to favourable condition** Favourable condition in this context means the: • extent is stable or increasing; • 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; and • water and sediment quality.
Subtidal sand	

Natural England and JNCC are currently in the process of developing a conservation advice package for South West Approaches to the Bristol Channel MPA. Since there is no package currently available, Natural England and JNCC has advised using a proxy from within the same bioregion. Therefore, the Western Channel MPA conservation advice package[3] has been used to help identify pressures, sensitivities, and attributes of relevance to the features within South West Approaches to the Bristol Channel 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] JNCC Conservation Advice - Western Channel MCZ: www.jncc.gov.uk/our-work/western-channel-mpa/#conservation-advice (Last accessed on 03/07/2024)

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[4].

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 the 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.

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

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

- 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[5], 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 West Approaches to the Bristol Channel MPA.

Gear type	Gear name	Gear code	Justification
Anchored nets and lines	Trammel net	GTR	Present in VMS data.
	Set gillnet (anchored)	GNS	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	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	
	Otter trawls (unspecified)	OT	
	Towed dredge	DRB	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Bottom otter trawl	OTB	
	Beam trawl	TBB	
	Scottish / fly seine	SSC	Present in VMS data.
	Danish / anchor seine	SDN	
Midwater gear	Midwater otter trawl	OTM	
	Pair trawls - midwater	PTM	
	Hook and line (unspecified)	LX	Present in under 12 m vessel landings data for ICES statistical
	Hand-operated pole-and-line	LHP	
	Hand fishing	HF	
	Drift gillnet	GND	

[5] Stage 3 MPA Site Assessment Methodology document: www.gov.uk/government/publications/stage-3-site-assessments (last accessed 11 September 2024)

Gear type	Gear name	Gear code	Justification
Shore based	Beach seine	SB	rectangles that overlap the site.
Traps	Trap	FIX	
	Pot/Creel	FPO	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
Miscellaneous	Not known	NK	Present in VMS data.

3.2 Pressures and activities screened out

This section identifies activities or pressures that are **occurring but do not need to be considered** for South West Approaches to the Bristol Channel MPA.

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

- **Midwater gears:** although the use of midwater gears does occur within South West Approaches to the Bristol Channel 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 West Approaches to the Bristol Channel MPA is not considered to be capable of affecting the designated features other than insignificantly and is not considered further within this assessment.
- **Shore based activities:** although landings data show that fishing activity using beach seine occurs within the site, this is based on all activity occurring within the overlapping ICES rectangles. ICES rectangle 30E4 and 30E5 encompasses the majority of South West Approaches to the Bristol Channel MPA, but also covers a large area of coast where shore-based activities occur. As the assessment focuses on the designated features of the South West Approaches to the Bristol Channel MPA beyond 6 nm from shore, shore-based activities will not affect them and therefore will not be assessed further.
- **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[6];
- Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear[7]; and
- Stage 3 Fishing Gear MPA Impacts Evidence Traps[8].

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.

As previously noted, there is currently no advice on operations available for South West Approaches to the Bristol Channel MPA. Natural England and JNCC has therefore advised the use of the conservation advice package for Western Channel MPA, due to the similarity between site features and location within the same bioregion.

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 out in **sections 3.1 and 3.2.**

[6] Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 12 September 2024).
[7] Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 12 September 2024).
[8] Stage 3 Fishing Gear MPA Impacts Evidence Traps: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 12 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, or that the feature is not sensitive to the pressure.

Table 3. Summary of pressures on designated features of South West Approaches to the Bristol Channel MPA to be taken forward to Part B.

Potential pressures	Designated feature					
	Subtidal coarse sediment			Subtidal sand		
	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, including abrasion						
Physical change (to another seabed 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[9].

Table 3 shows the fishing activities and pressures identified in **Part A** which have been included for assessment in **Part B**. The important targets for favourable condition were identified within Natural England and JNCC's conservation supplementary advice tables for the site used as a proxy for South West Approaches to the Bristol Channel MPA, in this case Western Channel MCZ, as outlined in **Table 4**. 'Important' in this context means only those targets relating to attributes that will most efficiently and directly help to define condition. These attributes should be clearly capable of identifying a change in condition.

Table 4: Relevant favourable condition targets for identified pressures.

Features	Attribute	Target	Relevant pressures
Subtidal coarse sediment 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 West Approaches to the Bristol Channel MPA, provided that they have a licence issued by the UK to do so. Nationalities which fished within the MPA include vessels from 2016 to 2021 include UK, Belgium,

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

Germany, France, Ireland, Netherlands and Poland. VMS records indicate that UK and Irish vessels are most prevalent.

More information on non-UK vessel access to UK waters can be found on MMO's Single Issuing Authority page[10].

South West Approaches to the Bristol Channel MPA is subject to the following relevant legislative catch restrictions that are applicable to fisheries occurring in the site:

- **Closed area for the conservation of cod -** From the 1st of February to 31st March each year, it is prohibited[11] to conduct any fishing activity using towed dredge, trawls, seine and surrounding nets, hooks, lines and longlines and gillnets, entangling and lift nets in ICES statistical rectangles 30E4 and 31E4 which overlap the site.

4.2 Fishing activity summary

Table A1. 1 to **Table A1. 8** in Annex 1 display a detailed breakdown of fishing activity within South West Approaches to the Bristol Channel MPA. When discussing weights from landings in this section, figures used are a total of weights from UK and EU Member States.

Of the fishing activities not screened out in **Part A** of this assessment, VMS data shows that the most prevalent gear types operated by over 12 m vessels within the site are beam trawls and bottom otter trawls, followed by towed dredges and pots/creels and to a lesser extent gillnets (unspecified), trammel nets, set gillnet (anchored) and demersal seines. Landings data shows that the most prevalent gear types for operated by under 12 m vessels in the site is pots/creels, followed by towed dredges, gillnets (unspecified), gillnets and entangling nets, bottom otter trawls, and to a lesser extent otter trawls (unspecified), beam trawls and twin bottom otter trawls and minimal demersal seine activity.

Anchored nets and lines:

According to VMS and landings data for over 12 m vessels, anchored nets and lines are the fourth most frequently deployed gear type in the site with an average count of 19 VMS records between 2016 and 2021, and approximately 2.2 tonnes (t) landed on average between 2016 and 2020 across gillnets (unspecified), trammel nets and set gillnet (anchored). Under 12 m vessels using anchored nets and lines landed approximately 9.17 tonnes per year on average in the same data reporting period.

[10] The UK Single Issuing Authority: www.gov.uk/guidance/united-kingdom-single-issuing-authority-uksia (last accessed 26 July 2023).
[11] For more information: www.legislation.gov.uk/eur/2019/1241/annex/VI/part/C/division/2/adopted

Under 12 m landings are recorded at 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 anchored nets and lines between 2016 and 2021 for the area of South West Approaches to the Bristol Channel MPA that intersects ICES rectangles 30E4, 30E5 and 31E4 was 23.7 days. South West Approaches to the Bristol Channel MPA covers 27.68 % of ICES rectangle 30E4, 3.36 % of ICES rectangle 30E5 and 0.03 % of ICES rectangle 31E4. Fishing effort days are derived from logbooks and is collected at ICES rectangle and then apportioned accordingly.

Bottom Towed Gear:

Demersal Seines

According to VMS data for over 12 m vessels, the use of demersal seines in the site is minimal with an average count of five VMS records between 2016 and 2021. No landings for vessels over 12 m were recorded (reporting period 2016 to 2020), however less than 0.01 tonnes have been recorded for under 12m vessels for demersal seine fishing activity. Average fishing effort recorded by UK vessels under 12 m in length using demersal seines between 2016 and 2021 for the area of South West Approaches to the Bristol Channel MPA that intersects ICES rectangles 30E4, 30E5 and 31E4 was less than 0.01 days.

Demersal Trawls

According to VMS data, beam trawls and bottom otter trawls are the most prevalent types of fishing gear deployed in South West Approaches to the Bristol Channel MPA. Between 2016 and 2021 there were 2,564 beam trawl and 2,163 bottom otter trawl VMS records on average per year. Vessels over 12 m in length using demersal trawls landed approximately 564.90 tonnes per year, whereas vessels under 12 m in length landed approximately 2.69 tonnes in the same data reporting period (2016 to 2020).

Average fishing effort recorded by UK vessels under 12 m in length using demersal trawls between 2016 and 2021 for the area of South West Approaches to the Bristol Channel MPA that intersects ICES rectangles 30E4, 30E5 and 31E4 was 3.5 days.

Dredges

According to VMS and landings data for over 12 m vessels, towed dredge activity is the third most prevalent type of bottom towed fishing gear deployed in the South West Approaches to the Bristol Channel MPA. Between 2016 and 2021 there were 727 VMS records on average of this gear type per year. Between 2016 and 2020 vessels over 12 m in length using towed dredges landed approximately 111.27 tonnes per year, whereas vessels under 12 m in length landed approximately 4.08 tonnes in the same data reporting period.

Average fishing effort recorded by UK vessels under 12 m in length using towed dredges between 2016 and 2021 for the area of South West Approaches to the

Bristol Channel MPA that intersects ICES rectangles 30E4, 30E5 and 31E4 was 1.25 days.

Traps

According to VMS and landings data for over 12 m vessels, traps were also deployed in the site with an average count of 181 VMS records between 2016 and 2021, and approximately 22.59 tonnes landed on average between 2016 and 2020. Under 12 m vessels using traps landed approximately 29.70 tonnes per year on average in the same data reporting period. Average Fishing effort recorded by UK vessels under 12 m in length using traps between 2016 and 2021 for the area of South-West Approaches to Bristol Channel MPA that intersects ICES rectangles 30E4, 30E5 and 31E4 was 80.91 days.

4.3 Pressures by gear type

The Stage 3 Fishing Gear MPA Impacts Evidence documents for anchored nets and lines[6], bottom towed gear[7] and traps[8] 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. For the purposes of benthic feature assessments, the physical effects of fishing gears on seabed communities are best addressed through the assessment of abrasion and penetration pressures. As there are no designated species features associated with South West Approaches to the Bristol Channel MPA, and the detail of key structural and influential species is yet to be fully defined, we conclude that impacts from target and non-target removal pressures can be scoped out from further assessment of this site. We acknowledge that 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.

4.3.1 Anchored nets and lines

The relevant pressures on the subtidal coarse sediment and subtidal sand features of South West Approaches to the Bristol Channel MPA from anchored nets and lines 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 setting and retrieval of nets and the associated ground lines and anchors, as well as by their movement over the seabed during rough weather. Abrasion impacts are greater on subtidal coarse sediment compared to subtidal sand as the coarser habitats often contain populations of epifauna which are slow growing and take longer to recover (Bolam *et al.*, 2017).

Biotope data for the South West Approaches to the Bristol Channel MPA is consolidated at bioregion level in the JNCC Biotope Databases. Biotope data for the Western Channel and Celtic Sea was extracted from the Biotope Presence Absence Database[12] 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)[13] to outline biotopes' sensitivities for the appropriate pressures. **Table A2. 1** and **Table A2. 2** of Annex 2 details the list of biotopes that may be found within the subtidal coarse sediment and subtidal sand features of the site. For the subtidal coarse sediment feature, 12 biotopes have been identified which could be present in the site. As outlined in **Table A2. 1**, nine of which have low sensitivity to the abrasion pressure and three are not sensitive to this pressure. Therefore, these have not been considered further within this section. 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. 2**. 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. The species composition drives the sensitivity within these biotopes. Species such as *Echinocardium cordatum* have a fragile test, easily damaged when abraded. Polychaetes and various segmented worms live in fragile tubes, constructed from the surrounding sediment. Pressure such as abrasion and penetration damage these tubes, negatively impacting the species and habitat. This results in the biotopes having low resistance to these pressures and are categorised as having medium sensitivity.

According to VMS and landings data for over 12 m vessels, anchored nets and lines activity is minimal in the site with an average count of 19 VMS records between 2016 and 2021, and approximately 2.2 tonnes landed on average between 2016 and 2020. In contrast, under 12 m vessels using anchored nets and lines landed approximately 9.17 tonnes per year on average in the same data reporting period. Under 12 m landings data were recorded at ICES rectangle level and attributed to the site based on the proportions of the relevant ICES rectangles intersected by the MPA. Confidence in how much of this activity is occurring within the MPA is therefore low. The limited VMS activity data available shows that anchored nets and lines

[12] 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 28 November 2023).

[13] The Marine Life Information Network: www.marlin.ac.uk (last accessed July 2024)

activity is evenly distributed throughout the MPA and is occurring over the subtidal sediment features.

Section 9.4 of the anchored nets and lines Impacts Evidence document[6] 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.

Overall, given the good rates of resilience and recoverability of the biotopes present on the features, and the likelihood that these biotopes already have some resilience to current levels of anchored nets and lines in the site, there is a low risk of impacts to this feature at the activity levels described 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.

Therefore, MMO concludes that the ongoing use of anchored nets and lines at the activity levels described does not pose a significant risk of hindering the achievement of the conservation objectives of South West Approaches to the Bristol Channel MPA.

4.3.2 Bottom towed gear

The following features of South West Approaches to the Bristol Channel MPA have been considered in relation to pressures from bottom towed gear.

Subtidal coarse sediment and subtidal sand

The relevant pressures on the features of South West Approaches to the Bristol Channel 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^.

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.

- 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. For the subtidal sand biotopes, five biotopes have been identified as having medium sensitivity to penetration, shown in **Table A2. 2** in Annex 2, with four being the same biotopes identified as having medium sensitivity to abrasion pressures in **section 4.3.1.**

Section 4.2 describes the fishing activity within South-West Approaches to Bristol Channel MPA from VMS and landings data. According to VMS data, beam trawls, bottom otter trawls and towed dredges are the most prevalent types of fishing gear deployed in South West Approaches to the Bristol Channel MPA. Between 2016 and 2021 there were 2,564, 2,163 and 727 VMS records on average of these gear types per year. Given the levels of bottom towed gear occurring within the site, it is likely that the sedimentary features of the site are experiencing regular exposure to abrasion and penetration pressures.

As described in section 8.4.1 of the bottom towed gear Impacts Evidence document[7], the abrasion and penetration pressures from this gear type can have both biological and physical impacts. 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. Biological impacts include damage and mortality to flora and fauna on the seabed via surface and subsurface abrasion and penetration, as well as 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[7], 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.

The bottom towed gear Impacts Evidence document identified that during scallop dredging the greatest amount of mortality results in individuals left on the seabed rather than occurring as bycatch. This can lead to shifts in benthic community structure to one dominated by small, encrusting, opportunistic, fast-growing species

due to the supplementation of the diet of predators such as starfish or crabs from carrion left in the dredge tracks and the removal of upright species. This is predominantly related to how long a site had been fished, rather than actual fishing intensity. Stable mixed sediment seabed (sand and mud mixtures) are dominated by faunal turfs consisting largely of erect hydroids and erect bryozoans, all of which are particularly vulnerable to scallop dredging which can reduce the complexity of benthic habitats by flattening substrates and removing these structurally complex species. These species form emergent structures that provide important settlement substrates for many other species, including scallop spat. The abundance of species within such faunal turfs has been found to be reduced by 56 to 96 % by dredging. Lastly, dredging in muddy sediments can cause high mortality and removal rates of benthic macrofauna (Kaiser *et al.*, 2006).

Despite the site's dominance of low sensitivity biotopes, the site does contain sensitive species and its dominance of low sensitivity biotopes may be a result of decades of bottom towed fishing activity that have shifted community baselines. Based on the rationale above, bottom towed gears 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 low resistance and recoverability of subtidal coarse sediment and subtidal sand biotopes to bottom towed gear, 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 West Approaches to the Bristol Channel MPA.

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

Table A2. 1 and **Table A2. 2** 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).

As described in **section 4.2**, the majority of bottom towed gear activity in the site is being undertaken by vessels deploying beam trawls, bottom otter trawls, and dredges. Research on the effects of sediment suspension by otter trawls used to inform the bottom towed gear Impacts Evidence document 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.

Furthermore, scallop dredges have been shown to entrain sandy sediments up to 30 m behind the gear. The dredge teeth rake through, loosen, and break up the top layer of sediment. Section 8.4.2 of the bottom towed gear Impacts Evidence document[7] describes a study on sandy sediment grounds in Scotland which demonstrated that the turbulent wake of scallop dredges entrains up to 0.85 kg per metre of plume about 20 m behind the dredge, which is the equivalent of a 1 mm layer of sediment per unit of swept width. This means a typical scallop dredger fishing eight dredges off each side would put about 13.6 kg of sediment into the water column per metre of seabed towed depending on the sediment's particle size distribution and the local hydrography.

As described in section 8.4.2 of the bottom towed gear Impacts Evidence document[7], 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 to 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[7] 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 medium sensitivity of one biotope identified within the subtidal coarse sediment feature, low resistance to this type of fishing activity and slow recoverability, it is likely that the ongoing use of bottom towed gear will pose a significant risk of hindering the achievement of the conservation objective of South West Approaches to the Bristol Channel MPA.

Therefore, MMO conclude that the ongoing use of bottom towed gear does pose a significant risk of hindering the achievement of the conservation objectives of South West Approaches to the Bristol Channel MPA.

4.3.3 Traps

The following features of South West Approaches to the Bristol Channel MPA have been considered in relation to pressures from traps.

Subtidal coarse sediment and subtidal sand

The relevant pressures on the features of South West Approaches to the Bristol Channel 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 setting and retrieval of nets and the associated ground lines and anchors, as well as by their movement over the seabed during rough weather.

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[8], 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, neither of which is present at South-West Approaches to Bristol Channel MPA currently. According to VMS and landings data for over 12 m vessels, traps are the third most frequently deployed gear type in the site with an average count of 181 VMS records between 2016 and 2021; significantly lower than VMS records recorded for bottom towed gear in the same reporting period.

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 West Approaches to the Bristol Channel MPA.

Therefore, MMO conclude that the ongoing use of traps at the described activity levels does not pose a significant risk of hindering the achievement of the conservation objectives of South West Approaches to the Bristol Channel MPA.

4.4 Part B conclusion

The assessment of anchored nets and lines, bottom towed gears, and traps on the subtidal coarse sediment and subtidal sand features South West Approaches to the Bristol Channel MPA has concluded that:

- the ongoing use of anchored nets and lines and traps at the activity levels described 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 benthic features of the site in-combination with effects 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, and with 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 and historic 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-West Approaches to the Bristol Channel 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 two projects, within the 5 km buffer applied. **Table 5** shows this activity and the relevant category from the JNCC Pressures-Activities Database (PAD)[14].

Table 5: Summary of marine licensable activities and associated PAD categories.

Marine licence case reference number[15]	PAD Category	Description
MLA/2022/00280	Telecommunication cable: Laying, burial and protection.	Telecommunications Cable System - proposed subsea fibre-optic cable system linking several countries with the United Kingdom via Cornwall. Inside the site boundary. **Possible in-combination effects.**
MLA/2022/00239	Anchorage and moorings: Construction.	Installation of 4 sets of floating buoy FLiDAR/seabed mooring with upward looking ADCP at a maximum of four locations to collect metocean data (wave and currents). Known as the Celtic Sea Metocean survey. Area of search 2 overlaps with the 5 km buffer of South West Approached to the Bristol Channel MPA; specific locations for installation within these areas will be identified prior to deployment. Outside the site boundary. **No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**

[14] JNCC Pressures-Activities Database (PAD**):** hub.jncc.gov.uk/assets/97447f16-9f38-49ff-a3af-56d437fd1951 (last accessed 12 September 2024)

[15] Public register of marine licence applications and decisions: marinelicensing.marinemanagement.org.uk/mmofox5/fox/live/MMO_PUBLIC_REGISTER/ (last accessed 12 September 2024)

The PAD and **Table 3** from **section 3.3**, were used to identify medium-high risk pressures exerted by fishing and non-fishing activities to identify those which require in-combination assessment (**Table 6**).

Table 6 summarises the pressures exerted by fishing and non-fishing activities and identifies those exerted by both (Y: pressure exerted). Activity-pressure interactions are highlighted dark blue to illustrate an in-combination effect. Only fishing activity with no proposed or current fisheries management in place are considered.

Table 6: Pressures exerted by fishing and non-fishing activities.

	Non-fishing activities	Fishing activities	
Potential pressures	**Telecommunication cable: Laying, burial and protection**	**Anchored nets and lines**	**Traps**
Abrasion or disturbance of the substrate on the surface of the seabed	Y	Y	Y
Removal of non-target species		Y	Y
Removal of target species		Y	Y

5.1 In-combination pressure sections

Fisheries vs fisheries in-combination pressures will be considered in this section. The pressures exerted by the non-fishing activity will also be considered in-combination with the anchored nets and lines and traps fishing pressures.

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 detail of key structural and influential species is yet to be fully defined. 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 37, 19 for anchored nets and lines and 18 for traps. For under 12 m vessels, between

2016 and 2021, the annual average fishing effort estimated to have been derived from the MPA via traps and anchored nets and lines was 104.6 days (80.9 days for traps, 23.7 days for anchored nets and lines, Annex 1, calculated from **Table A1. 8**). For the same period (2016-2021), the total fishing effort (under 12s) estimated to have been derived from the MPA were 627.71 days (485.48 days for traps, 142.23 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 38.87 tonnes, 29.7 tonnes for traps and 9.17 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. VMS records indicate that anchored nets and lines activity is concentrated around the western corner of the site, with a few records sparsely distributed within the north and centre of the site. Trap VMS records are most dense within the northern half of the MPA with another area of higher VMS activity extending upwards from the middle of southern boundary. Any potential overlap of the two gear types is most likely within the southwest of the site. With only a couple of small areas of subtidal sand feature in the south-east and centre of the site any in-combination impact is likely to occur over the subtidal coarse sediment feature which dominates the site. Of the subtidal coarse sediment biotopes identified that could be present within the site, one does not have an assessment available and the remaining 12 are categorised as having either no or low sensitivity to abrasion pressures. In addition, the sediment habitat itself is considered to be resilient to all but intense fishing activity from static gear. As annual average anchored nets and line effort is relatively low (23.7 days), overlap of the two gear types is likely occurring over a limited area of the site and the biotopes present in these areas have low sensitivity to abrasion, 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-West Approaches to the Bristol Channel MPA at the levels described.

5.3 Fishing vs non-fishing activities in-combination pressures

5.3.1 Abrasion and disturbance of the substrate on the surface of the seabed

The designated features of the South-West Approaches to the Bristol Channel MPA are sensitive to physical damage through surface abrasion and disturbance of the substrate from anchored nets and lines and traps during gear deployment, movement of the gear on the seabed due to tidal movements and storm activity, and as the gear is dragged along the seabed during retrieval.

The telecommunications cable route runs from the south-western approaches of the United Kingdom and will traverse the South-West Approaches to the Bristol Channel MPA; therefore, installation works will be undertaken within the boundary of the MPA. No deposits for cable protection measures (for example rock placement or concrete mattresses) or removal or detonations of unexploded ordnance (UXO) are proposed during the cable installation operations. Offshore, and within the MPA, the cable will be buried in the seabed to a target depth of 1.5m – 2m (where bedrock allows), using a jetting plough. In the limited sections where cable burial is not possible, the cable will be surface laid on to the seabed. The cable will have a maximum diameter of 50 mm.

Activities associated with the telecommunications cable which might cause abrasion or disturbance of the seabed relate to a vessel towed pre-lay grapnel run (PLGR) which will be undertaken prior to cable installation activities and installation of the cable system itself using a jetting plough (used beyond depths of 15m) to a target burial depth of 1.5 m – 2 m (depending on bedrock depth).

The plough consists of four skids, which extend approximately 1.2 m wide on each side. When operating, the plough will dig the trench to the desired depth, lay the cable and backfill the trench in one operation. The jetting plough will cause abrasion, disturbance and penetration impacts to the substrate in the corridor of operation as it traverses the width of the MPA.

As detailed in **section 4.3** abrasion and disturbance of seabed surface substrate, at current activity levels anchored nets and lines and traps are not considered to be causing significant pressure through abrasion and disturbance. It is possible that activities linked to the telecommunication cable, in-combination with anchored nets and lines and traps may increase the potential for this pressure to have negative cumulative effects on the designated features of the MPA. Although there may be a direct impact from the laying and burial of the telecommunication cable, given the small footprint of the narrow corridor of operation that the plough will operate in when compared to the spatial extent of the MPA and sediment features within, coupled with the temporary nature of the works as the installation trench is backfilled, it is unlikely there would be a significant risk of hindering the achievement of the conservation objectivise. Therefore, the scale of the in-combination impacts from abrasion and disturbance of the substrate on the surface of the seabed between anchored nets and lines and traps and non-fishing activity is considered insignificant.

Therefore, MMO concludes that the combined pressures from anchored nets and lines and traps and other relevant activities will not result in a significant risk of hindering the achievement of the conservation objectives for the South West Approaches to the Bristol Channel MPA.

5.4 Part C conclusion

MMO concludes that fishing in-combination with other relevant activities will not result in a significant risk of hindering the achievement of the conservation objectives for the South West Approaches to the Bristol Channel 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 anchored nets and lines, bottom towed gear and traps, alone, are likely to have a significant effect on the designated features of South West Approaches to the Bristol Channel MPA.

Part B of this assessment concluded that ongoing use of bottom towed gear on the sediment features of South West Approaches to the Bristol Channel MPA may hinder the achievement of the conservation objectives of the MPA as a result of the impacts of abrasion or disturbance, penetration and smothering, siltation rate and suspended solid changes.

Part C of this assessment concluded that, at the activity levels described, use of anchored nets and lines and traps, in combination with each other and with other relevant activities, will not result in 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 of the MPA, MMO will implement a byelaw to prohibit the use of bottom towed gear throughout South West Approaches to the Bristol Channel 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[5].

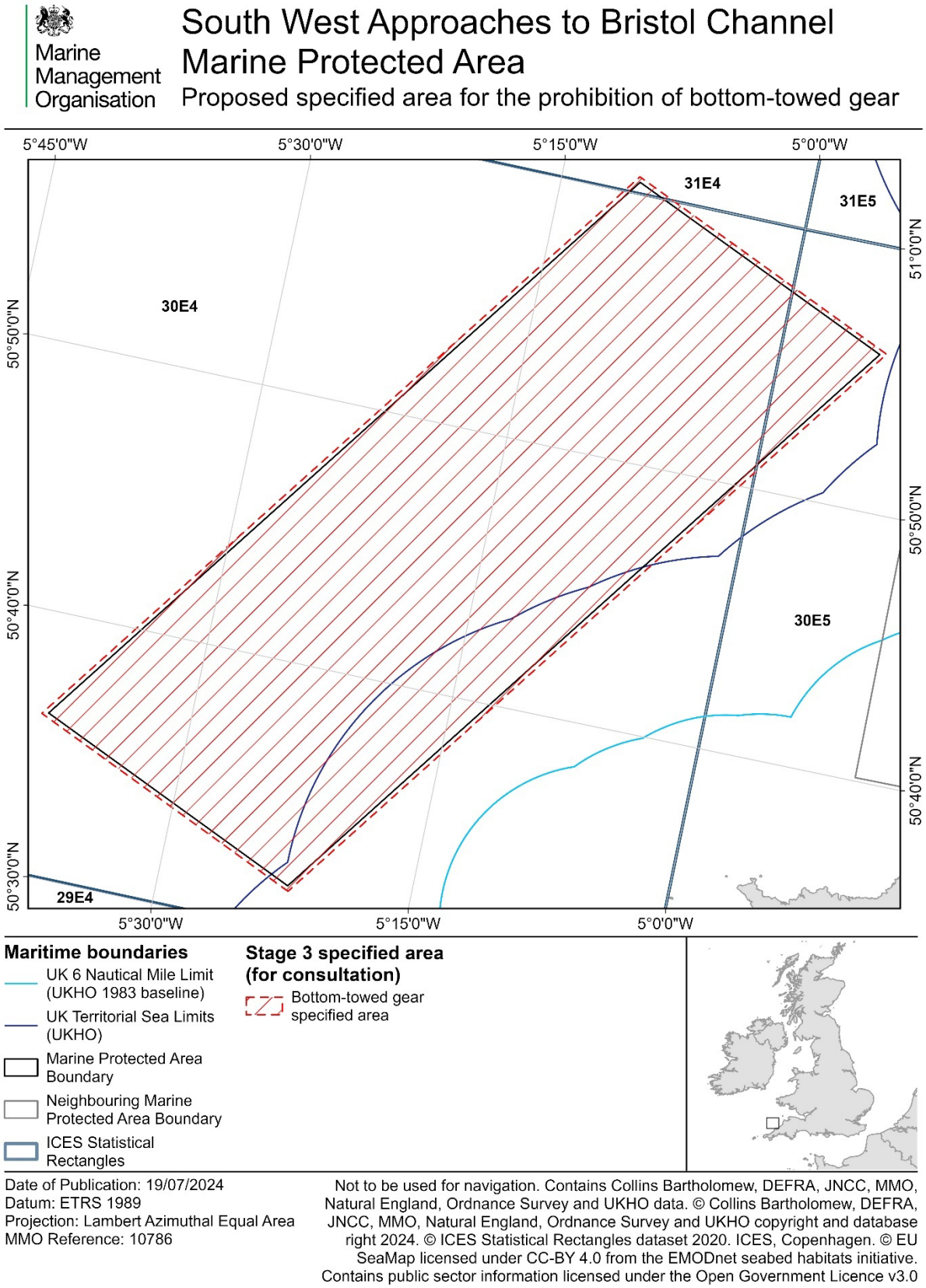

Figure 2: Map of proposed management.

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); and
- 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.

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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)		Average (2016 to 2021)
Gear group	Gear code	Nation group	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Anchored Net/Line	GN	UK	40	100	37	100	0	0	0	0	0	0	3	100	80	100	13
	GN Total		**40**	**74**	**37**	**70**	**0**	**0**	**0**	**0**	**0**	**0**	**3**	**100**	**80**	**70**	**13**
	GNS	UK	9	100	0	0	0	0	0	0	0	0	0	0	9	100	2
	GNS Total		**9**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9**	**8**	**2**
	GTR	EU	5	100	16	100	2	100	0	0	2	100	0	0	25	100	4
	GTR Total		**5**	**9**	**16**	**30**	**2**	**100**	**0**	**0**	**2**	**100**	**0**	**0**	**25**	**22**	**4**
Anchored Net/Line Total			**54**	**1**	**53**	**1**	**2**	**0**	**0**	**0**	**2**	**0**	**3**	**0**	**114**	**0**	**19**
Demersal Seine	SDN	EU	0	0	0	0	0	0	2	100	0	0	0	0	2	100	0
	SDN Total		**0**	**0**	**0**	**0**	**0**	**0**	**2**	**100**	**0**	**0**	**0**	**0**	**2**	**7**	**0**
	SSC	EU	0	0	2	100	0	0	0	0	25	100	0	0	27	100	5
	SSC Total		**0**	**0**	**2**	**100**	**0**	**0**	**0**	**0**	**25**	**100**	**0**	**0**	**27**	**93**	**5**
Demersal Seine Total			**0**	**0**	**2**	**0**	**0**	**0**	**2**	**0**	**25**	**0**	**0**	**0**	**29**	**0**	**5**
Demersal trawl	OTB	EU	2,152	100	1,628	100	2,979	100	2,089	100	1,785	100	2,344	100	12,977	100	2,163
	OTB Total		**2,152**	**47**	**1,628**	**49**	**2,979**	**59**	**2,089**	**45**	**1,785**	**36**	**2,344**	**41**	**12,977**	**46**	**2,163**
	TBB	EU	2,318	94	1,504	88	1,797	85	2,210	88	2,976	93	2,817	84	13,622	89	2,270
	TBB	UK	157	6	205	12	312	15	307	12	233	7	550	16	1,764	11	294
	TBB Total		**2,475**	**53**	**1,709**	**51**	**2,109**	**41**	**2,517**	**55**	**3,209**	**64**	**3,367**	**59**	**15,386**	**54**	**2,564**
Demersal trawl Total			**4,627**	**77**	**3,337**	**74**	**5,088**	**93**	**4,606**	**79**	**4,994**	**82**	**5,711**	**93**	**28,363**	**83**	**4,727**

			2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Average (2016 to 2021)
Gear group	**Gear code**	**Nation group**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**
Dredge	**DRB**	EU	709	71	50	6	21	9	0	0	622	60	86	68	1488	34	248
	DRB	UK	290	29	848	94	218	91	1,055	100	421	40	41	32	2,873	66	479
	DRB Total		**999**	**100**	**898**	**100**	**239**	**100**	**1,055**	**100**	**1,043**	**100**	**127**	**100**	**4,361**	**100**	**727**
Dredge Total			**999**	**17**	**898**	**20**	**239**	**4**	**1,055**	**18**	**1,043**	**17**	**127**	**2**	**4,361**	**13**	**727**
Midwater Trawl	**OTM**	EU	0	0	0	0	1	100	3	100	11	100	71	100	86	100	14
	OTM Total		**0**	**0**	**0**	**0**	**1**	**100**	**3**	**100**	**11**	**100**	**71**	**97**	**86**	**98**	**14**
	PTM	UK	0	0	0	0	0	0	0	0	0	0	2	100	2	100	0
	PTM Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**3**	**2**	**2**	**0**
Midwater Trawl Total			**0**	**0**	**0**	**0**	**1**	**0**	**3**	**0**	**11**	**0**	**73**	**1**	**88**	**0**	**15**
Traps	**FPO**	EU	285	83	193	82	111	71	111	74	0	0	0	0	700	65	117
	FPO	UK	58	17	43	18	46	29	39	26	15	100	182	100	383	35	64
	FPO Total		**343**	**100**	**236**	**100**	**157**	**100**	**150**	**100**	**15**	**100**	**182**	**100**	**1,083**	**100**	**181**
Traps Total			**343**	**6**	**236**	**5**	**157**	**3**	**150**	**3**	**15**	**0**	**182**	**3**	**1,083**	**3**	**181**
Unknown	**NK**	EU	0	0	0	0	0	0	0	0	29	100	19	100	48	100	8
	NK Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**100**	**19**	**100**	**48**	**100**	**8**
Unknown Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**29**	**0**	**19**	**0**	**48**	**0**	**8**
Grand Total			**6,023**	**8**	**4,526**	**6**	**5,487**	**8**	**5,816**	**8**	**6,119**	**0**	**6,115**	**0**	**34,086**	**8**	**5,682**

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-West Approaches to Bristol Channel 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	3.56	3.50	0	0	0	7.06	1.41
	GNS	3.95	0	0	0	0	3.95	0.79
	GTR	0	0	0	0	0	0	0
Anchored Net/Line Total		**7.50**	**3.50**	**0**	**0**	**0**	**11.01**	**2.20**
Demersal trawl	OT	0	0	0	0	0	0	0
	OTB	0	0	0	0	0	0	0
	TBB	19.05	21.01	30.90	35.33	18.69	124.98	25.00
Demersal trawl Total		**19.05**	**21.01**	**30.90**	**35.33**	**18.69**	**124.98**	**25.00**
Dredge	DRB	60.38	166.93	17.13	146.27	69.21	459.93	91.99
	HMD	0	0	0	0	0	0	0
Dredge Total		**60.38**	**166.93**	**17.13**	**146.27**	**69.21**	**459.93**	**91.99**
Traps	FPO	16.54	12.61	30.11	8.94	2.90	71.10	14.22
Traps Total		**16.54**	**12.61**	**30.11**	**8.94**	**2.90**	**71.10**	**14.22**
Grand Total		**103.48**	**204.06**	**78.14**	**190.53**	**90.80**	**667.01**	**133.40**

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-West Approaches to Bristol Channel 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)
Demersal trawl	OTB	189.95	135.08	217.70	155.58	153.79	852.10	170.42
	TBB	447.96	282.80	329.77	363.70	423.15	1,847.37	369.47
Demersal trawl Total		**637.91**	**417.88**	**547.46**	**519.28**	**576.94**	**2,699.48**	**539.90**
Dredge	DRB	54.10	3.05	0.52	0	38.75	96.42	19.28
Dredge Total		**54.10**	**3.05**	**0.52**	**0**	**38.75**	**96.42**	**19.28**
Midwater Trawl	OTM	0	0	0.40	51.09	49.35	100.85	20.17
	PTM	0	0	0	0	0	0	0
Midwater Trawl Total		**0**	**0**	**0.40**	**51.09**	**49.35**	**100.85**	**20.17**
Traps	FPO	12.33	18.61	9.16	1.74	0	41.84	8.37
Traps Total		**12.33**	**18.61**	**9.16**	**1.74**	**0**	**41.84**	**8.37**
Grand Total		**704.34**	**439.54**	**557.55**	**572.11**	**665.04**	**2,938.59**	**587.72**

Table A1. 4: Percentage of each ICES rectangle intersected by the MMO section of South-West Approaches to Bristol Channel MPA.

ICES rectangle	Percentage overlap (%)
30E4	27.68
30E5	3.36
31E4	0.03

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-West Approaches to Bristol Channel 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	GEN	12.52	3.39	0	0	0	15.91	3.18
	GN	3.13	6.06	7.42	7.32	5.42	29.35	5.87
	GNS	0.45	0.06	0.07	<0.01	0	0.59	0.12
	LL	0	0	0.02	<0.01	0	0.02	<0.01
Anchored Net/Line Total		**16.10**	**9.51**	**7.51**	**7.32**	**5.42**	**45.87**	**9.17**
Demersal Seine	SB	<0.01	0	0	0	0	<0.01	<0.01
Demersal Seine Total		**<0.01**	**0**	**0**	**0**	**0**	**<0.01**	**<0.01**
Demersal trawl	OT	1.08	3.59	0	0.00	0	4.67	0.93
	OTB	0	0.37	0.73	1.70	3.73	6.52	1.30
	OTT	0	0.01	0	0	0	0.01	<0.01
	TBB	0	0	0.36	0.52	1.41	2.29	0.46
Demersal trawl Total		**1.08**	**3.96**	**1.09**	**2.21**	**5.14**	**13.47**	**2.69**
Dredge	DRB	0	0	0.07	0.70	19.62	20.38	4.08
Dredge Total		**0**	**0**	**0.07**	**0.70**	**19.62**	**20.38**	**4.08**
Midwater - Gill Drift	GND	0	0	0	<0.01	0	<0.01	<0.01
Midwater - Gill Drift Total		**0**	**0**	**0**	**<0.01**	**0**	**<0.01**	**<0.01**
Midwater - Gill Encircling	GNC	0	0	0	0	0	0	0
Midwater - Gill Encircling Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Midwater Hook/Lines	HF	0	0	0	0.01	0	0.01	0.01
	LHP	0.20	0.13	0.17	0.14	0.21	0.86	0.17
	LX	<0.01	0.02	<0.01	0	0	0.02	<0.01
Midwater Hook/Lines Total		**0.20**	**0.15**	**0.18**	**0.14**	**0.21**	**0.88**	**0.18**
Traps	FIX	0.02	<0.01	0	0	0	0.02	<0.01
	FPO	53.77	36.26	31.58	16.26	10.61	148.49	29.70
Traps Total		**53.79**	**36.26**	**31.58**	**16.26**	**10.61**	**148.51**	**29.70**
Grand Total		**71.17**	**49.88**	**40.42**	**26.64**	**41.00**	**229.12**	**45.82**

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-West Approaches to Bristol Channel MPA (2016 to 2020).

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Anchored Net/Line	GTR	0	0	0	0	0	0	0
Anchored Net/Line Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Grand Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**

Table A1. 7: Mean annual surface and subsurface SAR values for C-squares intersecting the MMO section of South-West Approaches to Bristol Channel MPA (2016 to 2020).

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	0.06	0.12	0.03	0.09	0.07
	Subsurface	0.06	0.12	0.03	0.09	0.07
Demersal Trawls	Surface	1.89	1.35	2.31	2.02	1.84
	Subsurface	0.89	0.65	0.85	0.81	0.90
Bottom Towed Gear	Surface	1.95	1.47	2.34	2.11	1.91
	Subsurface	0.95	0.77	0.88	0.90	0.97

Table A1. 8: Fishing effort (days) recorded by UK vessels under 12 m in length, separated by gear type for the area of South-West Approaches to Bristol Channel MPA that intersects the marine portion of ICES rectangles 30E4, 30E5 and 31E4 (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)	Average (2016 to 2021)
Demersal seine	0.05	0	0	0	0	0	0.05	0.01
Demersal trawl	1.59	5.96	1.39	3.21	6.56	2.56	21.27	3.55
Dredge	0	0	0.15	2.19	4.88	0.28	7.50	1.25
Bottom towed gear total	**1.64**	**5.96**	**1.54**	**5.40**	**11.44**	**2.84**	**28.82**	**4.80**
Midwater gill drift	0	0	0	0.02	0	0	0.02	<0.01
Midwater trawl	0	0	0	0	0	0.20	0.20	0.03
Midwater hooks and lines	18.27	12.29	8.80	15.33	13.96	7.31	75.97	12.66
Midwater gear total	**18.27**	**12.29**	**8.80**	**15.35**	**13.96**	**7.52**	**76.19**	**12.70**
Traps	162.27	87.44	80.14	53.19	51.30	51.15	485.48	80.91
Anchored nets and lines	53.58	27.39	22.22	21.99	10.80	6.26	142.23	23.70
Static gear total	**215.85**	**114.83**	**102.36**	**75.17**	**62.10**	**57.40**	**627.71**	**104.62**
MPA total	**235.76**	**133.08**	**112.70**	**95.93**	**87.50**	**67.76**	**732.72**	**122.12**

Annex 2: Biotope information

Table A2. 1: Subtidal coarse sediment biotopes that may be found within South-West Approaches to Bristol Channel 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, Tillin and Watson, 2024)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Not sensitive

Biotope	Sensitivity
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, 2023f)	Abrasion: Low Penetration: Low Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): No evidence
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 Smothering and siltation rate changes (light): No evidence

Table A2. 2: Subtidal sand biotopes that may be found within South-West Approaches to Bristol Channel 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
Echinocardium cordatum and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand (De-Bastos, Hill, *et al.*, 2023)	Abrasion: Medium Penetration: Medium Changes in suspended solids (water clarity): Not sensitive Smothering and siltation rate changes (light): Not sensitive
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 (De-Bastos, Rayment, *et al.*, 2023)	Abrasion: Low Penetration: Medium Changes in suspended solids (water clarity): Low Smothering and siltation rate changes (light): Low