

Marine Management Organisation

MMO Stage 3 Site Assessment: East of Start Point MPA (DRAFT)

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Title: MMO Stage 3 Site Assessment: East of Start Point MPA DRAFT

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Executive Summary

This assessment analyses the impact of anchored nets and lines, bottom towed gear and traps on the designated feature subtidal sand, in East of Start Point 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 ongoing fishing activities by bottom towed gear occurring in the site on the designated features subtidal sand pose a significant risk of hindering the achievement of the conservation objectives of East of Start Point MPA. As such the Marine Management Organisation (MMO) concludes that management measures are required.

1 Introduction

This assessment considers whether fishing activities are compatible with the conservation objectives of East of Start Point 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, 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 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 Site Information East of Start Point MCZ¹
- Defra Factsheet East of Start Point MCZ²

East of Start Point MPA is located in the Eastern Channel region, approximately 20 km off Torquay and 19 km south of Lyme Bay. A small portion of the site's northwest corner straddles the 12 nautical mile (nm) limits, whilst the majority of the site is located beyond the 12 nm limits. The site covers an area of approximately 116 km² (**Figure 1**). 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.

East of Start Point MPA was designated as a marine conservation zone in 2019. The designated feature and its general management approaches are set out below in **Table 1.**

The seabed in the MPA is dominated by subtidal sand and this habitat supports a broad diversity of epifaunal and infauna species including worms, bivalve molluscs including razor clams and mussels. The site also supports a number of flat fish species and is an important spawning and nursery ground for a number of fish species including lemon sole (*Microstomus kitt*), sand eels (*Ammodytes tobianus*), mackerel (*Scomber scombrus*), thornback ray (*Raja clavata*) and spotted ray (*Raja montagui*).

The general management approach for the subtidal sand of East of Start Point MPA has been set based on a vulnerability assessment. Although bottom towed gear fishing will exert pressures in the site, no other activities were identified as driving the recover objective within East of Start Point MPA.

¹ <u>https://jncc.gov.uk/our-work/east-of-start-point-mpa/</u> (last accessed 29 September 2023)

² <u>https://www.gov.uk/government/publications/marine-conservation-zones-east-of-</u> <u>start-point</u> (last accessed 29 September 2023)





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Figure 1: Site overview map.

Natural England and JNCC are currently in the process of developing a conservation advice package for East of Start Point 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 of Portland MPA conservation advice package has been used to help identify pressures, sensitivities and attributes of relevance to the subtidal sand within East of Start Point 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.

Table 1:	Designated	feature	and	general	managen	nent	approac	:h.
				3				

Designated feature	General management approach	
	Recover to favourable condition	
Subtidal cand	Favourable condition in this context means the:	
Sublidar Sand	 extent is stable or increasing; and 	
	 structures and functions, its quality, and the 	
	composition of its characteristic biological	
	communities are such as to ensure that it is in a	
	condition which is healthy and not deteriorating.	

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 2009³.

Part A assesses the interactions between pressures from fishing gears and the designated feature 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

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

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:

- 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 <u>Stage 3</u> <u>MPA Site Assessment Methodology</u> document⁴, 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 andlandings data for East of Start Point MPA, 2016 to 2021.

Gear type	Gear name	Gear code	Justification
	Trammel net	GTR	
	Set gillnet (anchored)	GNS	
Anchored	Longline (unspecified)	LL	Present in under 12 m vessel landings data for ICES statistical rectangles that
	Gillnets and entangling nets	GEN	overlap the site.
	Gill nets (not specified)	GN	
	Twin bottom otter trawl	ΟΤΤ	
	Towed dredge	DRB	Present in VMS records and in under
	Bottom pair trawl	РТВ	12 m vessel landings data for ICES statistical rectangles that overlap the
Bottom towed	Bottom otter trawl	ОТВ	site.
year	Beam trawl	TBB	
	Otter trawls (unspecified)	ОТ	Present in under 12 m vessel landings data for ICES statistical rectangles that
	Nephrops trawl	TBN	overlap the site.
	Danish / anchor seine	SDN	

⁴ Stage 3 MPA Site Assessment Methodology document:

<u>www.gov.uk/government/publications/stage-3-site-assessments</u> (last accessed 17 September 2024)

Gear type	Gear name	Gear code	Justification
	Scottish / fly seine	SSC	Present in VMS data.
	Purse seine (ring net)	PS	Present in VMS records and in under 12 m vessel landings data for ICES
	Midwater otter trawl	ОТМ	statistical rectangles that overlap the site.
Midwater gear	Midwater pair trawl	PTM	Present in VMS data.
	Hook and line (unspecified)	LX	
	Hand-operated pole-and-line	LHP	Present in under 12 m vessel landings
	Hand fishing	HF	data for ICES statistical rectangles that
	Encircling gillnet	GNC	overlap the site.
	Drift gillnet	GND	
Shore based	Hand dredge	DRH	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Trap	FIX	Present in under 12 m vessel landings
	Fyke net	FYK	data for ICES statistical rectangles that overlap the site.
Traps	Pot/creel	FPO	Present in VMS records and in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
Miscellaneous	Miscellaneous	MHX, MIS	Present in under 12 m vessel landings data for ICES statistical rectangles that
	Not known NK		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 East of Start Point 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 East of Start Point MPA, there is no feasible pathway for gears of this type to interact with benthic designated feature 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 East of Start Point MPA is not considered to be capable of affecting the designated feature other than insignificantly and is not considered further within this assessment.

- Shore based activities: although landings data shows that fishing activity using hand dredge occurs within the site, this is based on all activity occurring within site-overlapping ICES rectangles. ICES rectangle 29E6 covers an area of coast where shore-based activities occur. As the area of the site being assessed lies beyond the 6 nm limit, it is not possible that shore-based activities would be capable of affecting the designated feature due to distance; shore-based activities are therefore not considered further within this assessment.
- **Unknown gear:** 'other gear' or 'miscellaneous 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 the feature 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 Lines⁵;
- Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear⁶; and
- Stage 3 Fishing Gear MPA Impacts Evidence Traps⁷.

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

⁵ Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines: <u>www.gov.uk/government/publications/stage-3-impacts-evidence</u> (last accessed 17 September 2024)

⁶ Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear: <u>www.gov.uk/government/publications/stage-3-impacts-evidence</u> (last accessed 17 September 2024)

⁷ Stage 3 Fishing Gear MPA Impacts Evidence Traps: <u>www.gov.uk/government/publications/stage-3-impacts-evidence</u> (last accessed 17 September 2024)

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 feature of the site.

As previously noted, there is currently no advice on operations available for East of Start Point MPA, Natural England and JNCC has therefore advised the use of the conservation advice package for South of Portland 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 in and out in **sections 3.1** and **3.2**.

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.

	Designated feature		ature	
Potential pressures		Subtidal sand		
	Α	В	Т	
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				
Organic enrichment				
Penetration and/or disturbance of the substrate below the surface of the seabed, including 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 (light)				
Synthetic compound contamination				
Transition elements and organo-metal contamination				
Underwater noise changes				
Visual disturbance				

Table 3: Summary of pressures on the designated feature of East of Start Point MPA to be taken forward to Part B.

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 2009⁸.

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 JNCC and Natural England conservation advice supplementary advice tables and are shown in **Table 4**.

Attribute	Target	Relevant pressures
Distribution: presence and spatial distribution of biological communities*	Maintain the presence and spatial distribution of subtidal sand communities.	 Abrasion or disturbance of the substrate on the surface of the seabed;
Extent and distribution	Maintain the total extent and spatial distribution of subtidal sand.	 Changes in suspended solids (water clarity);
Structure and function: presence and abundance of key structural and influential species	[Maintain OR Recover OR Restore] the abundance of listed species, to enable each of them to be a viable component of the habitat.	 Smothering and siltation rate changes (light); Penetration and/or disturbance of the substrate below the
Structure: sediment composition and distribution	Maintain the distribution of sediment composition types across the feature.	surface of the seabed, including abrasion;

Tahlo	1. Rolovant	favourable	condition	targets f	for identified	nrassuras
i able	4. Relevant	lavourable	condition	largets i	or identified	pressures.

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

Attribute	Target	Relevant pressures
Structure: species composition of component	Maintain the species composition of component communities.	 Removal of non-target species; Removal of
communities Supporting processes: water quality - turbidity (habitat)	Maintain natural levels of turbidity (e.g., concentrations of suspended sediment, plankton and other material) across the habitat.	target species.

* A recover target has been set as part of the GMA due to this feature's high sensitivity to pressures from bottom towed gear.

4.1 Fisheries access and existing management

Non-UK vessels can operate within East of Start Point MPA, provided that they have a licence issued by the UK to do so. Nationalities which fished within the MPA from 2016 to 2021 include UK, Belgium, Germany, Denmark, France, Ireland, Lithuania and Netherlands. VMS records indicate that UK vessels are most prevalent.

4.2 Fishing activity summary

Table A1. 1 to **Table A1. 8** in Annex 1 display a detailed breakdown of fishing activity within East of Start Point 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, the most prevalent gears operated by over 12 m vessels within the site are demersal trawls. Landings data show that the most prevalent gears operated by under 12 m vessels within the site are also demersal trawls, followed closely by traps – pots/creels.

Anchored nets and lines

The only anchored nets and lines activity in the MPA was from under 12 m vessels, which landed on average 6.6 tonnes (t) per year between 2016 and 2020 and recorded an annual average of 30 fishing effort days between 2016 and 2021 in the MPA. Fishing effort days are derived from logbooks and is collected at ICES rectangle and then apportioned according to the area of overlap with the MPA.

Bottom Towed Gear

The majority of over 12 m bottom towed gear activity in the MPA was from beam trawls (annual average of 719 VMS records), followed by bottom otter trawls and twin bottom otter trawls (combined annual average of 675 VMS records) and took

place across the extent of the site, with particularly high activity recorded in the north-west of the site. In total, demersal trawls landed on average 226 tonnes (over 12 m vessels - 193 tonnes; under 12 m vessels – 33 tonnes). Under 12 m vessels using bottom towed gear recorded an annual average of 93 fishing effort days between 2016 and 2021. Mean annual surface SAR values for demersal trawl activity for C-squares intersecting East of Start Point MPA increased from 3.29 in 2016 to a peak of 4.61 in 2017, then followed a decreasing trend to 2.20 in 2020. Mean annual subsurface SAR values increased from 1.03 in 2016 to a peak of 1.19 in 2017, then followed a decreasing trend to 0.74 in 2020. An SAR value of 1 would mean that on average these C-squares were passed over completely by demersal trawls once every year.

Vessels over 12 m using dredges recorded an annual average (2016 to 2021) of 81 VMS records and approximately 12.5 tonnes of landings and took place predominantly in the south and south-east of the site with little or no variation in the amount of effort applied to the designated feature in this portion of the site. Vessels under 12 m using dredges recorded an annual average of 12 fishing effort days between 2016 and 2021 and landed approximately 7.1 tonnes per year between 2016 and 2020. Mean annual surface and subsurface SAR values for dredge activity for C-squares intersecting East of Start Point MPA increased from 0.52 in 2016 to a peak of 0.57 in 2018, then followed a decreasing trend to 0.17 in 2020.

Vessels over 12 m using demersal seines recorded an annual average of four VMS records and approximately 0.5 tonnes of landings and took place predominantly in the southern portion of the site. No landings or effort data was recorded for demersal seining. Mean annual surface SAR values for demersal seine activity for C-squares intersecting East of Start Point MPA increased from 0 in 2016 to a peak of 0.05 in 2018, reducing to 0.02 in 2019 and 2020. Mean annual subsurface SAR values increased from 0 in 2016 to 0.001 in 2017 to 2020.

Traps

The only traps activity in the MPA was from under 12 m vessels, which landed on average 32.5 tonnes per year between 2016 and 2020. Between 2016 and 2021 there was an annual average of 91 fishing effort days for traps recorded in the MPA. Fishing effort days are derived from logbooks and is collected at ICES rectangle and then apportioned according to the area of overlap with the MPA.

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. 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 East of Start Point 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. These pressures may require consideration as a result of any future evidence review, in conjunction with updated conservation advice from JNCC and Natural England.

4.3.1 Anchored nets and lines

Subtidal sand

The relevant pressures on the subtidal sand feature of East of Start Point 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.

Table A2.1 in Annex 2 lists the biotopes that may be found within the subtidal sand feature of the site and relevant sensitivities is available within Natural England's Advice on Operations for South of Portland MPA, which has been used as a proxy site for East of Start Point MPA in the absence of a Conservation Advice Package. Biotope sensitivity data was then extracted from MarLIN to outline biotope sensitivity for the relevant pressure.

For the subtidal sand feature, ten biotopes were identified as potentially being present at the site. Two of these biotopes, shown in **Table A2.1** in Annex 2 were identified as having medium sensitivity to abrasion. Given the depth range of this site is 25 m to 50 m, it is unlikely that *Amphiura brachiata* with *Astropecten irregularis* and other echinoderms in circalittoral muddy sand occur within this site. **Table 5** demonstrates the one biotope with medium sensitivity to abrasion which has not been excluded due to depth ranges. A further seven biotopes were identified as having low sensitivity and one biotope identified as being not sensitive to abrasion, therefore these have not been considered further within this section.

Table 5: Subtidal sand biotopes that may be found within East of Start Point MPA with medium sensitivity to the abrasion/disturbance of the substrate on the surface of the seabed.

Biotope	Sensitivity
<i>Echinocardium cordatum</i> and <i>Ensis spp.</i> in lower shore and shallow sublittoral slightly muddy fine sand (De-Bastos <i>et al.</i> , 2023)	Abrasion: Medium

VMS fishing activity data identified no anchored nets and lines fishing activity for over 12 m vessels in the site between 2016 and 2021. Under 12 m vessels using anchored nets and lines landed 6.57 tonnes per year on average between 2016 and 2020. However, these landings are likely an overestimate for East of Start Point MPA as the ICES rectangle 29E6 that intersects the site, also encompasses other sites whereby the majority of anchored nets and lines activity is most likely occurring inshore of 6 nm by smaller vessels.

As described in section 9.4 of the anchored nets and lines Impacts Evidence document⁵, 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. 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 sediment habitats. Species associated with the biotopes identified for the site generally have high fecundity rates, reproduce annually and have high dispersal potential. The impact of anchored nets and lines will likely be greatest on any epifauna present with resistance varying by species, however 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. 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.

Given the low level of anchored nets and lines fishing activity currently occurring within the site, coupled with the small spatial footprint of the gear, no evidence of highly sensitive biotopes being present and good rates of resilience and recoverability of the medium sensitivity biotopes found within the subtidal sand feature, it is unlikely that the ongoing use of anchored nets and lines at the levels described will pose a significant risk of hindering the achievement of the conservation objective of 'recover to favourable condition' of the subtidal sand feature of East of Start Point MPA.

Therefore, MMO concludes 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 East of Start Point MPA.

4.3.2 Bottom towed gear

Subtidal sand

The relevant pressures on the subtidal sand feature of East of Start Point MPA from bottom towed gears 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^

As noted above, impacts from removal of target/non-target species pressures are not being considered in detail in this assessment, as they are assessed more completely within the abrasion pressure.

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

In addition to the biotopes identified in the anchored nets and lines section as having high or medium sensitivity to abrasion in **Table A2.1** of Annex 2, and those biotopes identified as having high or medium sensitivity to both abrasion and penetration pressures, no additional biotopes were identified as having high or medium sensitivity to penetration pressures. **Section 4.2** describes fishing activity within the site.

As described in section 8.4.1 of the bottom towed gear Impacts Evidence document⁶, abrasion and penetration pressures from bottom towed gears 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 to 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 (Hiddink *et al.*, 2006). 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 and dredges, which are both occurring within East of Start Point MPA, can cause collision, crushing and uprooting as animals encounter or pass under the gear. The first pass of a trawl has the largest initial impact on biomass and production of sediments whereas in areas of high trawling intensity, further increasing trawling intensity can have smaller additional effects on biomass and production. Direct mortality due to otter trawling is considerable but has been found to be lower than that caused by beam trawling for several 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 East of Start Point MPA have the potential to impact biological communities and the overall ecosystem function of the subtidal sand feature found in the site from abrasion, penetration, or disturbance of the substrate on the surface of the seabed pressures. Given the medium sensitivity of one biotope identified within the subtidal sand feature in the site, low resistance to this type of fishing activity and slow recoverability, it is likely that abrasion and penetration pressures from the ongoing use of bottom towed gear over the subtidal sand feature will pose a significant risk of hindering the achievement of the conservation objective of East of Start Point MPA.

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

Table A2.1 of Annex 2 details the list of biotopes that may be found within the subtidal sand feature which may be sensitive to the changes in suspended solids (water clarity) and smothering and siltation rate changes pressures. Of the ten biotopes which may be present in the subtidal sand feature, three biotopes were identified as having low sensitivity to smothering and siltation rate changes and seven biotopes were identified as not sensitive. Six biotopes were identified as having low sensitivity to changes in suspended solids and four biotopes were not sensitive.

As described in **section 4.2**, the majority of bottom towed gear activity in the site is being undertaken by vessels deploying beam trawls, followed closely by the combined activity of bottom otter trawls and twin otter trawls. 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 cm³ 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. VMS data also indicates that

bottom otter trawls activity is widespread across the site. The bottom towed gear Impacts Evidence document indicates that there is no specific evidence regarding the entrainment of sediment for beam trawls, however research used to inform the Impacts Evidence document outlines that as per other bottom towed gears, beam trawling will cause sediment to be resuspended.

As described in section 8.4.2 of the bottom towed gear Impacts Evidence document⁶, 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 document⁶ 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.

Based on the rationale above, given the low sensitivity of the subtidal sand biotopes to changes in suspended solids (water clarity) and smothering and siltation rate changes (light) pressures, it is unlikely that these pressures from the ongoing use of bottom towed gear over the subtidal sand feature will pose a significant risk of hindering the achievement of the conservation objective of 'recover to favourable condition' of East of Start Point MPA.

Given the sensitivity of the biotopes which may be present in the site, in particular to abrasion, disturbance and penetration from bottom towed gears, and the assessed activity levels, MMO concludes that the ongoing use of bottom towed gear at the levels described does pose a significant risk of hindering the achievement of the conservation objectives of East of Start Point MPA.

4.3.3 Traps

Subtidal sand

The relevant pressures on the subtidal sand feature of East of Start Point MPA from traps were identified in **Table 4** and are:

• Abrasion or disturbance of the substrate on the surface of the seabed.

As noted above, impacts from removal of target/non-target species pressures are not being considered in detail in this assessment, as they are assessed more completely within the abrasion pressure.

Impacts on this feature 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.

Traps and anchored nets and lines fishing gear exert similar pressures on the biotopes associated with the subtidal sand feature, 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 document⁷, there is limited primary evidence on the impacts of static gears on sand habitats. However, available literature suggests that static gears are unlikely to significantly impact the physical structure of the sediment. Based on the spatial footprint of the gear types, traps have a relatively low impact on benthic communities in comparison to towed gears, however, impacts from traps to biological communities become a concern if activity reaches a particularly high level of intensity, or particularly sensitive species are present. The potential for the snagging of gear and subsequent entanglement and damage to fragile epifauna increases as the level of fishing activity and density of anchors and ropes increases. However, no highly sensitive biotopes to abrasion pressures have been identified within the evidence available. Where lower levels of effort are evident, the impact of traps is of limited concern due to the generally high energy environments where subtidal sand occurs and the likely greater impact of natural disturbance in these environments compared to the level of pressure exerted. Furthermore, the total effort apportioned to the site by vessels under 12 m using bottom towed gear and static gear between 2016 and 2021 is currently an annual average of approximately 214 days, therefore potting activity in the site is unlikely to reach an intensity whereby biological communities of the subtidal sand feature will be impacted.

Given the current low levels of trap fishing activity taking place within the site, coupled with evidence regarding the limited impacts of traps on subtidal sand habitats, it is unlikely that the ongoing use of traps will pose a significant risk of hindering the achievement of the conservation objective of 'recover to favourable condition' of East of Start Point MPA.

Therefore, MMO concludes 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 East of Start Point MPA.

4.4 Part B conclusion

The assessment of anchored nets and lines, bottom towed gears, and traps on the subtidal sand of East of Start Point 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 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, 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 historic and/or 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 East of Start Point MPA that interact with the seabed. Incombination effects of these fishing activities as well as these activities incombination with other relevant activities will be assessed in this section.

In accordance with the methodology detailed above, ArcGIS identified one project, within the 5 km buffer applied. **Table 6** shows this activity and the relevant category from the JNCC Pressures-Activities Database (PAD)⁹.

Table 6: summary of marine licensable activities and associated PAD	
categories.	

Marine licence case reference number ¹⁰	PAD Category	Description
MLA/2016/00315	Power cable: Laying, burial and protection; Power cable: Operation and maintenance	FAB Link cable corridor is a 220km proposed underground and subsea interconnector electricity cable between France and Britain via Alderney. Situated in the north-east corner of the MPA buffer, outside of the site boundary.
		No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.

The PAD and **Table 3** from **section 3.3** were used to identify medium-high risk pressures exerted by fishing activities to identify those which require in-combination assessment (**Table 7**).

Table 7 summarises the pressures exerted by fishing activities and identifies thosepressures exerted by all gears (Y: pressure exerted).Activity-pressure interactions

⁹ JNCC Pressures-Activities Database (PAD): <u>hub.jncc.gov.uk/assets/97447f16-</u> <u>9f38-49ff-a3af-56d437fd1951</u>

¹⁰ Detail on the marine licence activity can be viewed on the public register of marine licence applications and decisions, searching by the marine licence case reference number: <u>Marine case management system - Public register - MCMS</u> (marinemanagement.org.uk) URL:

marinelicensing.marinemanagement.org.uk/mmofox5/fox/live/MMO_PUBLIC_REGIS TER

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 7: Pressures exerted by fishing.

	Fishing a	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

Fisheries vs fisheries in-combination pressures 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**), the removal of target and non-target species pressure in relation to traps and anchored nets and lines are scoped out of 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 one count (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 121 days (90.86 days for traps, 30.33 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 727 days (545 days for traps, 182 days for anchored nets and lines (**Section 4.2**)). The fishing effort data is further supported by the estimated live weight landings for under 12 m vessels that equal an annual average of 38.81 tonnes, 32.24 tonnes for traps and 6.6 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, due to the annual average anchored nets and line effort between 2016-2021 being low (30.33 effort days), 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 East of Start Point MPA at the levels described.

5.3 Part C conclusion

MMO concludes that different fishing gear types in-combination will not result in a significant risk of hindering the achievement of the conservation objectives for East of Start Point 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 East of Start Point MPA.

Part B of this assessment concluded that the ongoing use of bottom towed gear on the designated feature subtidal sand of East of Start Point MPA may hinder the achievement of the conservation objectives of the MPA as a result of the impacts of abrasion or disturbance and penetration.

Part C of this assessment concluded that the ongoing use of anchored nets and lines and traps, alone or in combination, does 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 of the MPA, MMO will implement a byelaw to prohibit the use of bottom towed gear throughout East of Start Point 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 <u>Stage 3 MPA Site Assessment Methodology</u> document⁴.



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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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Annex 1: Fishing activity data

Table A1. 1: VMS record count per nation group (UK and EU Member State (EU)) 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.

			201	6	201	7	201	8	201	9	202	20	202	21	Total to 2	(2016 2021)	Annual average (2016 to 2021)
Gear group	Gear code	Nation group	Count	%	Count	%	Count										
	SDN	EU	0	0	0	0	0	0	2	100	1	100	0	0	3	100	1
Demersal Seine	SDN To	tal	0	0	0	0	0	0	2	100	1	5	0	0	3	14	1
Demersal Seine	SSC	EU	0	0	0	0	0	0	0	0	18	100	0	0	18	100	3
	SSC Total		0	0	0	0	0	0	0	0	18	95	0	0	18	86	3
Demersal Seine	Total		0	0	0	0	0	0	2	0	19	1	0	0	21	0	4
	ОТВ	EU	9	4	20	6	28	9	29	3	13	3	11	3	110	4	18
	ОТВ	UK	224	96	327	94	275	91	922	97	438	97	355	97	2,541	96	424
	ОТВ То	tal	233	21	347	24	303	23	951	45	451	33	366	36	2,651	32	442
	ΟΤΤ	UK	162	100	230	100	135	100	252	100	388	100	229	100	1,396	100	233
Demorsal trawl	OTT To	tal	162	15	230	16	135	10	252	12	388	29	229	22	1,396	17	233
Demersartiawi	РТВ	UK	0	0	0	0	10	100	24	100	0	0	0	0	34	100	6
	PTB To	tal	0	0	0	0	10	1	24	1	0	0	0	0	34	0	6
	ТВВ	EU	33	5	45	5	28	3	43	5	12	2	0	0	161	4	27
	ТВВ	UK	665	95	854	95	869	97	832	95	502	98	431	100	4,153	96	692
	TBB To	tal	698	64	899	61	897	67	875	42	514	38	431	42	4,314	51	719
Demersal trawl	Total		1,093	88	1,476	89	1,345	95	2,102	92	1,353	90	1,026	96	8,395	91	1,399

			20 1	16	201	17	20 1	8	201	9	202	20	202	21	Total to 2	(2016 2021)	Annual average (2016 to 2021)
Gear group	Gear code	Nation group	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Dredge	DRB	UK	130	100	131	100	31	100	144	100	18	100	34	100	488	100	81
Diougo	DRB To	tal	130	100	131	100	31	100	144	100	18	100	34	100	488	100	81
Dredge Total			130	10	131	8	31	2	144	6	18	1	34	3	488	5	81
Midwater -	PS	EU	0	0	0	0	2	100	1	100	0	0	0	0	3	100	1
surrounding	PS Tota	I	0	0	0	0	2	100	1	100	0	0	0	0	3	100	1
Midwater - surr	ounding	Total	0	0	0	0	2	0	1	0	0	0	0	0	3	0	1
	ОТМ	EU	12	80	17	33	0	0	19	42	0	0	0	0	48	18	8
	ОТМ	UK	3	20	35	67	40	100	26	58	106	100	5	100	215	82	36
Midwater Trawl	ΟΤΜ Το	tal	15	71	52	87	40	100	45	100	106	100	5	100	263	95	44
	РТМ	UK	6	100	8	100	0	0	0	0	0	0	0	0	14	100	2
	PTM To	tal	6	29	8	13	0	0	0	0	0	0	0	0	14	5	2
Midwater Trawl	Total		21	2	60	4	40	3	45	2	106	7	5	0	277	3	46
Trans	FPO	UK	0	0	0	0	0	0	0	0	1	100	0	0	1	100	0
Парз	FPO Tot	tal	0	0	0	0	0	0	0	0	1	100	0	0	1	100	0
Traps Total			0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
Grand Total			1,244	2	1,667	2	1,418	2	2,294	3	1,497	2	1,065	2	9,185	2	1,531

Table A1. 2: UK live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of East of Start Point 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 Tot	tal	0	0	0	0	0	0	0
	OT	0	0	0	0	0	0	0
	OTB	68.20	116.18	45.94	35.08	17.16	282.56	56.51
Demersal trawl	OTT	46.26	93.94	29.03	10.99	14.14	194.36	38.87
	PTB	0	0	3.56	0.90	0	4.45	0.89
	TBB	73.96	85.69	104.29	138.08	79.95	481.98	96.40
Demersal trawl Total		188.42	295.81	182.83	185.05	111.24	963.35	192.67
Drodgo	DRB	20.73	21.36	5.32	12.12	2.05	61.58	12.32
Dieuge	HMD	0	0	0	0	0	0	0
Dredge Total		20.73	21.36	5.32	12.12	2.05	61.58	12.32
Midwater Hook/Lines	LHP	0	0	0	0	0	0	0
Midwater Hook/Lines	Fotal	0	0	0	0	0	0	0
Midwator Trawl	OTM	31.94	277.87	99.58	45.07	62.21	516.65	103.33
WIGWALET TTAWI	PTM	45.82	93.32	0	0	0	139.14	27.83
Midwater Trawl Total		77.75	371.19	99.58	45.07	62.21	655.79	131.16
Traps	FPO	0	0	0	0	1.66	1.66	0.33
Traps Total		0	0	0	0	1.66	1.66	0.33
Grand Total		286.91	688.36	287.73	242.23	177.16	1,682.38	336.48

Table A1. 3: EU27 live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of East of Start Point MPA (2016 to 2020).

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Demersal Seine	SDN	0	0	0	0	0.45	0.45	0.09
	SSC	0	0	0	0	1.77	1.77	0.35
Demersal Seine Total		0	0	0	0	2.22	2.22	0.44
Demersal trawl	OTB	1.00	2.29	2.59	3.11	1.68	10.68	2.14
	TBB	6.98	7.44	5.69	7.12	2.45	29.68	5.94
Demersal trawl To	otal	7.98	9.72	8.29	10.23	4.14	40.36	8.07
Midwater Trawl	OTM	73.21	44.70	0	3.10	0	121.01	24.20
	PTM	0	0	0	0	0	0	0
Midwater Trawl Total		73.21	44.70	0	3.10	0	121.01	24.20
Grand Total		81.19	54.43	8.29	13.33	6.36	163.59	32.72

Table A1. 4: Percentage of each ICES rectangle intersected by the MMO section of East of Start Point MPA.

ICES rectangle	Percentage overlap (%)
29E6	3.74

Table A1. 5: UK live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the MMO section of East of Start Point MPA (2016 to 2020).

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
	GEN	0.14	0.48	0	0	0	0.62	0.12
	GN	6.32	5.88	5.87	6.93	7.00	31.99	6.40
Anchored Net/Line	GNS	0.01	0.06	0.03	0.04	0.08	0.21	0.04
	GTR	0	0	0	0	0	0	0
	LL	0.05	0	0	0	0	0.05	0.01
Anchored Net/Line Total		6.52	6.43	5.89	6.96	7.07	32.87	6.57
Demersal Seine	SB	0	0	0	0	0	0	0
Demersal Seine Total	•	0	0	0	0	0	0	0
Domoroal trawl	OT	32.83	15.04	0	0	0	47.87	9.57
	OTB	0.02	26.23	26.20	32.70	19.44	104.60	20.92
	OTT	1.20	1.92	1.14	1.35	1.58	7.18	1.44
Demersal trawi	PTB	0.00	0.00	0.00	0.00	0.03	0.03	0.01
	TBB	0.00	0.00	0.62	2.43	2.09	5.14	1.03
	TBN	0.00	0.00	0.00	0.32	0.00	0.32	0.06
Demersal trawl Total		34.05	43.19	27.96	36.80	23.15	165.15	33.03
Dradga	DRB	6.23	5.21	8.54	8.32	7.25	35.55	7.11
Diedge	DRH	0	0.01	0	0	0	0.02	<0.01
Dredge Total		6.23	5.22	8.54	8.32	7.25	35.56	7.11
Midwater - Gill Drift	GND	0.28	0.19	<0.01	<0.01	0.02	0.5	0.1
Midwater - Gill Drift Total		0.28	0.19	<0.01	<0.01	0.02	0.5	0.1
Midwater - Gill Encircling	GNC	0.01	0.15	0	0.01	0	0.17	0.03

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Midwater - Gill Encircling	Total	0.01	0.15	0	0.01	0	0.17	0.03
Midwater - surrounding	PS	0.17	0.01	0	0	0	0.18	0.04
Midwater - surrounding To	otal	0.17	0.01	0	0	0	0.18	0.04
	HF	0.27	0.26	0	0	0	0.53	0.11
Midwater Hook/Lines	LHP	3.24	2.8	2.52	2.79	2.28	13.62	2.72
	LX	0	0.05	0.16	0.29	0.1	0.61	0.12
Midwater Hook/Lines Tota	I	3.51	3.11	2.68	3.08	2.38	14.76	2.95
Midwater Trawl	OTM	12.98	11.93	14.13	9.29	7.74	56.07	11.21
Midwater Trawl Total		12.98	11.93	14.13	9.29	7.74	56.07	11.21
	FIX	2.88	1.19	0	0	0	4.08	0.82
Traps	FPO	47.91	34.41	28.35	25.95	20.48	157.11	31.42
	FYK	0.02	0	0	0	0	0.02	0
Traps Total		50.82	35.61	28.35	25.95	20.48	161.21	32.24
Unknown	MIS	0	0.19	0.68	0.89	0.68	2.44	0.49
CIRIOWI	NK	0	0.02	0	0	0	0.02	<0.01
Unknown Total		0	0.21	0.68	0.89	0.68	2.46	0.49
Grand Total		114.58	106.04	88.24	91.29	68.78	468.94	93.79

Table A1. 6: EU27 live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the MMO section of East of Start Point MPA (2016 to 2020).

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Anchored	LLS	0	0	0	0	0	0	0
Net/Line	GNS	0	0	0	0	0	0	0
Anchored Net/Line	Total	0	0	0	0	0	0	0
Demersal trawl	OTB	0	0	0	0	0	0	0
Demersal trawl Tot	tal	0	0	0	0	0	0	0
Traps	FPO	0	0	0	0	0	0	0
Traps 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 East of Start Point MPA (2016 to 2020).

Gear group	SAR category	2016	2017	2018	2019	2020
Domorsal Sainas	Surface	0	0.01	0.05	0.02	0.02
Demersar Semes	Subsurface	0	0	<0.01	<0.01	<0.01
Dradaaa	Surface	0.52	0.43	0.57	0.49	0.17
Diedges	Subsurface	0.52	0.43	0.57	0.49	0.17
Demorael Traula	Surface	3.29	4.61	4.16	2.82	2.20
	Subsurface	1.03	1.19	0.97	0.94	0.74
Bottom Towed Coor	Surface	3.81	5.05	4.78	3.32	2.39
Bolloni Towed Geal	Subsurface	1.55	1.63	1.54	1.43	0.91

Table A1. 8: Fishing effort (days) recorded by UK vessels under 12 m in length, separated by gear type for the area of East of Start Point MPA that intersects ICES rectangle 29E6 (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 (see Table A1. 4).

			F	ishing effort	: (days at se	a)		
Gear group	2016	2017	2018	2019	2020	2021	Total (2016 to 2021)	Annual average (2016 to 2021)
Demersal trawl	79.96	99.41	78.14	90.77	65.32	68.03	481.62	80.27
Dredge	10.93	8.46	14.98	13.74	11.20	15.10	74.41	12.40
Bottom towed gear total	90.89	107.86	93.12	104.51	76.52	83.13	556.03	92.67
Midwater gill drift	3.13	2.00	0.15	0.15	0.19	0.15	5.77	0.96
Midwater gill encircling	0.04	0.04	0	0.04	0	0	0.11	0.02
Midwater hooks and lines	40.02	48.70	42.91	49.66	41.01	40.68	262.98	43.83
Midwater surrounding	0.82	0.04	0	0	0	0	0.86	0.14
Midwater trawl	2.40	3.03	3.22	1.98	1.65	0.56	12.84	2.14
Midwater gear total	46.40	53.82	46.28	51.83	42.85	41.39	282.57	47.09
Anchored nets and lines	36.50	33.62	26.67	30.53	30.73	23.93	181.98	30.33
Traps	104.29	93.42	89.41	93.98	74.82	89.26	545.19	90.86
Static gear total	140.79	127.04	116.08	124.51	105.56	113.19	727.17	121.20
Unknown	0	0.97	3.71	5.80	4.08	1.20	15.77	2.63
Unknown total	0	0.97	3.71	5.80	4.08	1.20	15.77	2.63
MPA total	278.09	289.69	259.19	286.66	229.01	238.90	1,581.54	263.59

Annex 2: Biotope information

Table A2.1: Subtidal sand biotopes that may be found within East of Start Point MPA with sensitivity to the pressures 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
<i>Echinocardium cordatum</i> and <i>Ensis spp.</i> in lower shore and shallow sublittoral slightly muddy fine sand (De-Bastos <i>et al.</i> , 2023)	Abrasion: Medium
	Penetration: Medium
	Smothering and siltation rate changes (light): Not sensitive
	Changes in suspended solids (water clarity): Not sensitive
<i>Amphiura brachiata</i> with <i>Astropecten irregularis</i> and other echinoderms in circalittoral muddy sand (De-Bastos, Lloyd and Watson, 2023)	Abrasion: Medium
	Penetration: Medium
	Smothering and siltation rate changes (light): Low
	Changes in suspended solids (water clarity): Not sensitive
<i>Spisula subtruncata</i> and <i>Nephtys hombergii</i> in shallow muddy sand (Tillin, Lloyd and Watson, 2023)	Abrasion: Low
	Penetration: Low
	Smothering and siltation rate changes (light): Low
	Changes in suspended solids (water clarity): Low
<i>Abra alba</i> and <i>Nucula nitidosa</i> in circalittoral muddy sand or slightly mixed sediment (Tillin and Budd, 2023)	Abrasion: Low
	Penetration: Low
	Smothering and siltation rate changes (light): Low
	Changes in suspended solids (water clarity): Low
Sublittoral sand in variable salinity (estuaries) (Ashley, 2016)	Abrasion: Low
	Penetration: Low
	Smothering and siltation rate changes (light): Not sensitive
	Changes in suspended solids (water clarity): Low

Biotope	Sensitivity
<i>Nephtys cirrosa</i> and <i>Macoma balthica</i> in variable salinity infralittoral mobile sand (Tillin and Ashley, 2022)	Abrasion: Low
	Penetration: Low
	Smothering and siltation rate changes (light): Not sensitive
	Changes in suspended solids (water clarity): Low
Infralittoral mobile clean sand with sparse fauna (Tillin, Tyler- Walters and Garrard, 2019)	Abrasion: Low
	Penetration: Low
	Smothering and siltation rate changes (light): Not sensitive
	Changes in suspended solids (water clarity): Low
<i>Sertularia cupressina</i> and <i>Hydrallmania falcata</i> on tide-swept sublittoral sand with cobbles or pebbles (Readman and Garrard, 2019)	Abrasion: Low
	Penetration: Low
	Smothering and siltation rate changes (light): Not sensitive
	Changes in suspended solids (water clarity): Not sensitive
<i>Nephtys cirrosa</i> and <i>Bathyporeia spp.</i> in infralittoral sand (Tillin and Garrard, 2022)	Abrasion: Low
	Penetration: Low
	Smothering and siltation rate changes (light): Not sensitive
	Changes in suspended solids (water clarity): Low
<i>Arenicola marina</i> in infralittoral fine sand or muddy sand (Tyler-Walters and Garrard, 2019)	Abrasion: Not sensitive
	Penetration: Low
	Smothering and siltation rate changes (light): Not sensitive
	Changes in suspended solids (water clarity): Not sensitive