Marine Management Organisation

MMO Stage 3 Site Assessment: Inner Bank MPA (Draft)

...ambitious for our seas and coasts

Title: MMO Stage 3 Site Assessment: Inner Bank MPA (Draft)

Contents

Executive summary 1

1 Introduction 2

2 Site information 3

3 Part A - Identified pressures on the MPA 6

4 Part B - Fishing activity assessment 12

5 Part C - In-combination assessment 24

6 Conclusion and proposed management 28

7 Review of this assessment 30

References 31

Annex 1: Fishing activity data 34

Annex 2: Biotope screening 43

Executive summary

This assessment analyses the impact of anchored nets and lines, bottom towed gear and traps on the designated features subtidal coarse sediment, subtidal mixed sediments and subtidal sand in Inner Bank 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 without further management, ongoing use of bottom towed gear on the sedimentary features of Inner Bank 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. The Marine Management Organisation (MMO) will therefore introduce management measures to prohibit the use of bottom towed fishing gears throughout the MPA.

1 Introduction

This assessment considers whether fishing activities are compatible with the conservation objectives of Inner Bank 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 public consultation and will require confirmation from the Secretary of State to come into effect.

2 Site information

2.1 Overview

The following Joint Nature Conservation Committee (JNCC) site information; JNCC's post-consultation scientific advice on offshore MCZs proposed for designation in 2019; the Department for Environment Food and Rural Affairs (Defra) factsheet and Natural England and JNCC conservation advice package were used for background on site geography, designations, features, conservation objectives and general management approaches:

- JNCC Site Information – Inner Bank MCZ[1]
- JNCC's post-consultation scientific advice on offshore MCZs proposed for designation in 2019 – Inner Bank MCZ[2]
- Defra Fact Sheet – Inner Bank MCZ[3]
- Natural England and JNCC Draft Conservation Advice – Inner Bank MCZ[4]

Inner Bank MPA is situated in the central English Channel, approximately 10 kilometres (km) south of Dungeness, covering an area of around 199 square kilometres (km^2) and with depths ranging from 10 to 50 metres (m) below chart datum (bcd). The site straddles the 6 and 12 nautical mile (nm) limits - most of the site is located between these boundaries, with a very small area at the north corner of the site inshore of 6 nm and only the southernmost corner lying more than 12 nm from the coast (**Figure 1**).

[1] JNCC Conservation Advice Package – Inner Bank MCZ: jncc.gov.uk/our-work/inner-bank-mpa (Last accessed on: 19 August 2024).
[2] JNCC's post-consultation scientific advice on offshore MCZs proposed for designation in 2019 – Inner Bank MCZ: hub.jncc.gov.uk/assets/c240f828-7c7b-49d2-b550-308c1ff302fb (Last accessed on: 19 August 2024).
[3] Defra Fact Sheet – Inner Bank MCZ: www.gov.uk/government/publications/marine-conservation-zones-inner-bank (Last accessed on: 19 August 2024).
[4] Natural England and JNCC Draft Conservation Advice – Inner Bank MCZ: designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UKMCZ0079 (Last accessed on: 19 August 2024).

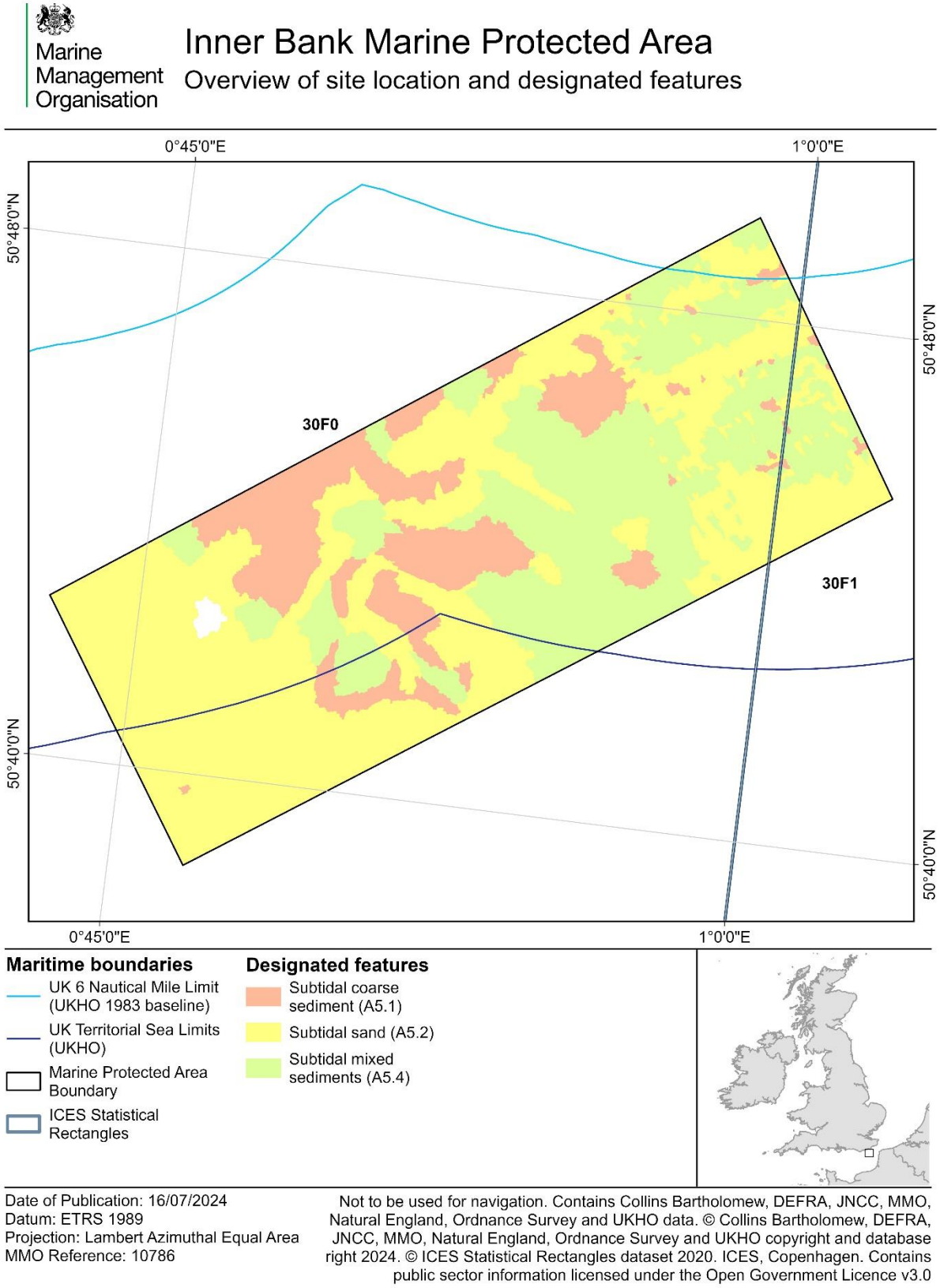

Figure 1: Site overview map.

Inner Bank MPA was designated as a marine conservation zone (MCZ) in 2019 for the protection of the broad-scale habitat features 'subtidal coarse sediment', 'subtidal mixed sediments' and 'subtidal sand'. Subtidal sand occurs throughout the site, covering approximately half of the MPA, with the western part dominated by this feature. Large areas of subtidal coarse sediment and subtidal mixed sediments occur throughout the central portion of Inner Bank MPA alongside subtidal sand, whereas in the easternmost region subtidal sand and subtidal mixed sediments cover most of the area, with evidence of smaller, scattered sections of subtidal coarse sediment. Evidence suggests that the west of the site also contains a small area of subtidal mud habitat, however this is not a designated feature of the site (Defra, 2015). This range of habitats supports a variety of species, including anemones, bivalve molluscs, sea firs, sea mats, starfish, urchins and several types of polychaete worms.

The designated features and their general management approaches are set out below in **Table 1**. The general management approaches for the features of Inner Bank MPA have been set based on a vulnerability assessment. The attributes driving these approaches are described in Natural England and JNCC's draft supplementary advice on conservation objectives[4].

Table 1: Designated features, including supporting habitats, and general management approaches.

Designated feature	General management approach
Subtidal coarse sediment	Recover to favourable condition
Subtidal mixed sediments	
Subtidal sand	

There is no feature condition assessment available for this site; in its absence the vulnerability assessment, which includes sensitivity and exposure information for features and activities, is used as a proxy for condition. More information on this can be found in Natural England and JNCC's draft supplementary advice on conservation objectives for Inner Bank MPA[4].

2.2 Scope of this assessment

The scope of this assessment covers fishing activities alone, and relevant activities in combination with fishing, including the small portion inshore of 6 nautical miles (nm), as agreed with Kent and Essex Inshore Fisheries and Conservation Authority (IFCA).

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 described by section 126 of the Marine and Coastal Access Act 2009[5].

Part A assesses the interactions between pressures from fishing gears on 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. if the pressure is not capable of affecting the feature, other than insignificantly; or
    c. if MMO have 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. if 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 have 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.

[5] For more information see: www.legislation.gov.uk/ukpga/2009/23/section/126.

3.1 Activities taking place

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

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); and
- swept area ratio (SAR) data.

For more information about the above evidence sources, please see the MPA Fisheries Assessment Methodology document[6], which describes each type of fishing activity evidence and summarises the strengths and limitations of each source.

[6] MPA Fisheries Assessment Methodology: www.gov.uk/government/publications/stage-3-site-assessments (Last accessed on: 27 August 2024).

Table 2: Fishing activities covered by this assessment present in VMS records (2016 to 2021) and landings data (2016 to 2020) for Inner Bank MPA.

Gear type	Gear name	Gear code	Justification
Anchored nets and lines	Combined gillnet-trammel net	GTN	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Gill nets (not specified)	GN	
	Gillnets and entangling nets	GEN	
	Longline (unspecified)	LL	
	Longlines (demersal)	LLS	
	Set gillnet (anchored)	GNS	Present in VMS records and in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Trammel net	GTR	
Bottom towed gear	Beam trawl	TBB	
	Bottom otter trawl	OTB	
	Danish / anchor seine	SDN	Present in VMS data.
	Nephrops trawl	TBN	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Otter trawls (unspecified)	OT	
	Pair seine	SPR	Present in VMS data.
	Scottish / fly seine	SSC	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Towed dredge	DRB	
	Twin bottom otter trawl	OTT	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
Midwater gear	Drift gillnet	GND	
	Encircling gillnet	GNC	
	Hand-operated pole-and-line	LHP	
	Hook and line (unspecified)	LX	
	Jigging or trolling line	LTL	
	Midwater otter trawl	OTM	Present in VMS data.
	Midwater pair trawl	PTM	
Traps	Pot/Creel	FPO	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Trap	FIX	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
Shore based	Beach seine	SB	
Other	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 Inner Bank MPA.

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

- **Midwater gear:** although the use of midwater gear does occur within Inner Bank MPA, there is no feasible pathway for gears of this type to interact with benthic designated features under normal operation. 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 Inner Bank 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 shows that fishing activity using beach seines occurs within the site, this is based on all activity occurring within site-overlapping ICES rectangles. ICES rectangle 30F0 encompasses the majority of Inner Bank MPA, but also covers a large area of coast where shore-based activities occur. As the site lies more than 5 nm from the shoreline at its nearest point, it is not possible that beach seining would be capable of affecting the designated features due to distance; beach seining is therefore not considered further within this assessment.
- **Unknown gear**: 'other gear' has been declared as having been used to land fish from this ICES statistical rectangle. The gear code used to report these landings does not provide any further information relating to the fishing method used. It is therefore not possible to assess the likelihood of this fishing method interacting with the seabed and it is not considered further within this assessment.

3.3 Pressures to be taken forward to Part B

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

- Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines[7];
- Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear[8]; and
- Stage 3 Fishing Gear MPA Impacts Evidence Traps[9].

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 specific information, including sensitivity assessments, risk profiling of pressures from conservation advice packages, and joint Natural England and JNCC advice to assess the sensitivities of pressures on the designated features of the site.

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

[7] Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines: www.gov.uk/government/publications/stage-3-impacts-evidence (Last accessed on: 27 August 2024).
[8] Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear: www.gov.uk/government/publications/stage-3-impacts-evidence (Last accessed on: 27 August 2024).
[9] Stage 3 Fishing Gear MPA Impacts Evidence Traps: www.gov.uk/government/publications/stage-3-impacts-evidence (Last accessed on: 27 August 2024).

Table 3: Summary of pressures on designated features of Inner Bank MPA to be taken forward to Part B.

Potential pressures	Designated features								
	Subtidal coarse sediment			Subtidal mixed sediments			Subtidal sand		
	A	B	T	A	B	T	A	B	T
Abrasion or disturbance of the substrate on the surface of the seabed									
Changes in suspended solids (water clarity)									
Deoxygenation									
Hydrocarbon and 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									
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 described by section 126 of the Marine and Coastal Access Act 2009[5].

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 draft conservation advice supplementary advice tables and are shown in **Table 4**[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 for all site features.

Attribute	Target	Relevant Pressures
Distribution: extent, presence and spatial distribution of biological communities	Recover the total extent, presence and spatial distribution of designated sediment feature communities	• 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 • Removal of non-target species • Removal of target species (subtidal mixed sediments and subtidal sand only) • Smothering and siltation rate changes (subtidal mixed sediments only) • Changes in suspended solids (water clarity) (subtidal sand only)
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.	
Structure: sediment composition and distribution	Recover the distribution of sediment composition types across the feature compared to an established baseline, to ensure continued structural habitat integrity and connectivity.	
Structure: species composition of component communities	Recover the species composition of component communities	

4.1 Fisheries access and existing management

Non-UK vessels can operate within the region of Inner Bank MPA offshore of 12 nm, provided that they have a licence issued by the UK to do so. In the area of the site that lies within the 6 to 12 nm zone, only French and Belgian UK licensed vessels can operate in the area west of the line drawn due south from Dungeness New Lighthouse. In the area east of the same line within the 6 to 12 nm zone, UK licensed vessels from France, Belgium, Germany and the Netherlands are permitted to fish.

While VMS records indicate that flag states of vessels operating within the MPA from 2016 to 2021 also included Ireland and Lithuania, it is likely that vessels inshore of the 12 nm limit from these nations were transiting through the site rather than fishing. More information on non-UK vessel access to UK waters can be found on MMO's Single Issuing Authority page[10].

The Kingfisher fishing restriction map (Seafish, 2023) contains information on MPA management measures for the portion of the site inside of 6 nm. Inner Bank MPA is subject to the following relevant legislative catch restrictions that are applicable to fisheries occurring in the site:

1. Minimum sizes byelaw
2. Cockle fishery flexible permit byelaw
3. Vessel length and engine power byelaw
4. Whelk fishery flexible permit byelaw
5. Fishing instruments byelaw
6. Annual season for the removal of scallops (*Pecten maximus*) byelaw.

More information on these byelaws can be found on Kent and Essex IFCA's website[11]. MMO will continue to engage directly with IFCAs regarding recommended management measures within and adjacent to their areas of jurisdiction.

4.2 Fishing activity level summary

Table A1. 1 to **Table A1. 8** in **Annex 1: Fishing activity data** display a detailed breakdown of fishing activity within Inner Bank MPA. The most prevalent gears that operated within the site were beam trawls and trammel nets. The following analysis considers only fishing activities not screened out in Part A of this assessment; midwater and shore-based gears are therefore not examined here.

During the initial assessment of this site, only fishing activity data for the portion of Inner Bank MPA offshore of 6 nm was originally considered. However, as a result of

[10] The UK Single Issuing Authority: www.gov.uk/guidance/united-kingdom-single-issuing-authority-uksia (Last accessed on: 26 July 2023).
[11] Kent and Essex IFCA Byelaws: www.kentandessex-ifca.gov.uk/i-want-to-find-out-about/regulations/keifca-byelaws (Last accessed on: 15 May 2024).

discussions with Kent and Essex IFCA, MMO has agreed to assess and propose management measures for the whole of Inner Bank MPA, including the small section of the site inshore of the 6 nm limit. Following formal consultation, fishing activity figures in this assessment will therefore be updated to account for the whole MPA; changes are expected to be very minor, given the size of the area to be additionally considered.

Unless otherwise stated, figures cover fishing activity attributed to the offshore portion of Inner Bank MPA between 2016 and 2020, apart from VMS records of over 12 m vessel activity which cover the same area between 2016 to 2021 (**Table A1. 1**). When discussing weights from landings in this section, figures used are a total of weights from UK and EU member state vessels.

Beam trawling was the most prevalent type of fishing activity in the site. Between 2016 and 2021 on average there were 1,092 VMS records of this type per year. Between 2016 and 2020, vessels over 12 metres (m) in length using beam trawls landed approximately 278 tonnes (t) on average per year, and vessels under 12 m in length averaged landings of just over one tonne annually in the same period.

Swept area ratio (SAR) analysis indicates that demersal trawl activity was relatively high for the period 2016 to 2020, with average annual surface SAR values across C-squares intersecting Inner Bank MPA ranging between 1.83 and 2.31, and subsurface values between 1.53 and 1.78. An SAR value of 1 means that each area C-square experiences a pass of fishing gear on average once a year. VMS activity shows that demersal trawling activity occurred throughout the MPA, however it was more concentrated in the western section and along the northern site boundary.

Trammel nets were the second most frequently deployed gear type in Inner Bank MPA according to VMS data. Between 2016 and 2021 there were approximately 450 trammel net VMS records on average per year, however over half of the total number of records for this period occurred in 2017, and trammel net activity declined after this. Trammel net landings also declined from approximately 9 t in 2017 to 0.2 t in 2020. VMS data show that activity from over 12 m vessels employing anchored nets and lines, including trammel nets, occurred almost exclusively in the central and eastern sections of the site.

Under 12 m landings data, which are recorded at ICES rectangle level and have been attributed to the MPA based on the proportion of the ICES rectangles it overlays, indicate that there may have been significant levels of potting activity occurring within the site. Under 12 m vessels using pots landed approximately 126 t of catch per year on average between 2016 and 2020. In addition, the available data indicate there were low levels of otter trawling, trammel netting and gill netting taking place in the under 12 m fleet, with an average of approximately 37 t and 34 t of catch landed by these vessels using anchored nets and lines and demersal trawls respectively.

4.3 Pressures by gear type

The Stage 3 Fishing Gear MPA Impacts Evidence documents for anchored nets and lines[7], bottom towed gear[8] and traps[9] 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.

As subtidal coarse sediment, subtidal mixed sediments and subtidal sand designated features have similar sensitivities to the pressures identified for different gear types, these features have been considered together. Where there are differences between the features or the potential impacts of different gears within each grouping, this has been highlighted.

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

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

4.3.1 Anchored nets and lines

The main pressures on subtidal sediment features of Inner Bank 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; and
- removal of non-target species.

As noted above, impacts from the non-target removal pressure have been scoped out from this assessment in most cases, as they are assessed more completely within the abrasion and penetration pressures. Where separate consideration of this pressure is required, this has been stated.

Section 4.2 describes fishing activity within Inner Bank MPA, and notes that the second most frequently deployed fishing gear within the site were trammel nets. Anchored net and line activity occurred in the central section to the north-eastern half of the site, overlaying each of the three designated features.

Impacts on sediment features relating to abrasion or disturbance of the substrate on the surface of the seabed occur primarily from the footrope and anchors during the hauling of the gear, and during movement along the seabed due to tides, currents, or storms. Abrasion impacts are considered likely to be greatest on subtidal mixed and coarse sediments compared to subtidal sand as the coarser habitats often contain populations of sessile epifauna. However, as per section 9.3 of the anchored nets and lines Impacts Evidence document[7], abrasion impacts from this gear type are unlikely to negatively impact the extent or distribution of any sediment feature or structure and function of the ecosystem in a significant manner, as 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.

Of the biotopes identified in Natural England and JNCC's draft conservation advice package for Inner Bank MPA[4] as characteristic of the subtidal coarse sediment, subtidal mixed sediments and subtidal sand features for the Eastern Channel bioregion, the majority of biotopes are described by The Marine Life Information Network (MarLIN) as having 'low' or 'no' sensitivity and 'high' resilience to 'abrasion or disturbance' from anchored nets and lines (**Table A2. 1Table A2. 2Table A2. 3**). **Table A2. 2** shows five biotopes within the subtidal mixed sediment habitat noted to exhibit 'medium' sensitivity and 'medium' resilience to abrasion from anchored nets and lines, and one subtidal sand biotope that exhibits medium sensitivity to this pressure is shown in **Table A2. 3**.

Characterising species within the subtidal sand biotope are comprised of urchins such as *Echinocardium cordatum* and razor shells like *Ensis ensis*. Both of these species are infaunal which offers them minimal protection from the abrasion pressure at the surface (De-Bastos, Hill, Lloyd, *et al.*, 2023; De-Bastos, Lloyd and Watson, 2023).

Subtidal mixed sediments biotopes contain various characterising species with medium sensitivity to the abrasion pressure, including resilient hydroids, and other structure forming epifauna, such as sponge colonies, encrusting polychaetes and anemones, as well as tube worms, such as *Sabella pavonina,* bryozoans like *F. foliacea* and brittlestar species including *Ophiothrix fragilis* and *Ophiocomina nigra*. Resilient characterising hydroid species are able to quickly recover from damage, with surface abrasion considered likely to only remove or injure epiphytic species (Perry and Watson, 2023a, 2024). However, the resilience of subtidal mixed sediment biotopes may be reduced by the presence of species that are slower to recover and recolonise than hydroid colonies, such as *Cerianthus lloydii* a burrowing, tube-dwelling species, which characterises a number of subtidal mixed sediment biotopes. Although lack of evidence makes this conclusion uncertain (Perry and Watson, 2023a, 2024), *C. lloydii* is, nevertheless, provided some degree of protection by its ability to quickly withdraw into its tube under the surface (Tillin and Tyler-Walters, 2014). Likewise, in sessile epifauna that characterise subtidal mixed sediment biotopes, while the potential for significant damage by static gears is low,

recovery of these habitats may be slower than life history traits of the species present predict (Roberts *et al.*, 2010) and slow recovery from damage could result in significant effects if activity levels are high and sustained for long periods of time (Collie, Hermsen and Valentine, 2009).

The impact of surface abrasion will depend on the footprint, duration and magnitude of the pressure acting on the designated feature. Section 9.4.1 in the anchored nets and lines Impacts Evidence document[7] highlights that static gears are not a major concern for subtidal sediments due to the small footprint of the gear type having a low impact on the seabed. For all medium sensitivity biotopes that could be present, MarLIN profiles note that resilience is likely to be high in all instances except where impacts have caused significant mortality or the removal of the majority of the population of characterising species, the spatial scale of the pressure footprint is large enough to affect recruitment or the frequency of disturbance is particularly high. (Perry, 2016; De-Bastos, Hill, Garrard, *et al.*, 2023; De-Bastos, Hill, Lloyd, *et al.*, 2023; Perry and Watson, 2023a, 2024; Readman and Watson, 2024). All but heavy and repeated levels of fishing by anchored nets and lines are therefore considered to have minimal impact on subtidal sediments.

As per **section 4.2**, according to VMS data while anchored net and line activity within Inner Bank MPA occurred at high intensity at the beginning of the period under consideration between 2016 and 2021, this declined to lower intensity over this term. As a result, there is currently considered to be little interaction occurring between anchored net and line activity and the designated features, so risk of 'abrasion and disturbance' and 'removal of non-target species' pressures are likely to be limited. As activity using anchored nets and lines occurred sporadically during the period under consideration, it is also considered that there this would allow sufficient time between intense periods of fishing activity to permit some level of recovery of the designated features.

Therefore, **MMO concludes that the ongoing use of anchored nets and lines at current levels does not pose a significant risk of hindering the achievement of the conservation objectives of the MPA.**

4.3.2 Bottom towed gear

The main pressures on subtidal sediment features of Inner Bank MPA from bottom towed gear were identified in **Table 4** and are:

- abrasion or disturbance of the substrate on the surface of the seabed$^{\Delta}$;
- penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion$^{\Delta}$;
- removal of non-target species;
- removal of target species;
- smothering and siltation rate changes*; and
- changes in suspended solids (water clarity)*.

As noted above, impacts from target/non-target removal pressures have been scoped out from this assessment, as they are assessed more completely within the abrasion and penetration pressures. Pressures marked with matching superscript symbols (Δ and *) have been consolidated due to the similar nature of their impacts on the sediment features.

The abrasion and penetration pressures caused by bottom towed gears have both biological and physical impacts to sediment features, varying based on levels of activity and fishing intensity. Physical impacts range from the creation of furrows and berms in the sediment, to the flattening of bottom features such as ripples and the homogenisation of sediments, however impacts on the sediment sub-features of the site are unlikely to significantly impact their large-scale topography

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. Communities in subtidal coarse sediment and subtidal mixed sediments can be particularly sensitive to bottom towed gear activity because they generally contain large proportions of long-lived and sessile epifauna which are easily damaged or removed by the pass of bottom towed gears leading to reduced diversity, abundance and occurrence.

Of the biotopes identified in Natural England and JNCC's draft conservation advice package for Inner Bank MPA[4] as characteristic of the subtidal coarse sediment, subtidal mixed sediments and subtidal sand features for the Eastern Channel bioregion, all subtidal coarse sediment biotopes are noted to have low or no sensitivity to relevant pressures from bottom towed gear (**Table A2. 1**). **Table A2. 2** shows five biotopes with 'medium' sensitivity and resilience to abrasion and penetration to bottom towed gear within the subtidal mixed sediment habitat, while 'medium' sensitivity and resilience is exhibited by one biotope within the subtidal sand feature (**Table A2. 3**). For the '*O. fragilis'* and '*F. foliacea'* biotopes, MarLIN profiles note that penetrative gear may adversely affect populations, removing and damaging deep buried species and that damage caused by abrasion and entanglement of epifaunal species that may be found within this feature can build incrementally. However, resilience is likely to be high in all but instances where impacts have caused significant mortality or the removal of the majority of the population of characterising species (De-Bastos, Hill, Garrard, *et al.*, 2023; Readman and Watson, 2024). Nevertheless, MarLIN notes the sensitivity of infaunal and epifaunal communities that could be found in subtidal mixed sediment areas within this bioregion: in brittlestar beds repeated abrasion and penetration from fishing, where removal or displacement of the substrata is possible, could lead to potential loss or severe damage to the biotope over time (De-Bastos, Hill, Garrard, *et al.*, 2023).

Likewise, the recruitment processes of the biotope *C. lloydii*, a characterising species of other 'medium' sensitivity biotopes within the subtidal mixed sediment features can be sporadic. This means that penetrative gear may cause long term adverse population effects on biotopes characterised by this species, with variable rates of recruitment and repopulation after damage or removal (Perry and Watson, 2023a, 2024; Tyler-Walters, Durkin and Watson, 2023).

The same is true of long-lived characterising species within the subtidal sand biotope '*Echinocardium cordatum* and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand'. Both *E. cordatum* and *E. ensis* take a comparatively long time to reach reproductive maturity, experience irregular recruitment , and live close to the sediment surface (De-Bastos, Hill, Lloyd, *et al.*, 2023). In a study by Bergman and Van Santbrink (2000), the fragile nature of *E. cordatum* was noted to make this species one of the most vulnerable to damage by trawls and dredges, with between 10 and 40 % mortality caused by fishing gear after a single trawl event; in the summer when individuals move closer to the sediment surface, this figure could rise as high as 90 %. Should mass mortality occur, sporadic recruitment and long life cycles of species within this subtidal sand biotope mean that a return to original species resilience, diversity and abundance may take between two and ten years (De-Bastos, Hill, Lloyd, *et al.*, 2023).

Given the variability in species resilience, biological impacts on the sediment features of the site could be significant, should levels of fishing be high or sustained enough to cause significant damage to biotope communities. While lack of data means that there are no known records of these biotopes within the site currently, this does not equate to confirmed absence of potentially sensitive receptors. Confidence in the absence of these biotopes must therefore be regarded as low, and risk of abrasion and penetration impacts cannot be ruled out. As described in **section 4.2**, the fishing activity that predominates in Inner Bank MPA is beam trawling, which occurs throughout the site, with higher levels of activity in the western area where subtidal sand is the dominant feature. Average surface SAR values for trawling in C-squares across the MPA averaged between 1.83 and 2.31. Given that these figures indicate high levels of activity, it seems possible that the sedimentary features of Inner Bank are experiencing regular exposure to abrasion and penetration pressures that would preclude recovery of the structure, distribution, and function of the designated features.

High levels of natural disturbance may mean that some effects of abrasion and penetration are limited on the physical structure of sedimentary habitats. However, while the relative resilience of biological communities on sandy sedimentary habitats could be due to natural disturbance, there is also evidence that use of bottom towed gear can result in shifting baselines for biological communities from lower resilience, long-lived, slowly recruiting fauna that typify some of the characterising biotopes of the designated features, to more resilient, opportunistic, short-lived and faster reproducing, endemic fauna (Hiddink *et al.*, 2017; Plumeridge and Roberts, 2017;

Josefson *et al.*, 2018). The impacts of demersal trawling activity at the levels indicated in this assessment are not, therefore, compatible with the restore extent and distribution and structure and function targets with regards to biological communities in this site.

Smothering, siltation rate and suspended solid changes occur when bottom towed gear connects with the seabed, causing the top layer of the sediment to mix with the surrounding water. Sediments and faunal communities react differently to these pressures depending on grain size, the degree of sediment impaction and frequency/severity of the pressure upon them. For Inner Bank, smothering and siltation rate changes are applicable only to the subtidal mixed sediments feature and changes in suspended solids are applicable only to the subtidal sand feature.

Four biotopes identified in Natural England and JNCC's draft conservation advice[4] within the subtidal mixed sediments feature are described as exhibiting 'medium' sensitivity and resilience to 'light' smothering and siltation rate changes (**Table A2. 2**): '*C. lloydii* and other burrowing anemones in circalittoral muddy mixed sediment'; '*C. lloydii* with *Nemertesia spp*. and other hydroids in circalittoral muddy mixed sediment'; '*O. fragilis* and/or *O. nigra* brittlestar beds on sublittoral mixed sediment' and '*S. pavonina* with sponges and anemones on infralittoral mixed sediment' (Perry, 2016; De-Bastos, Hill, Garrard, *et al.*, 2023; Perry and Watson, 2023a, 2024).

For *O. fragilis*, a single event of light, fine material deposition can cause negative effects, with sedimentation affecting their ability to feed and filter material, clogging gills and filter mechanisms and impairing respiration - where material is not removed by water movement, this can lead to suffocation (De-Bastos, Hill, Garrard, *et al.*, 2023). At the benchmark of 'light' deposition of fine material, 5 cm, some sponges that characterise the '*S. Pavonina*' biotope can be totally buried, leading to mortality and immature specimens of *S. pavonina,* an immobile species, are unlikely to be able to extend their brachial plume to feed (Perry, 2016). It is unclear whether this depth of sediment would exceed the depth through which mature *C. lloydii* can burrow, which may also cause mortality, although this has not well documented (Perry and Watson, 2023a, 2024).

As a mostly offshore site subject to the high hydrodynamic energy of the Channel, it is likely that biological communities that predominate in the subtidal mixed sediments feature of Inner Bank MPA are acclimatised to some level of variation in water conditions. However, as noted previously, this resilience cannot be untethered from potential changes to the community structure caused by more resilient biotopes dominating in areas highly disturbed by fishing activity, as well as by natural hydrodynamic processes. In combination with the abrasion, disturbance and penetration pressures caused by bottom towed gear, it is likely that smothering, siltation rate and suspended solid changes could be affecting the extent, distribution and structure of biological communities of Inner Bank MPA to the extent that the conservation objectives of the site are hindered.

With regards to the discussion above, the assessed activity levels and the evidence available for the impact of bottom towed gears, **MMO concludes that there is a significant risk of the ongoing use of bottom towed gear over the sedimentary features of Inner Bank MPA hindering the achievement of the conservation objectives of the MPA.**

4.3.3 Traps

The main pressures on subtidal sediment features of Inner Bank MPA from traps were identified in **Table 4** and are:

- abrasion or disturbance of the substrate on the surface of the seabed;
- removal of non-target species; and
- removal of target species.

As noted above, impacts from target/non-target removal pressures have been scoped out from this assessment, as they are assessed more completely within the abrasion and penetration pressures. Where separate consideration of these pressures is required, this has been stated.

Section 4.2 describes the fishing activity within Inner Bank MPA and estimates that an annual average of approximately 130 t of catch was landed from within the MPA using gear within the traps gear group between 2016 and 2020. The majority of landings (approximately 126 t) were from under 12 m vessels using pots.

Traps and their associated lines and anchors may cause abrasion of subtidal sediments during setting and retrieval, as well as due to movement on the seabed while set as a result of storms, tides or currents, as outlined in the traps Impacts Evidence document[9]. However, there is little primary evidence on the physical impact of traps on subtidal sediments, and the footprint of traps is likely to be small. As with the potential impacts of anchored nets and lines (**section 4.3.1**), available evidence indicates that traps are not likely to be a concern with regard to the physical attributes of sediment features, and that impacts on biological communities of sediment features are unlikely to be of concern unless traps are used at particularly high levels of intensity, or if particularly sensitive species are present[9].

Indeed, of the biotopes identified in Natural England and JNCC's draft conservation advice package for Inner Bank MPA[4] as characteristic of the subtidal coarse sediment, subtidal mixed sediments and subtidal sand features for the Eastern Channel bioregion, the majority of biotopes are described by MarLIN as having 'low' or 'no' sensitivity and 'high' resilience to 'abrasion or disturbance' and 'removal of target and non-target species' pressures from traps (**Table A2. 1Table A2. 2Table A2. 3**).

Table A2. 2 shows five biotopes within the subtidal mixed sediment habitat noted to exhibit 'medium' sensitivity and 'medium' resilience to abrasion from traps. One subtidal sand biotope exhibits medium sensitivity to abrasion – '*E. cordatum* and

Ensis spp. in lower shore and shallow sublittoral slightly muddy fine sand' (De-Bastos, Hill, Lloyd, *et al.*, 2023) – and this is shown in **Table A2. 3**.

Characterising species within the subtidal sand biotope '*E. cordatum* and *Ensis* spp.' are comprised of urchins such as *E. cordatum* itself, and razor shells like *E. ensis*. As infaunal species, they have limited protection from the abrasion pressure at the surface, and repopulation in the event of mass mortality may be prolonged due to the several years it takes for these species to reach maturity, as well as the potential for inconsistent recruitment (De-Bastos, Hill, Lloyd, *et al.*, 2023; De-Bastos, Lloyd and Watson, 2023). However, it should be noted that the limited available evidence suggests that unless used at very high intensity, traps have a relatively low impact on benthic communities of sediment features in comparison to towed gears, as a result of the small footprint of the seabed affected by their use (Roberts *et al.*, 2010).

Similarly, in sessile epifauna that characterise the 'medium' sensitivity subtidal mixed sediments biotopes (**Table A2. 2**), the potential for significant damage by static gears is also considered to be low, though recovery of subtidal mixed sediments may be slower than life history traits of identified characterising species predict (Roberts *et al.*, 2010) and slow recovery from damage could result in significant effects if activity levels are high and sustained (Collie, Hermsen and Valentine, 2009). Nevertheless, for the 'medium' sensitivity subtidal mixed sediment biotopes '*O. fragilis* and/or *O. nigra* brittlestar beds on sublittoral mixed sediment', '*S. pavonina* with sponges and anemones on infralittoral mixed sediment, and '*F. foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment', MarLIN profiles note that resilience is likely to be 'high', rather than 'medium', if impacts have not caused significant mortality or the removal of the majority of the population of characterising species; the spatial scale of the pressure footprint is not large enough to affect recruitment, or the frequency of disturbance is not particularly high (De-Bastos, Hill, Garrard, *et al.*, 2023; Perry and Watson, 2023b; Readman and Watson, 2024).

Traps and their associated lines and anchors may cause abrasion of subtidal sediments during setting and retrieval, as well as due to movement on the seabed while set as a result of storms, tides or currents, as outlined in the traps Impacts Evidence document[9]. There is little primary evidence on the physical impact of traps on subtidal sediments, and the footprint of traps is likely to be small. The evidence that is available indicates that traps are not likely to be a concern unless used at particularly high levels of intensity, or if particularly sensitive species are present.

Fishing effort and landings data indicate that interactions between traps and the designated features are occurring, so there is a risk of the 'abrasion and disturbance' pressure impacting on sediments within the site. However, there is no evidence that species with a particular sensitivity to traps are likely to be present and there is minimal primary evidence of negative impacts of traps on sediment habitats. Given current activity levels, the evidence that is available indicates that traps are not likely to be a concern.

With regards to the discussion above, the assessed activity levels and the evidence available for the impact of traps, **MMO therefore concludes that the ongoing use of traps at current levels does not pose a significant risk of hindering the achievement of the conservation objectives of subtidal coarse sediment, subtidal mixed sediments or subtidal sand features of the MPA.**

4.4 Part B conclusion

The assessment of anchored nets and lines, bottom towed gears and traps on the subtidal coarse sediment, subtidal mixed sediments and subtidal sand features of Inner Bank MPA has concluded that the ongoing use of bottom towed gears may result in a significant risk of hindering the achievement of the conservation objectives of the MPA. Management measures will therefore be implemented for bottom towed fishing for Inner Bank MPA. **Section 0** contains further details of these measures.

5 Part C - In-combination assessment

Part C 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, which have 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.

While there may be operational submarine cables within this MPA, these cables are already in-situ and 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 activity.

Bottom towed gear was identified in Part B as requiring management to avoid a significant risk of hindering the achievement of the conservation objectives of Inner Bank MPA. Anchored nets and lines and traps are therefore the only remaining gear

groups able to operate within Inner Bank MPA that interact with the seabed. In-combination effects of these fishing activities with each other, as well as in combination with other relevant activities, will therefore be assessed in Part C.

In accordance with the methodology detailed above, no other relevant activities were identified within Inner Bank MPA or the applied 5 km buffer. Therefore, only fishing activities in-combination with other fishing activities are considered hereafter.

Table 3 from **section 0** was used to identify medium-high risk pressures exerted by fishing activities to identify those which require in-combination assessment (**Table 5**). **Table 5** summarises the pressures exerted by fishing activities and identifies those exerted by all gears (Y: pressure exerted). Activity-pressure interactions are highlighted dark blue to illustrate an in-combination effect. Only fishing activities with no proposed or current fisheries management in place are considered.

Table 5: Pressures exerted by fishing activities.

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

5.1 In-combination pressures

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

5.2 Fishing vs Fishing in-combination pressures

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

As noted in Part B (**section 4.3**), impacts from the removal of target and non-target species pressure are 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.

Section 4.2 describes fishing activity within Inner Bank MPA and activity data tables are set out in **Annex 1**: Fishing activity data. For both anchored nets and lines and traps, the majority of landings for the period under consideration in this assessment

are attributed to under 12 m vessels. For these vessels, anchored nets and lines averaged approximately 37 t per annum in landings, with landed catch weight experiencing a general decline across the period under consideration . Under 12 m vessels averaged approximately 129 t of catch using traps annually, fluctuating from a low of approximately 94 t in 2017 to a high of 186 t in 2020. Combined landings from traps and anchored nets and lines between 2016 and 2020 by under 12 m vessels in Inner Bank averaged approximately 166 t per annum, while between 2016 and 2021 the estimated annual average fishing effort for UK under 12 m vessels using static gear totalled 420 days, with 131 fishing effort days for traps and 289 days for anchored nets and lines.

For over 12 m vessels, while there was an annual average of 457 VMS records ascribed to anchored net and line usage from 2016 to 2021, the majority of records were from 2017. Landings for over 12 m vessels mirror this, with a peak of approximately 9 t of catch landed in 2017, but with landings otherwise generally in decline and averaging approximately 4 t annually. Use of traps by over 12 m vessels was also limited, with no landings using this gear group between 2016 and 2019, and only 1.23 t landed using traps in 2020.

As discussed in **section 4.3** the features subtidal coarse sediment, subtidal sand and subtidal mixed sediments are of low sensitivity to impacts from static fishing gears. Of the biotopes identified in Natural England and JNCC's draft conservation advice package for Inner Bank MPA[4] as characteristic of the sediment features likely to be found within the site, the majority are described by The Marine Life Information Network (MarLIN) as having 'low' or 'no' sensitivity and 'high' resilience to the 'abrasion or disturbance' pressure (**Table A2. 1, Table A2. 2, Table A2. 3**). As described in sections **4.3.1** and **4.3.3**, for medium sensitivity biotopes that may be found within the site (**Table A2. 2** and **Table A2. 3**), MarLIN profiles note that resilience is likely to be 'high' in all but instances where impacts have caused significant mortality or the removal of the majority of the population of characterising species, the spatial scale of the pressure footprint is large enough to affect recruitment, or where the frequency of disturbance is particularly high (Perry, 2016; De-Bastos, Hill, Garrard, *et al.*, 2023; Perry and Watson, 2023a, 2024; Readman and Watson, 2024).

While the cumulative 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', given the low level of activity using anchored nets and lines in particular, in combination impacts from the use of these two gear groups is not considered likely to be significant. Though the majority of activity is from under 12 m vessels, and therefore a precise understanding of spatial overlap is not possible, the combined levels of pressure from these fishing gears even if fully overlapping, would likely not be at a level which could undermine the condition of the features, given the sensitivity of the component biotopes and the amount of fishing activity described. Likewise, the maximum combined spatial footprint of these gear groups at the activity levels considered here

would not significantly change the area of the site impacted from that affected by use of traps alone. Traps and anchored net and line activity in combination at the levels described in this assessment therefore are not considered likely to cause an intensity of fishing within the site that would significantly increase the risk to designated features from abrasion. **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 Inner Bank MPA at current levels.**

5.3 Part C conclusion

MMO concludes that different fishing gear types in combination, and fishing in combination with other relevant activities will not result in a significant risk of hindering the achievement of the conservation objectives of Inner Bank MPA.

Further management measures will not therefore be implemented for these gears within the site.

6 Conclusion and proposed management

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

Part B of this assessment concluded that ongoing use of bottom towed gear on the sedimentary features of Inner Bank 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 B and 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 Inner Bank 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[6].

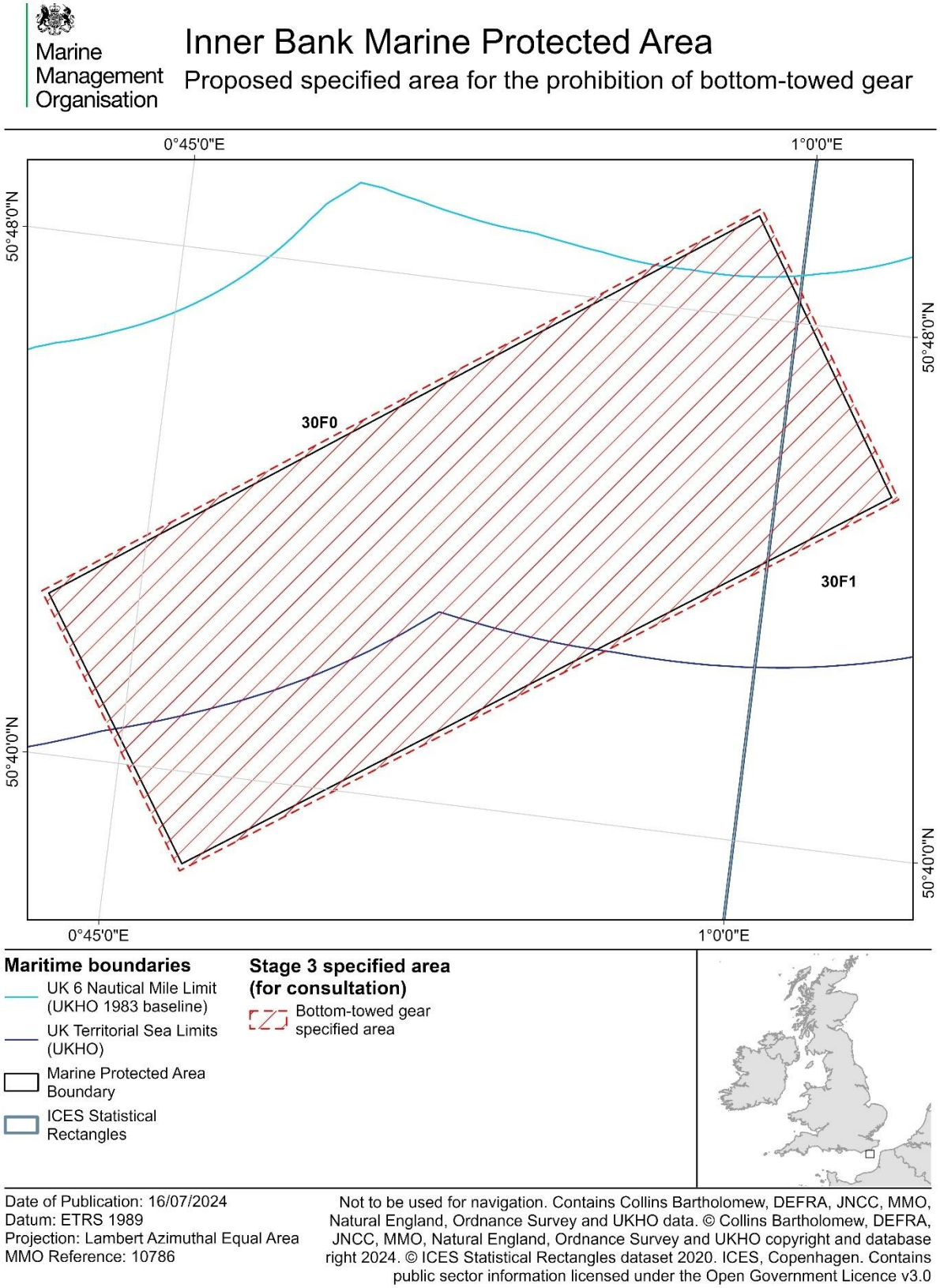

Figure 2: Map of proposed management.

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.

References

Bergman, M.J.N. and Van Santbrink, J.W. (2000) 'Mortality in megafaunal benthic populations caused by trawl fisheries on the Dutch continental shelf in the North Sea in 1994', *ICES Journal of Marine Science*, 57(5), pp. 1321–1331. doi:10.1006/jmsc.2000.0917.

Collie, J.S., Hermsen, J.M. and Valentine, P.C. (2009) 'Recolonization of gravel habitats on Georges Bank (northwest Atlantic)', *Deep Sea Research Part II: Topical Studies in Oceanography*, 56(19–20), pp. 1847–1855.

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

De-Bastos, E.S.R., Hill, J.M., Lloyd, K.A. and Watson, A. (2023) 'Echinocardium cordatum and Ensis spp. in lower shore and shallow sublittoral slightly muddy fine sand', in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/124.

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

Defra (2015) *Inner Bank rMCZ Post-survey Site Report*, *Marine Protected Areas Data and Evidence Co-ordination Programme Report No. 48. Project Code: MB0120*. Available at: https://randd.defra.gov.uk/ProjectDetails?ProjectId=18983.

Hiddink, J.G., Jennings, S., Sciberras, M., Szostek, C.L., Hughes, K.M., Ellis, N., Rijnsdorp, A.D., McConnaughey, R.A., Mazor, T., Hilborn, R., Collie, J.S., Pitcher, C.R., Amoroso, R.O., Parma, A.M., Suuronen, P. and Kaiser, M.J. (2017) 'Global analysis of depletion and recovery of seabed biota after bottom trawling disturbance', *Proceedings of the National Academy of Sciences of the United States of America*, 114(31), pp. 8301–8306.

Josefson, A.B., Loo, L.O., Blomqvist, M. and Rolandsson, J. (2018) 'Substantial changes in the depth distributions of benthic invertebrates in the eastern Kattegat since the 1880s', *Ecology and Evolution*, 8(18), pp. 9426–9438.

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

Perry, F. (2016) 'Sabella pavonina with sponges and anemones on infralittoral mixed sediment', in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1088.

Perry, F. and Watson, A. (2023a) 'Cerianthus lloydii with Nemertesia spp. and other

hydroids in circalittoral muddy mixed sediment', in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1092.

Perry, F. and Watson, A. (2023b) 'Sabella pavonina with sponges and anemones on infralittoral mixed sediment', in Tyler-Walters, H. (ed.) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1088.

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

Plumeridge, A.A. and Roberts, C.M. (2017) 'Conservation targets in marine protected area management suffer from shifting baseline syndrome: A case study on the Dogger Bank', *Marine Pollution Bulletin*, 116(1–2), pp. 395–404.

Readman, J.A.J. (2016) 'Crepidula fornicata with ascidians and anemones on infralittoral coarse mixed sediment', in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1139.

Readman, J.A.J. and Garrard, S.L. (2019) 'Sertularia cupressina and Hydrallmania falcata on tide-swept sublittoral sand with cobbles or pebbles', in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/223.

Readman, J.A.J. and Rayment, W.J. (2016) 'Crepidula fornicata and Mediomastus fragilis in variable salinity infralittoral mixed sediment', in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/52.

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

Roberts, C., Smith, C., Tilin, H. and Tyler-Walters, H. (2010) *Review of existing approaches to evaluate marine habitat vulnerability to commercial fishing activities*, *Environment Agency report: SC080016/R3*.

Seafish (2023) *Kingfisher Information Service - Fishing Restriction Map*. Available at: https://kingfisherrestrictions.org/fishing-restriction-map.

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

Tillin, H.M. and Tyler-Walters, H. (2014) *Assessing the sensitivity of subtidal sedimentary habitats to pressures associated with marine activities: Phase 2 Report – Literature review and sensitivity assessments for ecological group*, *JNCC Report No. 512B*.

Tillin, H.M., Tyler-Walters, H. and Garrard, S.L. (2019) ‘Infralittoral mobile clean sand with sparse fauna’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/262.

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

Tyler-Walters, H. and Garrard, S.L. (2019) ‘Arenicola marina in infralittoral fine sand or muddy sand’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/1118.

Tyler-Walters, H., Tillin, H.M. and Watson, A. (2024) ‘Spirobranchus triqueter with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles’, in Tyler-Walters, H. and Hiscock, K. (eds) *Marine Life Information Network: Biology and Sensitivity Key Information Reviews*. Plymouth. Available at: www.marlin.ac.uk/habitats/detail/177.

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 for the section of Inner Bank MPA offshore of 6 nm. 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	%	
Anchored net/line	GNS	EU	49	100	0	0	0	0	0	0	0	0	0	0	49	100	8
	GNS total		**49**	**6**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**49**	**2**	**8**
	GTR	EU	758	100	1,380	100	412	100	89	100	53	100	4	100	2,696	100	449
	GTR total		**758**	**94**	**1,380**	**100**	**412**	**100**	**89**	**100**	**53**	**100**	**4**	**100**	**2,696**	**98**	**449**
Anchored net / line total			**807**	**34**	**1,380**	**45**	**412**	**22**	**89**	**5**	**53**	**4**	**4**	**0**	**2,745**	**24**	**458**
Demersal seine	SDN	EU	14	100	22	100	177	100	184	100	43	100	34	100	474	100	79
	SDN total		**14**	**88**	**22**	**100**	**177**	**98**	**184**	**98**	**43**	**98**	**34**	**83**	**474**	**96**	**79**
	SPR	EU	1	100	0	0	3	100	2	100	0	0	0	0	6	100	1
	SPR total		**1**	**6**	**0**	**0**	**3**	**2**	**2**	**1**	**0**	**0**	**0**	**0**	**6**	**1**	**1**
	SSC	EU	1	100	0	0	1	100	1	50	1	100	5	71	9	75	2
	SSC	UK	0	0	0	0	0	0	1	50	0	0	2	29	3	25	<1
	SSC total		**1**	**6**	**0**	**0**	**1**	**1**	**2**	**1**	**1**	**2**	**7**	**17**	**12**	**2**	**2**
Demersal seine total			**16**	**1**	**22**	**1**	**181**	**10**	**188**	**11**	**44**	**4**	**41**	**3**	**492**	**4**	**82**
Demersal trawl	OTB	EU	169	100	249	100	78	100	164	82	26	87	174	80	860	91	143
	OTB	UK	0	0	0	0	0	0	36	18	4	13	44	20	84	9	14
	OTB total		**169**	**11**	**249**	**17**	**78**	**7**	**200**	**17**	**30**	**3**	**218**	**19**	**944**	**13**	**157**
	TBB	EU	1,325	100	1,226	100	1,009	100	1,009	100	1,022	100	960	100	6,551	100	1,092
	TBB	UK	1	0	0	0	2	0	0	0	0	0	0	0	3	0	<1
	TBB total		**1,326**	**89**	**1,226**	**83**	**1,011**	**93**	**1,009**	**83**	**1,022**	**97**	**960**	**81**	**6554**	**87**	**1,092**
Demersal trawl total			**1,495**	**63**	**1,475**	**48**	**1,089**	**58**	**1,209**	**73**	**1,052**	**86**	**1,178**	**89**	**7498**	**65**	**1,250**

			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	%	
Dredge	DRB	EU	0	0	7	78	0	0	0	0	3	100	2	2	12	8	2
	DRB	UK	1	100	2	22	1	100	36	100	0	0	90	98	130	92	22
	DRB total		**1**	**100**	**9**	**100**	**1**	**100**	**36**	**100**	**3**	**100**	**92**	**100**	**142**	**100**	**24**
Dredge total			**1**	**0**	**9**	**0**	**1**	**0**	**36**	**2**	**3**	**0**	**92**	**7**	**142**	**1**	**24**
Midwater trawl	OTM	EU	6	100	14	100	23	100	21	100	8	100	2	100	74	100	12
	OTM total		**6**	**12**	**14**	**58**	**23**	**38**	**21**	**27**	**8**	**20**	**2**	**22**	**74**	**28**	**12**
	PTM	EU	31	70	6	60	20	54	54	95	23	72	3	43	137	73	23
	PTM	UK	13	30	4	40	17	46	3	5	9	28	4	57	50	27	8
	PTM total		**44**	**88**	**10**	**42**	**37**	**62**	**57**	**73**	**32**	**80**	**7**	**78**	**187**	**72**	**31**
Midwater trawl total			**50**	**2**	**24**	**1**	**60**	**3**	**78**	**5**	**40**	**3**	**9**	**1**	**261**	**2**	**44**
Traps	FPO	EU	0	0	73	100	0	0	0	0	0	0	0	0	73	88	12
	FPO	UK	0	0	0	0	0	0	0	0	5	100	5	100	10	12	2
	FPO total		**0**	**0**	**73**	**100**	**0**	**0**	**0**	**0**	**5**	**100**	**5**	**100**	**83**	**100**	**14**
Traps total			**0**	**0**	**73**	**2**	**0**	**0**	**0**	**0**	**5**	**0**	**5**	**0**	**83**	**1**	**14**
Unknown	NK	EU	0	0	64	100	135	100	47	100	20	100	0	0	266	100	44
	NK total		**0**	**0**	**64**	**100**	**135**	**100**	**47**	**100**	**20**	**100**	**0**	**0**	**266**	**100**	**44**
Unknown total			**0**	**0**	**64**	**2**	**135**	**7**	**47**	**3**	**20**	**2**	**0**	**0**	**266**	**2**	**44**
Grand total			**2,369**		**3,047**		**1,878**		**1,647**		**1,217**		**1,329**		**11,487**		**1,915**

Table A1. 2: UK live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the section of Inner Bank MPA offshore of 6 nm (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 seine	SSC	0	0	0	1.26	0	1.26	0.25
Demersal seine total		**0**	**0**	**0**	**1.26**	**0**	**1.26**	**0.25**
Demersal trawl	OTB	0	0	0	13.24	0.57	13.81	2.76
	TBB	0.10	0	0.21	0	0	0.30	0.06
Demersal trawl total		**0.10**	**0**	**0.21**	**13.24**	**0.57**	**14.11**	**2.82**
Dredge	DRB	0.18	0.18	0.12	9.01	0	9.49	1.90
Dredge total		**0.18**	**0.18**	**0.12**	**9.01**	**0**	**9.49**	**1.90**
Midwater trawl	PTM	252.77	51.15	319.63	50.44	464.45	1,138.44	227.69
Midwater trawl total		**252.77**	**51.15**	**319.63**	**50.44**	**464.45**	**1,138.44**	**227.69**
Traps	FPO	0	0	0	0	1.23	1.23	0.25
Traps total		**0**	**0**	**0**	**0**	**1.23**	**1.23**	**0.25**
Grand total		**253.04**	**51.33**	**319.96**	**73.95**	**466.24**	**1,164.53**	**232.91**

Table A1. 3: EU27 live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the section of Inner Bank MPA offshore of 6 nm (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	GNS	0.05	0	0	0	0	0.05	0.01
	GTR	6.95	8.92	3.45	1.14	0.17	20.64	4.13
Anchored net/line total		**7.00**	**8.92**	**3.45**	**1.14**	**0.17**	**20.69**	**4.14**
Demersal seine	SDN	3.97	4.77	22.55	19.69	4.67	55.64	11.13
	SPR	0	0	0	0.05	0	0.05	0.01
	SSC	1.59	0	1.17	0.51	0.99	4.26	0.85
Demersal seine total		**5.57**	**4.77**	**23.71**	**20.25**	**5.66**	**59.95**	**11.99**
Demersal trawl	OTB	11.82	15.53	5.73	14.03	2.04	49.14	9.83
	TBB	326.24	334.91	318.95	209.64	198.18	1,387.93	277.59
Demersal trawl total		**338.06**	**350.44**	**324.68**	**223.67**	**200.22**	**1,437.07**	**287.41**
Dredge	DRB	0	1.72	0	0	0.40	2.12	0.42
Dredge total		**0**	**1.72**	**0**	**0**	**0.40**	**2.12**	**0.42**
Midwater trawl	OTM	73.76	183.87	227.93	329.00	82.63	897.20	179.44
	PTM	60.23	2.16	0.15	0.75	0.30	63.59	12.72
Midwater trawl total		**133.99**	**186.02**	**228.09**	**329.75**	**82.93**	**960.79**	**192.16**
Grand total		**484.61**	**551.86**	**579.94**	**574.81**	**289.39**	**2,480.62**	**496.12**

Table A1. 4: Percentage of each ICES rectangle intersected by the section of Inner Bank MPA offshore of 6 nm. All numbers are rounded to two decimal places.

ICES rectangle	Percentage overlap (%)
30F0	6.84
30F1	0.50

Table A1. 5: UK live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the section of Inner Bank MPA offshore of 6 nm (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	0.38	0	0	0	0	0.38	0.08
	GN	22.13	18.07	19.24	19.81	11.89	91.14	18.23
	GNS	2.28	0.72	2.06	1.44	0.95	7.45	1.49
	GTR	15.35	13.01	10.50	9.93	4.59	53.37	10.67
	LL	0.01	<0.01	0	0	<0.01	0.02	<0.01
Anchored net/line total		**40.14**	**31.80**	**31.80**	**31.17**	**17.44**	**152.36**	**30.47**
Demersal trawl	OT	27.22	9.16	0	0	0	36.38	7.28
	OTB	0.49	27.88	44.55	34.14	17.87	124.93	24.99
	OTT	0.28	1.16	0.36	0.11	0.23	2.14	0.43
	TBB	1.76	1.65	1.15	0.89	0.91	6.37	1.27
	TBN	0	0.01	0	0	0	0.01	<0.01
Demersal trawl total		**29.75**	**39.86**	**46.06**	**35.15**	**19.00**	**169.83**	**33.97**
Dredge	DRB	2.77	1.67	0.55	2.61	4.00	11.61	2.32
Dredge total		**2.77**	**1.67**	**0.55**	**2.61**	**4.00**	**11.61**	**2.32**
Midwater gill drift	GND	2.18	0.20	0.14	0.15	<0.01	2.67	0.53
Midwater gill drift total		**2.18**	**0.20**	**0.14**	**0.15**	<0.01	**2.67**	**0.53**
Midwater hook/line	LHP	<0.01	0.10	0.82	0.60	1.14	2.66	0.53
	LX	1.37	2.00	1.38	1.57	2.02	8.34	1.67
Midwater hook/line total		**1.38**	**2.10**	**2.20**	**2.17**	**3.16**	**11.00**	**2.20**
Traps	FIX	7.72	2.69	0	0	0	10.41	2.08
	FPO	131.55	94.25	92.67	122.85	184.58	625.92	125.18
Traps total		**139.27**	**96.94**	**92.67**	**122.85**	**184.58**	**636.33**	**127.27**
Grand total		**215.50**	**172.58**	**173.42**	**194.10**	**228.19**	**983.79**	**196.76**

Table A1. 6: EU27 live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the section of Inner Bank MPA offshore of 6 nm (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	LLS	0	<0.01	0	<0.01	0.01	0.01	<0.01
	GTR	8.30	10.80	6.30	2.50	3.56	31.45	6.29
	GNS	0.06	0.13	0.23	0.04	0.05	0.51	0.10
	GTN	<0.01	<0.01	0	<0.01	<0.01	0.01	<0.01
Anchored net/line total		**8.35**	**10.94**	**6.54**	**2.54**	**3.62**	**31.99**	**6.40**
Demersal seine	SSC	0	0	0.87	2.67	0.73	4.26	0.85
Demersal seine total		**0**	**0**	**0.87**	**2.67**	**0.73**	**4.26**	**0.85**
Demersal trawl	OTB	0.16	0.20	0.11	0.05	0.06	0.58	0.12
	OTT	0	<0.01	<0.01	0	0	<0.01	<0.01
	TBB	0.02	0.02	0.01	0.01	<0.01	0.06	0.01
Demersal trawl total		**0.19**	**0.22**	**0.12**	**0.06**	**0.06**	**0.65**	**0.13**
Dredge	DRB	2.05	0.85	0.52	0.69	0.96	5.07	1.01
Dredge total		**2.05**	**0.85**	**0.52**	**0.69**	**0.96**	**5.07**	**1.01**
Midwater gill drift	GND	0.02	0.12	0.08	0.03	0.02	0.27	0.05
Midwater gill drift total		**0.02**	**0.12**	**0.08**	**0.03**	**0.02**	**0.27**	**0.05**
Midwater gill encircling	GNC	0	0	0	<0.01	0	<0.01	<0.01
Midwater gill encircling total		**0**	**0**	**0**	**<0.01**	**0**	**<0.01**	**<0.01**
Midwater hook/line	LHP	<0.01	0.01	0.01	<0.01	<0.01	0.02	<0.01
	LTL	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01
Midwater hook/line total		**0.01**	**0.01**	**0.01**	**<0.01**	**<0.01**	**0.03**	**0.01**
Midwater trawl	OTM	0.05	0.01	0.01	0.15	0.05	0.27	0.05
Midwater trawl total		**0.05**	**0.01**	**0.01**	**0.15**	**0.05**	**0.27**	**0.05**
Traps	FPO	0.68	1.23	1.07	1.45	1.78	6.21	1.24
Traps total		**0.68**	**1.23**	**1.07**	**1.45**	**1.78**	**6.21**	**1.24**
Grand total		**11.36**	**13.38**	**9.21**	**7.58**	**7.23**	**48.76**	**9.75**

Table A1. 7: Mean annual surface and subsurface SAR values for C-squares intersecting the section of Inner Bank MPA offshore of 6 nm (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	SAR category	2016	2017	2018	2019	2020
Bottom towed gear	Surface	2.77	2.52	2.96	3.08	2.24
	Subsurface	1.61	1.80	1.80	1.69	1.58
Demersal seine	Surface	0.79	0.34	0.79	0.73	0.37
	Subsurface	0.01	0.01	0.01	0.01	0.01
Demersal trawl	Surface	1.97	2.18	2.15	2.31	1.83
	Subsurface	1.59	1.78	1.78	1.63	1.53
Dredge	Surface	0.01	0.01	0.02	0.05	0.04
	Subsurface	0.01	0.01	0.02	0.05	0.04

Table A1. 8: Fishing effort (days) recorded by UK vessels under 12 m in length, separated by gear type for the section of Inner Bank MPA offshore of 6 nm that intersects ICES rectangles 30F0 and 30F1 (2016 to 2020). 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). All numbers are rounded to two decimal places.

ICES rectangle	Gear type	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
30F0	**Bottom towed gear total**	**98.02**	**100.62**	**117.31**	**102.39**	**63.00**	**481.33**	**96.27**
	Demersal trawl	92.89	97.13	116.49	97.74	57.93	462.18	92.44
	Dredge	5.13	3.49	0.82	4.65	5.06	19.15	3.83
	Midwater gear total	**24.56**	**4.65**	**16.21**	**12.24**	**22.09**	**79.75**	**15.95**
	Midwater gill drift	24.21	3.01	1.44	2.39	0.14	31.19	6.24
	Midwater hook/line	0.34	1.64	14.77	9.85	21.96	48.56	9.71
	Static gear total	**556.43**	**445.35**	**403.70**	**350.62**	**342.21**	**2,098.31**	**419.66**
	Anchored net/line	401.10	333.79	298.91	226.27	184.89	1,444.95	288.99
	Traps	155.34	111.56	104.79	124.35	157.32	653.36	130.67
	ICES rectangle total	**679.01**	**550.62**	**537.21**	**465.26**	**427.29**	**2,659.39**	**531.88**
30F1	**Bottom towed gear total**	**0.22**	**0.15**	**0.07**	**0.37**	**0.21**	**1.01**	**0.20**
	Demersal trawl	0.22	0.14	0.04	0.25	0.21	0.86	0.17
	Dredge	0	0.01	0.03	0.12	0	0.16	0.03
	Static gear total	**1.86**	**1.67**	**1.55**	**1.54**	**1.27**	**7.88**	**1.58**
	Anchored net/line	1.73	1.05	0.61	0.45	0.40	4.23	0.85
	Traps	0.13	0.62	0.94	1.10	0.87	3.65	0.73
	ICES rectangle total	**2.07**	**1.81**	**1.62**	**1.91**	**1.48**	**8.89**	**1.78**
MPA total		**681.08**	**552.43**	**538.83**	**467.17**	**428.77**	**2,668.28**	**533.66**

Annex 2: Biotope screening

Table A2. 1: Subtidal coarse sediment biotopes

Biotope name	Sensitivity to relevant pressures	Found at depth of site?
Dense *Lanice conchilega* and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand (McQuillan, Tillin and Watson, 2023)	Low or no sensitivity	Yes
Pomatoceros triqueter with barnacles and bryozoan crusts on unstable circalittoral cobbles and pebbles (Tyler-Walters, Tillin and Watson, 2024)		
Sparse fauna on highly mobile sublittoral shingle (cobbles and pebbles) (Tillin, 2023)	Not relevant	

Table A2. 2: Subtidal mixed sediments biotopes

Biotope name	Sensitivity to relevant pressures	Found at depth of site?
***Cerianthus lloydii* and other burrowing anemones in circalittoral muddy mixed sediment (Perry and Watson, 2024)**	All gear groups: Medium sensitivity to abrasion and removal of non-target species Bottom towed gear: Medium sensitivity to penetration and smothering and siltation rate changes Dredges and traps: Medium sensitivity to removal of target species	Yes
***Cerianthus lloydii* with *Nemertesia* spp. and other hydroids in circalittoral muddy mixed sediment (Perry and Watson, 2023a)**		
***Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment (De-Bastos, Hill, Garrard, *et al.*, 2023)**		
***Sabella pavonina* with sponges and anemones on infralittoral mixed sediment (Perry and Watson, 2023b)**		
***Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment (Readman and Watson, 2024)**	All gear groups: Medium sensitivity to abrasion and removal of non-target species Bottom towed gear: Medium sensitivity to penetration Dredges and traps: Medium sensitivity to removal of target species	Yes
Crepidula fornicata with ascidians and anemones on infralittoral coarse mixed sediment (Readman, 2016)	Low or no sensitivity to relevant pressures	
Crepidula fornicata and *Mediomastus fragilis* in variable salinity infralittoral mixed sediment (Readman and Rayment, 2016)	Not relevant to site due to habitat	No, estuarine habitat

Table A2. 3: Subtidal sand biotopes

Biotope name	Sensitivity to relevant pressures	Found at depth of site?
***Echinocardium cordatum* and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand (De-Bastos, Hill, Lloyd, *et al.*, 2023)**	All gear groups: Medium sensitivity to abrasion and removal of non-target species Bottom towed gear: Medium sensitivity to penetration Dredges and traps: Medium sensitivity to removal of target species	Yes
Arenicola marina in infralittoral fine sand or muddy sand (Tyler-Walters and Garrard, 2019)	All gear groups: Medium sensitivity to removal of non-target species Dredges and traps: Medium sensitivity to removal of target species	Yes, however likely to be found in the intertidal area, or in isolated sea lochs and lagoons
Infralittoral mobile clean sand with sparse fauna (Tillin, Tyler-Walters and Garrard, 2019)	Low or no sensitivity to relevant pressures	Yes
Sertularia cupressina and *Hydrallmania falcata* on tide-swept sublittoral sand with cobbles or pebbles (Readman and Garrard, 2019)		