Marine Management Organisation

MMO Stage 3 Site Assessment: West of Walney MPA (DRAFT)

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Title: MMO Stage 3 Site Assessment: West of Walney MPA (DRAFT)
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Executive Summary

This assessment analyses the impact of anchored nets and lines, bottom towed gears and traps on the designated features sea-pen and burrowing megafauna communities, subtidal sand and subtidal mud in West of Walney Marine Protected Area (MPA) to determine whether a significant risk of hindering the achievement of 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, at current fishing activity levels, the use of anchored nets and lines and traps will not result in a significant risk of hindering the achievement of the conservation objectives of the MPA. Management measures will not therefore be implemented for anchored nets and lines and traps for West of Walney MPA. However, 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.**

1 Introduction

This assessment considers whether fishing activities are compatible with the conservation objectives of West of Walney MPA.

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

Although MMO is responsible only for the area of the MPA beyond 6 nautical miles (nm), in the interest of continuity and compliance, it has been agreed with North Western Inshore Fisheries and Conservation Authority (IFCA) that MMO will assess West of Walney MPA as a whole and not just the section beyond 6 nm.

2 Site information

2.1 Overview

The following Natural England and Joint Nature Conservation Committee (JNCC) conservation advice package, 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:

- Natural England and JNCC Conservation Advice - West of Walney MCZ[1];
- JNCC Site Information – West of Walney MCZ[2]; and
- Defra Factsheet - West of Walney MCZ[3].

West of Walney MPA is located in the Irish Sea, 8 km west of Walney Island on the Cumbrian coast of north-west England. The site straddles the 6 nautical miles (nm) and 12 nm limits and covers an area of approximately 388 km^2 (**Figure 1**). Fishing activity in this area is principally regulated by North Western Inshore Fisheries and Conservation Authority (NWIFCA) (0 to 6 nm) and MMO (beyond 6 nm). Natural England (0 to 12 nm) and JNCC (beyond 12 nm) are the relevant Statutory Nature Conservation Bodies for the site.

[1]Natural England Conservation Advice – West of Walney MCZ designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UKMCZ0045&SiteName=West%20of%20Walney%20MCZ&SiteNameDisplay=West%20of%20Walney%20MCZ&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=&HasCA=1 (Last accessed 28 September 2023)

[2]JNCC Site information for West of Walney MCZ jncc.gov.uk/our-work/west-of-walney-mpa/ (Last accessed 28 September 2023)

[3]Defra Fact sheet – West of Walney MCZ assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/492471/mcz-west-walney-factsheet.pdf (Last accessed 28 September 2023)

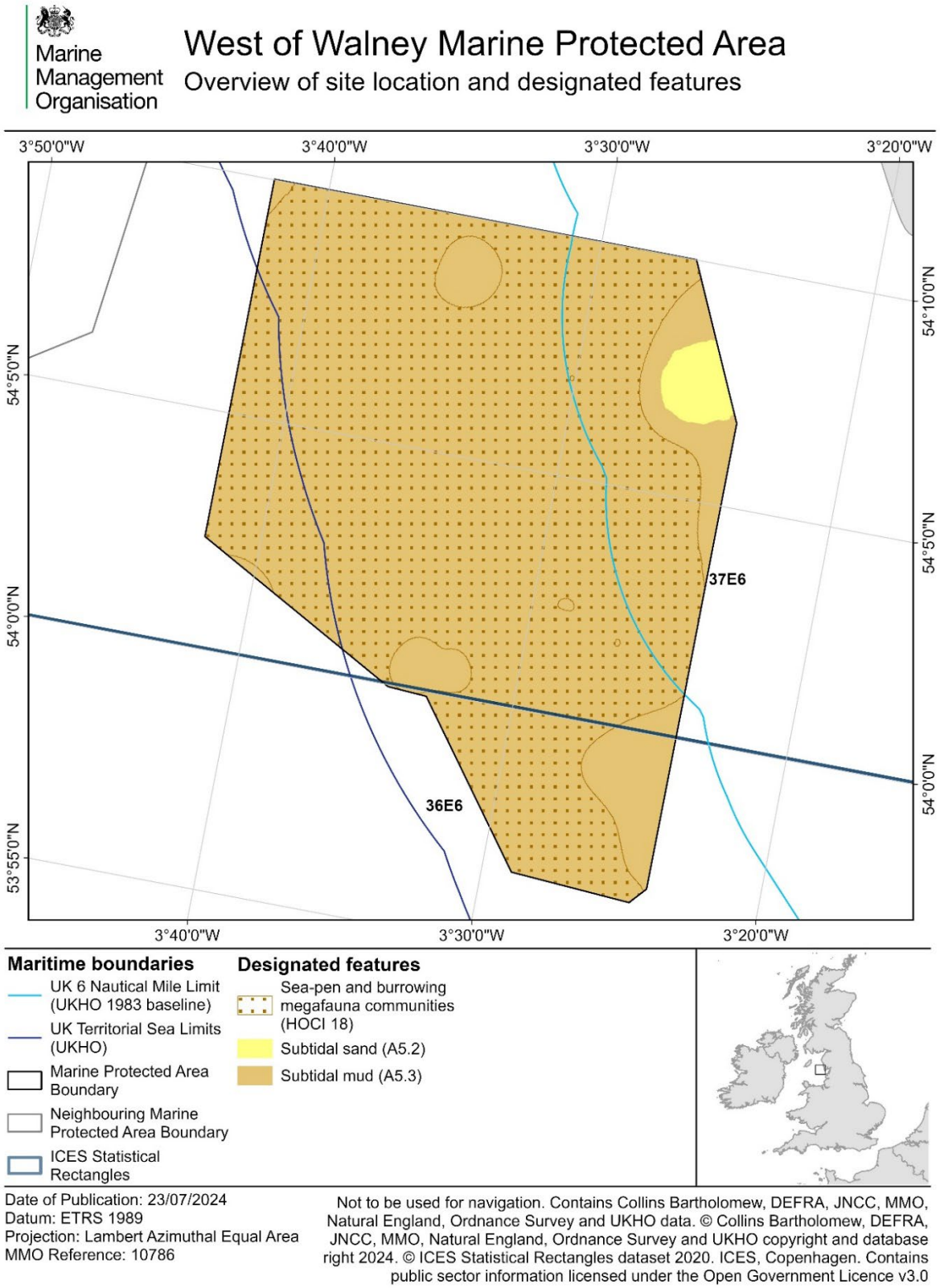

Figure 1. West of Walney MPA location overview.

West of Walney MPA was designated as a MCZ in 2016. The designated features and their general management approaches are set out in **Table 1**.

The seabed in the site contains two broad-scale habitat designated features: subtidal mud and subtidal sand. Subtidal mud is the most extensive feature in the site and forms part of the wider Irish Sea mud belt. The subtidal mud feature is an important habitat for a range of animals including worms, molluscs, sea urchins and crustaceans. Subtidal sand occurs over a far smaller area and supports high densities of brittle stars and flat fish species. Sea-pen and burrowing megafauna communities occur across the subtidal mud habitat, characterised by sea-pens (feather-like soft corals) and burrowing animals such as mud shrimp and the Norway lobster (*Nephrops norvegicus*). The burrowing activity of these species provides an important ecological function in the bioturbation (mixing) of the sediments and increases the structural complexity of the habitat. Collectively these animals create a network of burrows and tunnels, helping to shelter other small creatures and allow oxygen to penetrate deeper into the sediment.

There is no feature condition assessment available for this site; in its absence a vulnerability assessment, which includes sensitivity and exposure information for features and activities in a site, is used as a proxy for condition. The favourable condition targets for the attributes listed in **Table 1** for the site features have been set as recover due to their high sensitivity to pressures from bottom towed gear. More information on this can be found in Natural England's Supplementary Advice on Conservation Objectives[1].

Table 1. Designated features and general management approaches.

Designated feature	General management approach
Sea-pen and burrowing megafauna communities	Recover to favourable condition.
Subtidal mud	
Subtidal sand	

2.2 Scope of this assessment

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

3 Part A - Identified pressures on the MPA

Part A of this assessment was carried out in a manner that is consistent with the 'capable of affecting (other than insignificantly)' test required by section 126 of the Marine and Coastal Access Act 2009[4].

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

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

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

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

3.1 Activities taking place

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

[4] For more information: Conservation of Habitats and Species Regulations 2017 www.legislation.gov.uk/ukpga/2009/23/section/126

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

- VMS data;
- fisheries landings data (logbooks and sales records);
- 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 MPA Site Assessment Methodology document[5], which describes each type of fishing activity evidence and summarises the strengths and limitations of each source.

[5] MPA Site Assessment Methodology document: www.gov.uk/government/publications/stage-3-site-assessments (Last accessed 13 August 2024).

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

Gear type	Gear name	Gear code	Justification
Anchored nets and lines	Trammel net	GTR	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Set gillnet (anchored)	GNS	
	Longline (unspecified)	LL	
	Gillnets and entangling nets	GEN	
	Gill nets (not specified)	GN	
Bottom towed gear	Pair seine	SPR	Present in VMS data.
	Towed dredge	DRB	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Otter trawls (unspecified)	OT	
	Twin bottom otter trawl	OTT	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Nephrops trawl	TBN	
	Bottom otter trawl	OTB	
	Beam trawl	TBB	
Midwater gear	Midwater otter trawl	OTM	Present in VMS data.
	Hook and line (unspecified)	LX	Present in under 12 m vessel landings data for ICES statistical rectangles that overlap the site.
	Hand-operated pole-and-line	LHP	
	Drift gillnet	GND	
Miscellaneous	Miscellaneous	MHX, MIS	
Traps	Pot/Creel	FPO	Present in VMS records and under 12 m vessel landings data for ICES statistical rectangles that overlap the site.

3.2 Activities screened out

This section identifies activities that are **occurring but do not need to be considered** for West of Walney MPA.

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

- **Midwater gears:** although the use of midwater gears does occur within West of Walney MPA, there is no feasible pathway for gears of this type to interact with benthic designated features. 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 West of Walney MPA is not considered to be capable of affecting the designated features other than insignificantly and is not considered further within this assessment.

- **Miscellaneous**: 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[6]:

- 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 JNCC and Natural England advice to assess the sensitivities of pressures on the designated features of the site.

[6] Stage 3 MPA Impacts Evidence: www.gov.uk/government/publications/marine-protected-areas-stage-3-impacts-evidence (Last accessed 13 August 2024)
[7] Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines www.gov.uk/government/publications/marine-protected-areas-stage-3-impacts-evidence (Last accessed 13 August 2024)
[8] Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gears www.gov.uk/government/publications/marine-protected-areas-stage-3-impacts-evidence (Last accessed 13 August 2024)
[9] Stage 3 Fishing Gear MPA Impacts Evidence Traps www.gov.uk/government/publications/marine-protected-areas-stage-3-impacts-evidence (Last accessed 13 August 2024)

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.

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

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

Potential pressures	Designated features								
	Sea-pen and burrowing megafauna communities			Subtidal mud			Subtidal sand		
	A	B	T	A	B	T	A	B	T
Abrasion or disturbance of the substrate on the surface of the seabed									
Changes in suspended solids (water clarity)									
Deoxygenation									
Hydrocarbon and polycyclic aromatic hydrocarbon contamination									
Introduction of light									
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 required by section 126 of the Marine and Coastal Access Act 2009[4].

Table 3 shows the fishing activities and pressures identified in Part A which have been included for assessment in Part B. The most relevant attributes of the designated features that could be compromised by fishing pressures were identified using the West of Walney MPA conservation advice package and are shown in **Table 4**.

Table 4: Relevant favourable condition targets for identified pressures.

Feature	Attribute	Target	Relevant pressures
Sea-pen and burrowing megafauna communities	Distribution: presence and spatial distribution of biological communities	Recover the presence and spatial distribution of sea-pens and burrowing megafauna 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
	Extent and distribution	Maintain the extent and spatial distribution of subtidal mud with sea-pens and burrowing megafauna.	
	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: species composition of component communities	Recover the species composition of component communities.	
	Supporting processes: water quality - turbidity (habitat)	Maintain natural levels of turbidity (for example concentrations of suspended sediment, plankton and other material) across the habitat.	
Subtidal mud **Subtidal sand**	Distribution: presence and spatial distribution of biological communities	Recover the presence and spatial distribution of subtidal sand and subtidal mud communities.	• Abrasion or disturbance of the substrate on the surface of the seabed • Changes in suspended solids (water clarity) • Smothering and siltation rate changes • Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion • Removal of non-target species • Removal of target species
	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: species composition of component communities	Recover the species composition of component communities.	
	Supporting processes: sedimentation rate	Maintain the natural rate of sediment deposition.	
	Supporting processes: water quality - turbidity (habitat)	Maintain natural levels of turbidity (for example concentrations of suspended sediment, plankton and other material) across the habitat.	

4.1 Fisheries access and existing management

Non-UK vessels can operate within West of Walney MPA, provided that they have a licence issued by the UK to do so. Nationalities which fished within the MPA between 2016 to 2021 include vessels from UK, Ireland and Belgium. VMS records indicate that UK vessels are most prevalent.

West of Walney MPA is subject to the following relevant legislative catch restrictions that are applicable to fisheries occurring in the site:

- West of Walney Marine Conservation Zone (Specified Area) Bottom Towed Fishing Byelaw 2018[10]

West of Walney Marine Conservation Zone (Specified Area) Bottom Towed Fishing Byelaw 2018[10] currently applies to the part of the MPA within the 12 nm boundary. This byelaw prohibits bottom towed fishing gears from operating within specified areas of the MPA up to the 12 nm boundary[11].

More information on non-UK vessel access to UK waters can be found on MMO's Single Issuing Authority page[12].

4.2 Fishing activity summary

Table A1.1 to **Table A1. 8** in **Annex 1** display a detailed breakdown of fishing activity within West of Walney MPA. Of the fishing activities not screened out in Part A of this assessment, VMS data (2016-2021) show that the most prevalent gear type operated by over 12 m vessels within the site is demersal trawls. Landings data show that the most prevalent gears operated by under 12 m vessels within the site are traps, followed by demersal trawling. Unless otherwise stated, figures cover fishing activity attributed to West of Walney MPA between 2016 and 2020.

Anchored nets and lines

The only anchored nets and line activity in the MPA was from under 12 m vessels, which landed on average 0.67 tonnes (t) per year between 2016 and 2020 and recorded approximately 45 days fishing effort in the MPA. Fishing effort days are

[10] West of Walney Marine Conservation Zone (Specified Area) Bottom Towed Fishing Byelaw 2018: assets.publishing.service.gov.uk/media/665f0a1c16cf36f4d63ebdcc/Amended_West_of_Walney_Byelaw.pdf

[11] The 2018 byelaw extends to the 12 nm boundary based on the 1983 UK baselines, which vary slightly from the 12 nm boundary used currently due to the legislative restrictions at the time.

[12] The UK Single Issuing Authority: www.gov.uk/guidance/united-kingdom-single-issuing-authority-uksia (Last accessed 04 October 2023).

derived from logbooks, with data collected at ICES rectangle level 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 bottom otter trawls (annual average: 76 VMS records) with some twin bottom otter trawls and *Nephrops* trawls (combined annual average: 11 VMS records), and predominantly took place over the north and east of the site.

Between 2016 and 2020, mean annual surface SAR values for demersal trawl activity for C-squares intersecting West of Walney MPA varied between 0.19 and 0.35. Mean annual subsurface SAR values were between 0.07 and 0.17. An SAR value of 1 would mean that on average these C-squares were passed over completely by demersal trawls once every year.

In total, demersal trawls landed on average 23 t (over 12 m vessels - 14 t, under 12 m vessels – 9 t). Under 12 m vessels using bottom towed gear recorded 122 days of fishing.

The only dredging activity was from under 12 m vessels which recorded a total of 0.23 t and a total fishing effort of 0.5 days at sea across the years analysed. No landings or effort data was recorded for demersal seining.

Traps

Trap fishing is spread evenly, both spatially and temporally, throughout the central and southern portions of the site, with little or no variation in the amount of effort applied to the designated features of the site. Vessels over 12 m using traps recorded an annual average of four VMS records and approximately 3 t of landings. Vessels under 12 m using traps recorded an annual average of 165.55 days of fishing effort and approximately 13 t per year.

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

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

The designated features in this site, sea-pens and burrowing megafauna communities, may be sensitive to removal of target and/or non-target species pressures. Removal of target species in this case is most relevant to Nephrops**,** as part of the burrowing megafauna element of the sea-pen and burrowing megafauna communities feature, commonly targeted using bottom towed gears. As there is Nephrops fishing via bottom towed gear occurring in the site, removal of target species in relation to Nephrops associated with burrowing megafauna will be considered in relation to bottom towed gear. There are instances of fishing for Nephrops using traps (creels), however this is an uncommon fishing practice, generally limited to the Scottish inshore fleets and potentially a small number of English inshore vessels. Nephrops creel fisheries are not known to occur within West of Walney MPA. Removal of this species is not possible through the use of anchored nets and lines. In relation to removal of non-target species, due to the selectivity of traps for the target species and high probability of survival for any unwanted species caught and discarded, the impact of removal of non-target species on key burrowing megafauna species such as Nephrops is also not considered to be significant. As such, these features are more fully assessed within the abrasion and penetration pressures for static gear types.

Burrowing megafauna, such as Norway lobster are generally considered less sensitive to abrasion and penetration impacts than sea-pens due to their motility and ability to move from areas of disturbance. Sea-pens, although able to retract into their burrows and bend in some instances, are fixed and unable to move from potential disturbance episodes. Therefore, this assessment focuses on the most sensitive component of this designated feature, sea-pens.

There is limited survey information available for this site so available information on biotopes of the features present in the site have been assessed at the Irish Sea sub-region level. West of Walney MPA's location in terms of sub-region and information about the biotopes was taken from evidence from JNCC and Natural England's joint conservation advice[1]. Sensitivity information was extracted from Marlin[13].

Using this information biotopes were screened out if:

- they were not located in the same bioregion as West of Walney MPA;
- if they were only found in the inshore area; and
- if they were not sensitive or had low sensitivity to the relevant pressures in **Table 4.**

The resulting screened in biotopes are listed in **Table 5**.

[13] Sensitivity information from Marlin - www.marlin.ac.uk/habitats/eunis (Last accessed 23 June 2023)

Table 5: Biotopes in Irish Sea sub-region 5a to be considered.

Feature	Biotope name	Sensitivity
Sea-pen and burrowing megafauna communities	Sea-pens, including *Funiculina quadrangularis*, and burrowing megafauna in undisturbed circalittoral fine mud (Tyler-Walters and Watson, 2023)	Abrasion: High Penetration: High
	Burrowing megafauna and *Maxmuelleria lankesteri* in circalittoral mud (Durkin and Tyler-Walters, 2022)	Abrasion: Medium Penetration: High
	Sea-pens and burrowing megafauna in circalittoral fine mud (Hill *et al.*, 2023)	
Subtidal mud	*Amphiura filiformis, Mysella bidentata* and *Abra nitida* in circalittoral sandy mud (De-Bastos and Hill, 2016)	Abrasion: Medium Penetration: Medium
	Sublittoral mud in low or reduced salinity (lagoons) (Tyler-Walters, Tillin and Watson, 2023)	Penetration: Medium
	Ampelisca spp., *Photis longicaudata* and other tube-building amphipods and polychaetes in infralittoral sandy mud (Tyler-Walters, De-Bastos and Watson, 2023)	
	Arenicola marina in infralittoral mud (Tyler-Walters, 2023)	
Subtidal sand	*Echinocardium cordatum* and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand (De-Bastos, Hill, *et al.*, 2023)	Abrasion: Medium Penetration: Medium
	Semi-permanent tube-building amphipods and polychaetes in sublittoral sand (De-Bastos, Rayment, *et al.*, 2023)	Penetration: Medium

4.3.1 Anchored nets and lines

The relevant pressures on the designated features of West of Walney MPA from anchored nets and lines were identified in **Table 3** and are:

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

As noted above, impacts from the removal of non-target species pressure is not being considered in detail in this assessment, as it is assessed more completely within the abrasion pressure. Removal of target species is also not being considered for anchored nets and lines, as detailed previously.

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

Subtidal sand and subtidal mud

As described in section 9.4 of the anchored nets and lines Impacts Evidence document[7], there is limited information on the impacts of static gears on sediment 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. Equally, 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. 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.

Table 5 lists those biotopes which may exist in West of Walney MPA which have a medium or high sensitivity to relevant pressures. Out of 9 biotopes, one of the biotopes for sea-pen and burrowing megafauna has a high sensitivity to abrasion and penetration, whilst the other two biotopes for sea-pen and burrowing megafauna are medium for abrasion and high for penetration. One biotope for subtidal mud, and one for subtidal sand have a medium sensitivity to abrasion and penetration. Three biotopes in subtidal mud and one in subtidal sand are medium sensitivity to penetration.

For the subtidal sand feature, one of the biotopes, *Echinocardium cordatum* and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand, was identified as having medium sensitivity to abrasion. *Echinocardium cordatum* and *Ensis* spp. are generally found in depths ranging from 5 to 30 m in muddy sand

habitat and have a broad tolerance threshold with regard to preferential tidal strength and wave exposure.

For the subtidal mud feature, two of the biotopes, *Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* in circalittoral sandy mud and *Lagis koreni* and *Phaxas pellucidus* in circalittoral sandy mud were identified as having medium sensitivity to abrasion. *Amphiura filiformis*, *Mysella bidentata* and *Abra nitida* are generally found in depths ranging from 10 m to 30 m in sandy mud habitat. Species associated with this biotope prefer weak or very weak tidal strength and exposed or moderately exposed wave exposure. *Lagis koreni* and *Phaxas pellucidus* are generally found in depths ranging from 10 m to 100 m and have a broad tolerance threshold with regard to preferential tidal strength and wave exposure.

Species associated with the biotopes identified for the site generally have high fecundity rates, reproduce annually and have high dispersal potential. However, long-lived species take a relatively long time to reach reproductive maturity. Sensitivity of erect epifauna to abrasion impacts from anchored nets and lines in subtidal mud habitats is likely to be species dependent. As described in section 9.4 of the anchored nets and lines Impacts Evidence document[7] three species of sea-pens cannot retract into the sediment and/or are more rigid and likely to be less tolerant to disturbance but no lasting effects on the substrate were observed during the study. Similarly, even if uprooted, some sea-pens are able to reinsert themselves into the sediment. While these studies considered the impact of traps, the ability of sea-pens to flex under weight and retract into the sediment, will similarly aid in their resilience to anchored nets and lines.

As described in section 9.4 of the anchored nets and lines Impacts Evidence document[7] 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 sediment habitats or those with long-lived bivalves, however the potential for impact will be dependent on the intensity of fishing activity taking place. Increasing levels of activity increase the likelihood of weights and ropes associated with nets and lines damaging, entangling or removing epifaunal species, in particular those species which are upright and protrude from the sediment.

Section 4.2 discusses the fishing activity within West of Walney and notes that activity within the site is low, however that may change in the future. The evidence collated on the impacts of anchored nets and lines within the Impacts Evidence documents[7] suggests that they are unlikely to adversely affect the designated subtidal sediment features or any of the attributes laid out in **Table 4** due to their static nature and small footprint. Therefore, **MMO concludes that at the activity levels described, the use of anchored nets and lines over subtidal mud and subtidal sand does not pose a significant risk of hindering the achievement of the conservation objectives of West of Walney MPA.**

Sea-pen and burrowing megafauna communities

Three biotopes were identified in sea-pen and burrowing megafauna communities as potentially being present at the site. One of these biotopes, sea-pens, including *Funiculina quadrangularis*, and burrowing megafauna in undisturbed circalittoral fine mud, was identified as having high sensitivity to abrasion from anchored nets and lines. Sea-pens, including *Funiculina quadrangularis*, and burrowing megafauna in undisturbed circalittoral fine mud are generally found in depths ranging from 10 to 50 m and prefer weak or very weak tidal strengths and extremely sheltered, moderately exposed, sheltered or very sheltered wave exposure. A further two biotopes were identified as having medium sensitivity to abrasion; burrowing megafauna and *Maxmuelleria lankesteri* in circalittoral mud and sea-pens and burrowing megafauna in circalittoral fine mud. These biotopes are generally found in depths ranging from 10 to 50 m and 10 to 100 m respectively and prefer weak or very weak tidal strengths and extremely sheltered, moderately exposed, sheltered or very sheltered wave exposure.

Sea-pen and burrowing megafauna communities are present throughout West of Walney MPA. Sea-pens protrude from the surface of the mud and can grow to more than 2 m in height. Within West of Walney MPA, the sea-pen species *Virgularia mirabilis* has been identified in the muddier sediment habitats. As described in section 9.4 of the anchored nets and lines Impacts Evidence document[7], this species can retract into the sediment whilst *F quadrangularis* cannot. On stable plains of fine mud, areas of the seabed within the MPA are often characterised by mounds and burrows as a result of the burrowing activities of animals, such as the Norway lobster (*Nephrops norvegicus*), below the surface. These burrows offer shelter to a wide range of smaller animals, creating a diverse benthic community. Although the abundance and distribution of these communities is limited to the information on *Nephrops norvegicus* from stock assessment survey, the data indicates that burrow densities are higher in the central part of the MCZ where finer mud sediments occur.

There is only a limited level of anchored nets and lines fishing activity currently occurring within the site. Despite biotopes having high and medium sensitivity to pressures, some sea-pen species are able to retract into the sediment. As such, it is unlikely that the use of anchored nets and lines at the levels described will pose a significant risk of hindering the achievement of the conservation objectives of West of Walney MPA.

Therefore, **MMO concludes that, at the activity levels described, the use of anchored nets and lines over sea-pens and burrowing megafauna communities does not pose a significant risk of hindering the achievement of the conservation objectives of West of Walney MPA.**

4.3.2 Bottom towed gear

The relevant pressures on the designated features of West of Walney MPA from bottom towed gear were identified in **Table 3** 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) ^ (only for subtidal sediments);
- smothering and siltation rate changes^ (only for subtidal sediments); and
- removal of non-target species; and
- removal of target species (only for sea-pen and burrowing megafauna communities).

As noted above, impacts from removal of target species are not being considered in detail in this assessment, as they are assessed more completely within the abrasion pressure. Removal of target species is considered however, in relation to Nephrops associated with burrowing megafauna communities and targeting of the species via bottom towed gear occurring in the site.

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

Subtidal sand and subtidal mud

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

Table 5 lists the biotopes that may be found within the sediment features which may be sensitive to the abrasion or disturbance and penetration pressures. Of the eleven biotopes which may be present in the subtidal sand, one has a medium sensitivity to both abrasion and penetration pressures, *Echinocardium cordatum* and *Ensis* spp. in lower shore and shallow sublittoral slightly muddy fine sand, as described in **Section 4.3.1.** Semi-permanent tube-building amphipods and polychaetes in sublittoral sand has a medium sensitivity to penetration and are generally found in depths ranging from 0 m to 20 m in fine/medium muddy sand. Species associated with this biotope prefer weak or very weak tidal strength and moderately exposed or sheltered wave exposure. *Ampelisca* spp., *Photis longicaudata* and other tube-building amphipods and polychaetes in infralittoral sandy mud and *Arenicola marina* in infralittoral mud are generally found in depths ranging from 10 m to 50 m in sandy mud/mud habitat. Species associated with this biotope prefer weak or very weak tidal strength and exposed or moderately exposed wave exposure.

As described in **section 4.1**, demersal trawl activity was concentrated in the north and east of the site. However, since July 2019, bottom towed fishing has been prohibited across the site, except in the north-western portion which sits outside of the 12 nm limit. It is likely that the sedimentary features in this portion of the site are experiencing regular exposure to abrasion and penetration pressures.

Abrasion and penetration pressures from bottom towed gear can result in both physical and biological impacts on subtidal sediment features. Physical impacts

include the creation of furrows and berms in the sediment from the trawl doors associated with bottom otter trawls; and the flattening of bottom features such as ripples and irregular topography by beam trawls. 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 can cause collision, crushing and uprooting as animals encounter or pass under the gear. Initial reductions in biomass, species richness and diversity, as well as changes in community structure are considered likely to be greatest on subtidal coarse sediments compared to subtidal sand. The first pass of a trawl has the largest initial impact on biomass and production of sediments (Hiddink *et al.*, 2006), 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 a number of burrowing species, however, as described in section 8.4.1 of the bottom towed gear Impacts Evidence document[8] research has shown that otter trawls remove, on average, around 6 % of faunal biomass per pass.

In conclusion, bottom towed gears operating within West of Walney MPA have the potential to impact biological communities and the overall ecosystem function of the subtidal sediment features found in the site from abrasion, penetration or disturbance of the substrate on the surface of the seabed pressures.

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

‘Abrasion, penetration or disturbance of the substrate on the surface of the seabed’ by bottom towed gear at the levels described will pose a significant risk of hindering the achievement of the conservation objective of ‘recover to favourable condition’ of this feature, the pressure group containing changes in suspended solids (water clarity) and smothering and siltation rate changes have not been considered further in this assessment.

Sea-pen and burrowing megafauna communities

Removal of target species

For the sea-pen and burrowing megafauna communities feature, three biotopes were identified as potentially being present at the site in **Table 5**. In addition to the medium sensitivity identified for the biotopes for abrasion in **Section 4.3.1**, three

biotopes including: *Funiculina quadrangularis*, and burrowing megafauna in undisturbed circalittoral fine mud; burrowing megafauna and *Maxmuelleria lankesteri* in circalittoral mud; and sea-pens and burrowing megafauna in circalittoral fine mud were also identified as having high sensitivity to penetration pressures.

Sea-pen and burrowing megafauna communities, including Norwegian lobster (*N. norvegicus)* are generally considered less sensitive to abrasion and penetration impacts than sea-pens due to their motility and ability to move from areas of disturbance. The sea-pen species *Virgularia mirabilis* has been identified in the muddier sediment habitats. As described in section 9.4 of the anchored nets and lines Impacts Evidence document[7], this species can retract into the sediment whilst *F. quadrangularis* cannot. Nephrops are considered to have high recoverability if able to recover fully within five years[14], however the observed SAR values, disturbance events are likely to occur more often than every five years. Given that the Nephrops fishery is also targeting Nephrops specifically, sensitivity is likely to be higher in this situation.

Section 4.2 of the bottom towed gear Impacts Evidence document[8] indicates that these fishing methods have the potential to damage the fragile components of the feature, such as sea-pens which protrude from the seabed, resulting in a change to benthic community structure. Sea-pens are slow growing and particularly sensitive to trawling as the whole animal can be removed from their burrows. Overall, there is limited literature available on the interactions of bottom towed gear with sea-pen and burrowing megafauna communities however, the feature is considered highly vulnerable to disturbance from this fishing method.

Bottom towed gears have the potential to impact sea-pen and burrowing megafauna communities, therefore management of these fishing gears is likely required for this site. The presence of sea-pen and burrowing megafauna communities throughout the extent of the site, coupled with low resistance of the biotopes identified on the feature to bottom towed gear activity and slow recoverability, it is likely that the ongoing use of this fishing gear at the levels described will pose a significant risk of hindering the achievement of the conservation objective of 'recover to favourable condition' of this feature of West of Walney MPA.

Therefore, **MMO concludes that, at the activity levels described, the use of bottom towed gear does pose a significant risk of hindering the achievement of the conservation objectives of West of Walney MPA.**

4.3.3 Traps

The relevant pressures on the designated features of West of Walney MPA from traps were identified in **Table 3** and are;

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

[14] For more information: The Marine Life Information Network – Recoverability ranking www.marlin.ac.uk/glossarydefinition/recoverabilityranking

- removal of target species; and
- removal of non-target species.

As noted above, impacts from the removal of non-target species pressure is not being considered in detail in this assessment, as it is assessed more completely within the abrasion pressure. Removal of target species is also not being considered for traps, as detailed previously.

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

Subtidal sand and subtidal mud

Traps and anchored nets and lines fishing gear exert similar pressures on the biotopes associated with the sediment features of the site, therefore the biotopes identified in **Table 5** as having medium sensitivity to abrasion in the anchored nets and lines section also apply here for the traps section.

As described in section 9.4 of the traps Impacts Evidence document[9], 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 and have a relatively low impact on benthic communities in comparison to towed gears and are likely to be of limited concern to subtidal sand habitats. Impacts to biological communities could become a concern if activity reaches a particularly high level of intensity, or particularly sensitive species are present, as there is the potential for the snagging of gear and subsequent entanglement and damage to fragile epifauna as the level of fishing activity and therefore density level of anchors and ropes increases. Although no primary evidence is available on the impact of traps on subtidal sand specifically, sensitivity assessments indicate that 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 by traps.

Some primary evidence is available for potting impacts on subtidal mud from two experimental studies concerning sea-pens. The studies used sea-pens as an indicator of physical disturbance and found impacts from traps were low with no lasting effects on the muddy substrate. As per other sediment types, sensitivity assessments suggest traps are of limited concern on subtidal muds, due to their limited contact with the seabed. Albeit with the same caveat for potential snagging of gear and subsequent entanglement and damage to fragile epifauna, particularly as the level of fishing activity and therefore density level of traps and associated ropes and anchors increases.

Given the current levels of trap fishing activity taking place within the site, coupled with the 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 these sediment 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 the sediment features of West of Walney MPA.

Sea-pen and burrowing megafauna communities

Traps and anchored nets and lines fishing gear exert similar pressures on the biotopes associated with the sea-pen and burrowing megafauna communities feature of the site, therefore the biotopes identified in **Table 5** as having high and medium sensitivity to abrasion in the anchored nets and lines section also apply here for the traps section. Burrowing megafauna, such as Norwegian lobster *Nephrops norvegicus* are generally considered less sensitive to abrasion and penetration impacts than sea-pens due to their motility and ability to move from areas of disturbance. Sea-pens, although able to retract into their burrows and bend in some instances, are fixed and unable to move from potential disturbance episodes. Nephrops are considered to have high recoverability if able to recover fully within five years[15], however the observed SAR values, disturbance events are likely to occur more often than every five years.

There is limited direct evidence of the impacts of static gears such as traps on the physical environment that sea-pen and burrowing megafauna communities inhabit. Research detailing the impacts of abrasion from traps on three species of sea-pens and noted that species which cannot retract into the sediment and/or are more rigid are likely to be less tolerant to disturbance caused by potting. Some sea-pens species are able to reinsert themselves into the sediment after being uprooted. 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 traps damaging, entangling or removing or damaging these species. Although studies have observed no lasting effects, it remains unknown whether they would suffer from potential long-term effects if repeatedly uprooted. Overall, the available literature suggests that trap fishing at the levels described is unlikely to significantly impact sea-pen and burrowing megafauna communities, despite their presence throughout the extent of the MPA.

There is only a limited level of traps currently occurring with the site. Despite biotopes having high and medium sensitivity to abrasion pressure, some sea-pen species are able to retract into the sediment, reducing their sensitivity.

Given the current levels of trap fishing activity taking place within the site, coupled with the spatial footprint of the gear and resilience and recoverability of the medium

[15] For more information: The Marine Life Information Network – Recoverability ranking www.marlin.ac.uk/glossarydefinition/recoverabilityranking.

sensitivity biotopes identified, it is unlikely that the ongoing use of traps at the levels described will pose a significant risk of hindering the achievement of the conservation objective of 'recover to favourable condition' of the sediment features of West of Walney MPA.

Therefore, **MMO concludes that, at the activity levels described, the use of traps does not pose a significant risk of hindering the achievement of the conservation objectives of West of Walney MPA.**

4.4 Part B conclusion

The assessment of anchored nets and lines, and traps on the sea-pen and burrowing megafauna communities, subtidal mud, and subtidal sand designated features in West of Walney MPA, has concluded that at the activity levels described, the use of these gear types will not result in an adverse effect on the site integrity of the MPA. As such, MMO concludes that management measures to restrict fishing activities using anchored net and lines, and traps are not required in West of Walney MPA.

The assessment of bottom towed gears on the sea-pen and burrowing megafauna communities, subtidal mud, and subtidal sand designated features in West of Walney MPA, has concluded that these fishing activities may result in a significant risk of adverse effects on the site integrity of the MPA. As such MMO concludes that management measures are required to restrict bottom towed fishing gears from West of Walney MPA.

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 developments infrastructure plans and projects that occur in the MPA.

ArcGIS software has been used to check relevant activities that occur within, or adjacent to, the assessed site where there could be a pathway for impact. To determine relevant activities to be included in this part of the assessment, a distance of 5 km was selected as suitable to capture any potential way in which the activity could impact the site in-combination effects with those of the fishing activities assessed.

A 5 km buffer was therefore applied to the site boundary to identify relevant activities, incorporating the 0-6 nm portion of the site that MMO have assessed for management considerations in agreement with North-Western IFCA. 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 adverse effect on site integrity 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.

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 West of Walney MPA that interact with the seabed. In-combination effects of these fishing activities as well as these activities in-combination with other relevant activities will be assessed in this section.

In accordance with the methodology detailed above, ArcGIS identified sixteen projects, within the 5 km buffer applied. **Table 6** shows this activity and the relevant categories from the JNCC Pressures-Activities Database (PAD)[16].

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

Marine licence case reference number[17]	PAD Category	Description
MLA/2018/00113	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	West of Duddon Sands OFTO operation and maintenance licence. Maintenance activities associated with the offshore substation; and export cable repair and remediation activities (2018-2037). **Possible in-combination effect.**
MLA/2014/00155/3	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Barrow Offshore Wind Farm Operational Marine Licence. Emergency inter-array cable repairs over the operational lifetime (2014-2026). **Not within the site boundary. No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**

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

[17] Detail on the marine licence activities can be viewed on the public register of marine licence applications and decisions, searching by the marine licence case reference numbers: Marine case management system - Public register - MCMS (marinemanagement.org.uk) URL: marinelicensing.marinemanagement.org.uk/mmofox5/fox/live/MMO_PUBLIC_REGISTER (Last accessed 27 August 2024)

Marine licence case reference number[17]	PAD Category	Description
MLA/2016/00150/3	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	West of Duddon Sands offshore wind farm operation and maintenance activities in relation to the turbines and associated foundations over operational lifetime (2016 until 2037). **No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**
MLA/2016/00151/3	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Walney 1&2 Offshore Wind Farms operation and maintenance marine licence (2016-2032). **Possible in-combination effect.**
MLA/2016/00224/2&3	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Ormonde Offshore Wind Farm operations and maintenance marine licence (2017-2027). **Possible in-combination effect.**
MLA/2023/00035/1	Offshore wind: Operation and maintenance	Walney Extension Offshore Windfarm: Maintenance Works (Jan 2024-Dec. 2024). Blade works campaign as part of O&M of WOW03. **Above sea level and not within the site boundary. No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**

Marine licence case reference number[17]	PAD Category	Description
MLA/2016/00149/3	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Barrow Offshore Wind Farm operations and maintenance licence over lifetime (2016-2026). **Not within the site boundary. No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**
MLA/2023/00259	Offshore wind: Operation and maintenance	Walney Extension Offshore Wind Farm: Installation of Aerodynamic Tip Boosters. Works carried out on the turbine blades. **Above sea level. No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**
MLA/2017/00100/1	Offshore wind: Operation and maintenance	Routine operational and maintenance activities at five offshore substations. Cleaning and repainting of the substation assets. **Above sea level. No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**
MLA/2014/00490/1	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Morecambe Wind Limited - Operational marine licence for inter-array cable repair for West of Duddon Sands Offshore Wind Farm. **Possible in-combination effect.**
MLA/2015/00086/2	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Ormonde Offshore Wind Farm (OWF) Export Cable Repair Replacement and Remediation over operational lifetime (2018-2030). **Possible in-combination effect.**

Marine licence case reference number[17]	PAD Category	Description
MLA/2017/00081/2	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Walney Offshore Wind Farm, Composite Operational and Maintenance Licence. Future cable repair/remediation/protection works on the Walney 1 export cable and for potential repair works on the Walney 1 Offshore Substation Platform. **Possible in-combination effect.**
MLA/2019/00514/1	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Walney Extension Transmission Assets operation and maintenance licence (2020-2043). **Possible in-combination effect.**
MLA/2022/00138	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	West of Duddon Sands Windfarm: Array Cable Stabilisation. Placement of permanent rock and/or rock bag berms to stabilise cable ends at 2 Wind Turbine Generator (WTG) foundations (H11 and H12) + 1 Offshore Substation (OSS). **Possible in-combination effect.**
MLA/2013/00426/2	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Walney Offshore Wind Farm Operational Marine Licence - Inter Array Cable Repair. Emergencies inter-array cable repairs over the operational lifetime of the Walney Offshore Wind Farm (1 & 2). **Possible in-combination effect.**
MLA/2022/00143	Offshore wind: Operation and maintenance; Power cable: Operation and maintenance	Walney 0102 Windfarm: Cable Stabilisation. Construction of rock and/or rock bag berms onto the existing Scour Protection Pads (SPP), with the rock berms extending off the toe of the SPPs onto surrounding seabed. **Possible in-combination effect.**

Marine licence case reference number[17]	PAD Category	Description
Calder, Dalton and Millom Installations and Pipelines decommissioning (no marine licence reference), being considered by OPRED	Oil and gas infrastructure: decommissioning	Reviewing information currently available in the public domain, works appear to be 7 km or more from West of Walney. **No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**

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

Table 7 summarises the pressures exerted by fishing and non-fishing activities and identified those exerted by both (Y: pressure exerted), Activity–pressure interactions are highlighted dark blue to illustrate an in-combination effect. Only fishing activity with no proposed or current fisheries management in place are considered.

Table 7: Pressures exerted by fishing and non-fishing activities.

	Non-fishing activities	Fishing activities	
Potential pressures	**Offshore wind: Operation and maintenance; Power cable: Operation and maintenance**	**Anchored nets and lines**	**Traps**
Abrasion or disturbance of the substrate on the surface of the seabed	Y	Y	Y
Removal of non-target species		Y	Y
Removal of target species		Y	Y

5.1 In-combination pressure sections

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

5.2 Fishing vs Fishing in-combination pressures

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

As noted in Part B (**Section 4.3.1** nets and lines and **Section 4.3.3** traps), impacts from the removal of target and non-target species pressure is not being considered

in detail in this assessment. In-combination impacts from the removal of target and non-target species pressures are more fully assessed under the pressure abrasion, as the feature sea-pen and burrowing megafauna communities is considered not to be at significant risk from these pressures via static gear use in this site (**Section 4.3**). Therefore, the removal pressures are not considered further in this in-combination assessment. The pressures may require further consideration as future evidence becomes available, in conjunction with updated conservation advice from JNCC and Natural England.

The annual average VMS records for over 12 m vessels within the MPA totalled 4 counts (0 counts for anchored nets and lines, and 4 counts for traps). For under 12 m vessels, between 2016 and 2020, the annual average fishing effort estimated to have been derived from the MPA via traps and anchored nets and lines was 42.13 days (42.13 days for anchored nets and lines, and 33.11 days for traps, Annex 1). For the same period (2016-2020), the total fishing effort (under 12s) for both ICES rectangles estimated to have been derived from the MPA were 211 days (45.11 days for anchored nets and lines, and 165.55 days for traps). The fishing effort data is further supported by the estimated live weight landings for under 12 m vessels (both UK and EU) that equal an annual average of 13 t (0.67 t for anchored nets and lines, and 12.64 t for traps), between 2016 and 2020.

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 of anchored nets and lines and traps effort being low (42.13 days) any in-combination impact is considered insignificant.

Therefore, the 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 West of Walney MPA at the levels described.

5.3 Fishing vs non-fishing activities in-combination pressures

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

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

When designated, West of Walney MCZ was co-located with several windfarms (Walney 1, Walney 2, Walney Extension, West of Duddon Sands and Ormonde). Natural England's co-location advice to regulators and industry states that the consented footprint of the windfarms does not count as qualifying MCZ habitat, therefore the footprint of the associated structures does not impact the extent of the

protected features. This applies to the actual footprint of the consented windfarms within the site, not to the wider area licensed for renewable energy development. As such, the total area of the habitat across the site excludes areas currently occupied by the associated windfarm infrastructure. Note this does not preclude consideration of secondary impacts such as scouring, on the attributes of designated features such as the presence and spatial distribution of biological communities. Therefore, any licenced activities associated with the operation and maintenance of windfarms have been considered for any possible in-combination effects with anchored nets and lines and traps (**Table 6**).

Activities associated with the operational maintenance (including power cables) works of offshore windfarms which might cause abrasion or disturbance of the seabed relate to the removal, repair, and reburial of power cables.

As detailed in **section 4.3** abrasion and disturbance of seabed surface substrate, at current activity levels anchored nets and lines and traps are not considered to be causing significant pressure through abrasion and disturbance. It is possible that activities linked to the operational maintenance works of offshore windfarms, in-combination with anchored nets and lines and traps may increase the potential for this pressure to have negative cumulative effects on the designated features of the MPA. Operation and maintenance activities for offshore wind farms; West of Duddon Sands, West of Duddon Sands OFTO, Walney 1, 2, and extension, and Ormonde overlap West of Walney MPA by approximately 195 km². However, it is expected that the isolated operational maintenance works themselves will have a small spatial footprint on the seabed and therefore the total area impacted from these activities in combination with fishing is only over a small area and for a limited time. Although there may be a direct impact from any maintenance activities, given the small spatial scale of the seabed footprint and the temporary nature of the works, it is unlikely there would be a significant risk of hindering the achievement of the conservation objectives. Therefore, the scale of the in-combination impacts from abrasion and disturbance of the substrate on the surface of the seabed between anchored nets and lines and traps and non-fishing activity is considered insignificant.

There may be other operational submarine cables within the MPA or the buffer that are already in-situ and are unlikely to have any direct or indirect pressure pathway or any residual abrasion/removal pressure in-combination with the assessed fishing activity. Any abrasion/removal pressure from submarine cable operation and maintenance activity is unlikely to have a significant risk of in-combination impacts with the assessed fishing activity.

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

5.4 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 for the West of Walney MPA.

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

6 Conclusion and proposed management

Part A of this assessment concluded that anchored nets and lines, bottom towed gear, and traps, alone, are likely to have a significant effect on the designated features of West of Walney MPA.

Part B of this assessment concluded that, at the activity levels described, use of bottom towed gear may cause a significant risk of hindering 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 whilst anchored nets and lines, and traps will not.

Part C of this assessment concluded that, at the activity levels described, use of anchored nets and lines and traps, in combination with each other and with other relevant activities, will not result in a significant risk of hindering the achievement of the conservation objectives of the MPA.

To ensure that fishing activities do not result in a significant risk of hindering the achievement of the conservation objectives of the MPA, MMO will implement a byelaw to prohibit the use of bottom towed gear throughout West of Walney 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 Methodology[5] document.

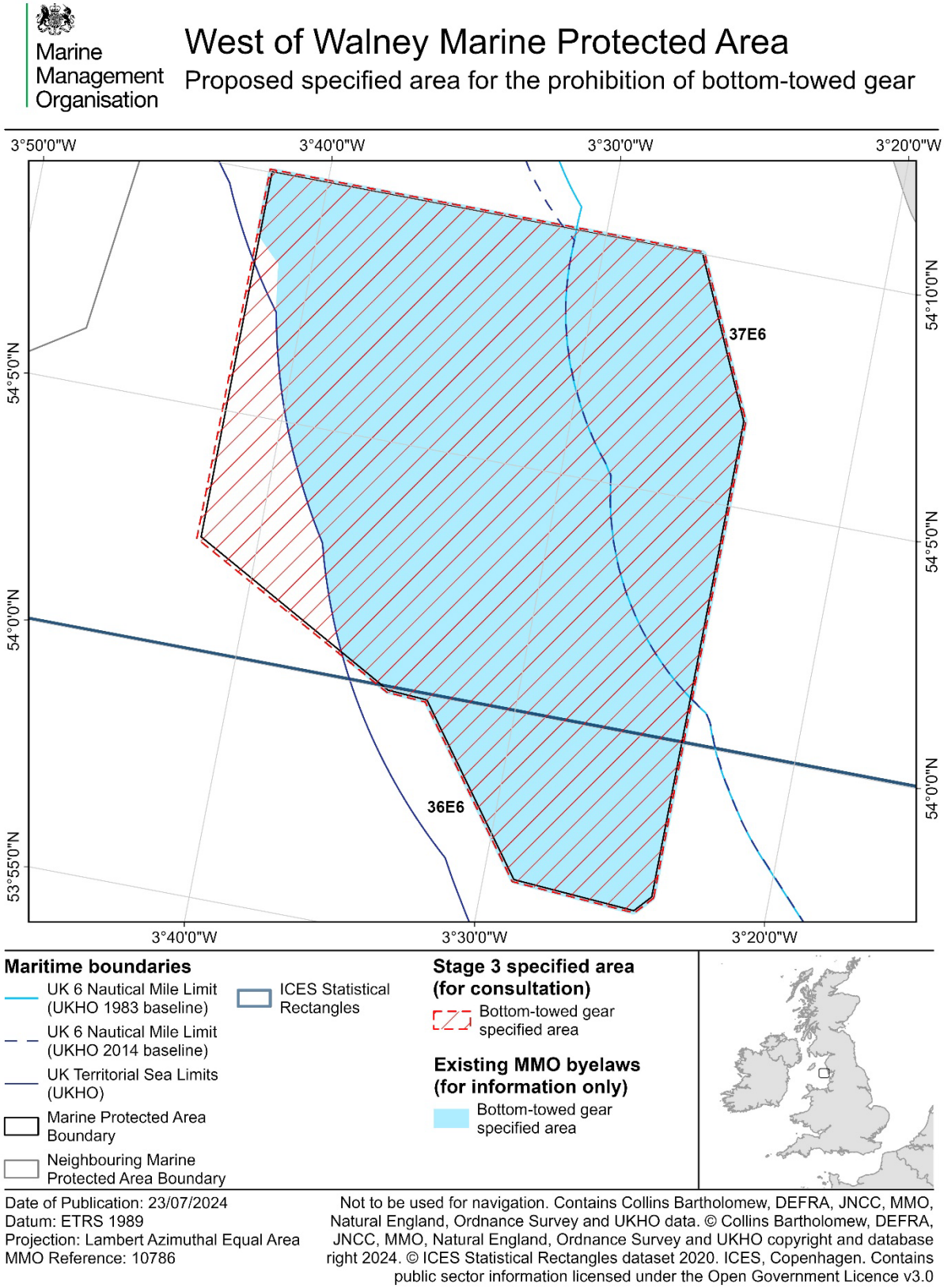

Figure 2: Map of proposed management.

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; and
- 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).

			2016		2017		2018		2019		2020		2021		Total 2016-2021		Average 2016-2021
Gear group	**Gear code**	**Nation group**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**
Demersal Seine	SPR	EU	7	100	5	100	0	0	0	0	0	0	0	0	12	100	2
	SPR total		**7**	**100**	**5**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	0	**12**	100	**2**
Demersal Seine total			**7**	**13**	**5**	**4**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**12**	**2**	**2**
Demersal trawl	OTB	EU	5	14	1	1	1	1	0	0	4	21	0	0	11	2	2
	OTB	UK	32	86	126	99	140	99	118	100	15	79	12	100	443	98	74
	OTB total		**37**	**84**	**127**	**96**	**141**	**97**	**118**	**86**	**19**	**53**	**12**	**48**	**454**	**87**	**76**
	OTT	UK	1	100	2	100	5	100	14	100	0	0	0	0	22	100	4
	OTT total		**1**	**2**	**2**	**2**	**5**	**3**	**14**	**10**	**0**	**0**	**0**	**0**	**22**	**4**	**4**
	TBB	EU	3	100	0	0	0	0	6	100	14	82	7	54	30	77	5
	TBB	UK	0	0	0	0	0	0	0	0	3	18	6	46	9	23	2
	TBB total		**3**	**7**	**0**	**0**	**0**	**0**	**6**	**4**	**17**	**47**	**13**	**52**	**39**	**7**	**7**
	TBN	UK	3	100	3	100	0	0	0	0	0	0	0	0	6	100	1
	TBN total		**3**	**7**	**3**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**6**	**1**	**1**
Demersal trawl total			**44**	**85**	**132**	**96**	**146**	**99**	**138**	**93**	**36**	**82**	**25**	**81**	**521**	**93**	**87**
Midwater Trawl	OTM	UK	1	100	0	0	0	0	0	0	0	0	0	0	1	100	0
	OTM total		**1**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**100**	**0**
Midwater Trawl total			**1**	**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**
Traps	FPO	EU	0	0	0	0	0	0	1	9	0	0	0	0	1	4	0
	FPO	UK	0	0	0	0	1	100	10	91	8	100	6	100	25	96	4

			2016		2017		2018		2019		2020		2021		Total 2016-2021		Average 2016-2021
Gear group	Gear code	Nation group	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
	FPO total		0	0	0	0	1	100	11	100	8	100	6	100	26	100	4
Traps total			0	0	0	0	1	1	11	7	8	18	6	19	26	5	4
Grand total			52	0	137	0	147	0	149	0	44	0	31	0	560	0	93

Table A1.2. UK live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of West of Walney MPA (2016 to 2020).

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

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

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

Table A1.4. Percentage of each ICES rectangle intersected by the MMO section of West of Walney MPA.

ICES rectangle	Percentage overlap (%)
36E6	1.40
37E6	10.42

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

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

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

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Dredge	DRB	0	0	0	0.01	0	0.01	0.002
Dredge total		**0**	**0**	**0**	**0.01**	**0**	**0.01**	**0.002**
Midwater hook/lines	LHM	0	0	0	0	0	0	0
Midwater hook/lines total		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Traps	FPO	0	0	0	0.02	0	0.02	0.004
Traps total		**0**	**0**	**0**	**0.02**	**0**	**0.02**	**0**
Grand total		**0**	**0**	**0**	**0.03**	**0**	**0.03**	**0.006**

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

Gear group	SAR category	2016	2017	2018	2019	2020
Demersal Seines	Surface	0	0	0	0	0
	Subsurface	0	0	0	0	0
Dredges	Surface	0	0	0	0	0
	Subsurface	0	0	0	0	0
Demersal Trawls	Surface	0.19	0.35	0.32	0.37	0.23
	Subsurface	0.07	0.11	0.09	0.17	0.15
Bottom Towed Gear	Surface	0.19	0.35	0.32	0.37	0.23
	Subsurface	0.07	0.11	0.09	0.17	0.15

Table A1. 8. Fishing effort (days) recorded by UK vessels under 12 m in length, separated by gear type for the area of West of Walney MPA that intersects ICES rectangles 36E6 and 37E6 (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).

ICES rectangle	Gear group	Fishing effort (days at sea)						
		2016	2017	2018	2019	2020	Total (2016 to 2020)	Annual average (2016 to 2020)
36E6	Demersal trawl	28.55	25.63	28.23	15.52	10.52	108.46	21.69
	Bottom towed gear total	**28.55**	**25.63**	**28.23**	**15.52**	**10.52**	**108.46**	**21.69**
	Anchored nets and lines	8.23	7.81	4.48	1.77	3.65	25.94	5.19
	Traps	34.69	37.71	26.78	31.78	24.59	155.55	31.11
	Static gear total	**42.92**	**45.53**	**31.26**	**33.55**	**28.23**	**181.49**	**36.30**
37E6	Demersal trawl	3.07	2.84	3.65	2.11	1.37	13.05	2.61
	Dredges	0.11	0.29	0.01	0.10	0.01	0.53	0.10
	Bottom towed gear total	**3.18**	**3.14**	**3.67**	**2.21**	**1.39**	**13.58**	**2.72**
	Midwater gill drift	0.03	0	0	0	0	0.03	<0.01
	Midwater hook/lines	0	0.29	0.43	0.32	0	1.05	0.21
	Midwater gear total	**0.03**	**0.29**	**0.43**	**0.32**	**0**	**1.08**	**0.21**
	Anchored nets and lines	4.58	4.79	3.15	3.19	3.46	19.17	3.83
	Traps	0.08	2.70	2.13	3.25	1.83	10.00	2.00
	Static gear total	**4.66**	**7.49**	**5.28**	**6.44**	**5.29**	**29.16**	**5.83**
MPA total		**79.34**	**82.08**	**68.87**	**58.04**	**45.43**	**333.76**	**66.75**