Marine Management Organisation

MMO Stage 3 Site Assessment: Margate and Long Sands MPA (Draft)

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Executive summary

This assessment analyses the impact of anchored nets and lines, bottom towed gear, and traps on the designated feature ‘sandbanks which are slightly covered by sea water all the time’ and its sub-features ‘subtidal coarse sediment’, ‘subtidal mixed sediments’ and ‘subtidal sand’ in the MMO portion of Margate and Long Sands Marine Protected Area (MPA) to determine whether an adverse effect on site integrity can be excluded. The assessment sets out the evidence considered and analyses the quality of that evidence.

The assessment finds that the ongoing use of bottom towed gear may result in an adverse effect on the site integrity of the MPA. Management measures will therefore be implemented for bottom towed gear for the MMO portion of Margate and Long Sands MPA.

1 Introduction

This assessment considers whether fishing activities are compatible with the conservation objectives of Margate and Long Sands MPA.

This site is designated as a special area of conservation (SAC). This assessment uses the best available evidence to review site characteristics and fishing activity and determine if fishing activity is causing an adverse effect on the integrity 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.

2 Site information

2.1 Overview

The following Natural England conservation advice package was used for background on site geography, designations, features, and conservation objectives in this assessment: Natural England Conservation Advice – Margate and Long Sands SAC[1]

Margate and Long Sands MPA starts just north of the Thanet coast of Kent, extending in a north-easterly direction to the outer reaches of the Thames Estuary and covers an area of 649 km^2 (**Figure 1**). It straddles the 6 nautical miles (nm) limit (1983 baseline), which marks the seaward boundary of the Kent and Essex IFC District within which fishing is regulated by the Kent and Essex Inshore Fisheries and Conservation Authority (IFCA) (0 to 6 nm). MMO are responsible for managing fishing in English waters beyond 6 nm. The area of the site within MMO's jurisdiction is 235 km^2. Its relevant statutory nature conservation body is Natural England (0 to 12 nm).

Margate and Long Sands MPA was designated as an SAC in 2017 to protect the Annex I habitat 'sandbanks which are slightly covered by sea water all the time'. The sandbanks are composed of well-sorted sandy sediments, with the upper crests of some of the larger banks drying out at low tide. The troughs between banks consist of muddier and more gravelly sediments.

Subtidal sand is found throughout Margate and Long Sands MPA and forms most of the sediment within the site. This sub-feature is heavily influenced by the strong tidal currents within the site and as a result, parts of this sub-feature are highly mobile. Typically, this sub-feature supports communities of lower diversity, particularly around the crests of the sandbanks, which are dominated by polychaete worms and amphipods.

The majority of the subtidal coarse sediment is found within the inshore (0 to 6 nm) portion of the site, but some is also present towards the northern end of the site, within 6 to 12 nm, and is closely associated with subtidal mixed sediments. The sands and gravels of this sub-feature typically provide an ideal habitat for many benthic marine species, such as polychaetes, crustacea, molluscs and echinoderms, with mobile epifauna including crabs, brown shrimp, squid and commercially important fish species such as sole and herring.

[1] Margate and Long Sands conservation advice package - designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UK0030371 (last accessed 21 June 2023)

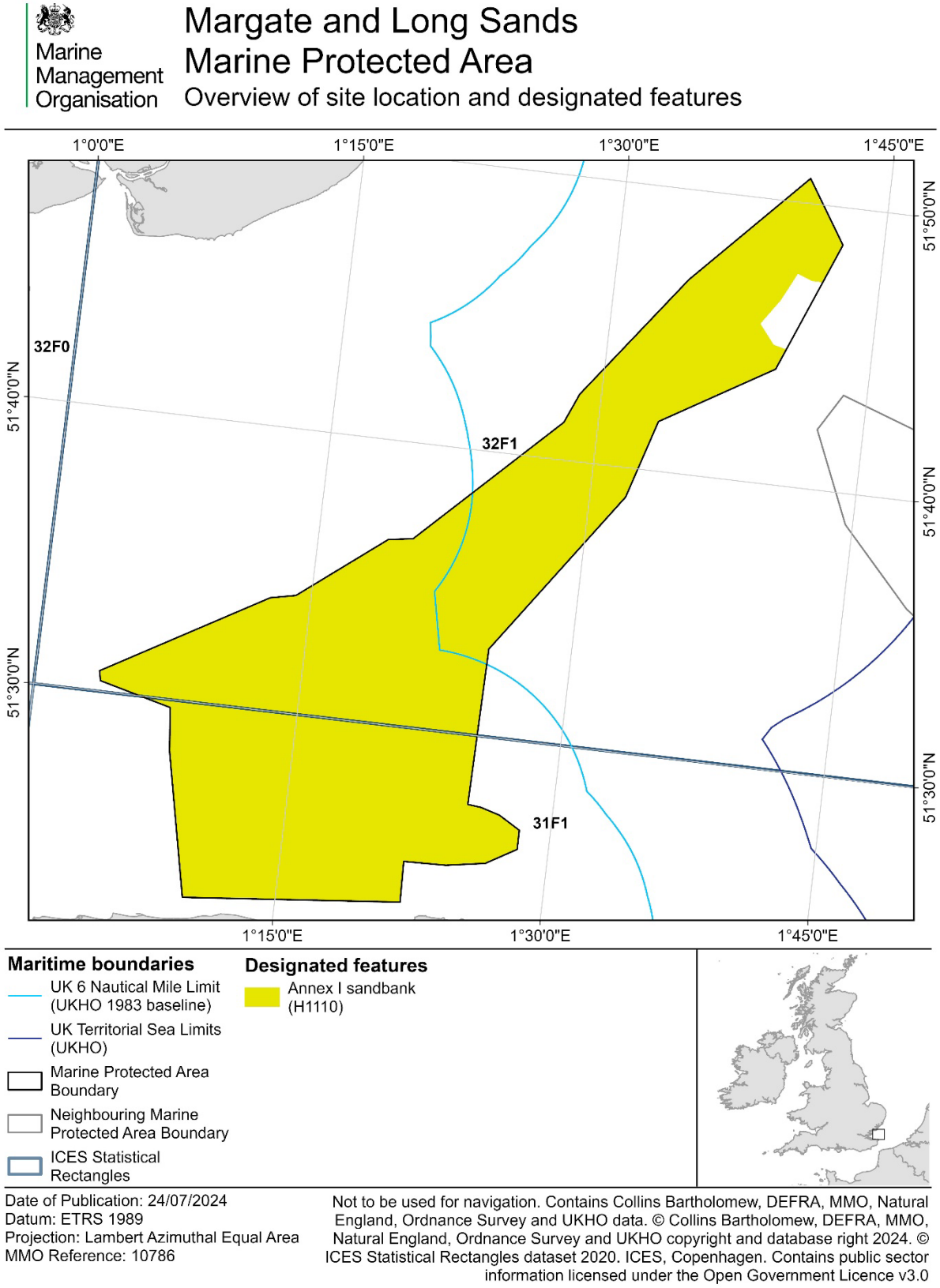

Figure 1: Margate and Long Sands MPA location overview.

Subtidal mixed sediments are only located at the northeastern tip of the site predominantly surrounded by subtidal sand, but also adjacent to a small occurrence of subtidal coarse sediment. Consisting of mixed gravelly sands and muddy sands, this sub-feature provides an ideal habitat for many benthic marine species including a range of bivalves and polychaete worms.

The reef-forming Ross worm (*Sabellaria spinulosa*), which when formed as a reef qualifies as an Annex I habitat (biogenic reef), is also present in the northeast of the site, however the available data indicate that the distribution of *S. spinulosa* is patchy and that aggregations form crusts rather than reefs. Therefore, it is not a designated feature of the site.

The designated feature, sub-features, and their conservation objectives are set out in **Table 1**. The conservation objectives for the sub-features of Margate and Long Sands MPA have been set based on a vulnerability assessment completed when the site was designated in 2017.

Table 1: Designated features, including supporting habitats, and conservation objectives.

Designated feature	Sub-feature	Conservation objective
Sandbanks which are slightly covered by sea water all the time	Subtidal coarse sediment	Maintain in favourable condition
	Subtidal mixed sediments	
	Subtidal sand	

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. More information on this can be found in Natural England's supplementary advice on conservation objectives[2].

2.2 Scope of this assessment

The scope of this assessment covers fishing activities alone, and relevant activities in combination with fishing. It does not cover fishing in areas of this site inshore of 6 nm, for which Kent and Essex IFCA is the regulator.

[2] Margate and Long Sands supplementary advice on conservation objectives - designatedsites.naturalengland.org.uk/Marine/SupAdvice.aspx?SiteCode=UK0030371 (last accessed 21 June 2023)

3 Part A - Identified pressures on the MPA

Part A of this assessment was carried out in a manner that is consistent with the 'likely significant effect (LSE)' test required by regulation 63 of the Conservation of Habitats and Species Regulations 2017[3] and regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017[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. if the effect/impact of the pressure is not likely to be significant; 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. if the potential scale or magnitude of any effect is likely to be significant;
    c. if it is not possible to determine whether the magnitude of any effect is likely to be significant; or
    d. if MMO has information that the activity or pressure is occurring in the site and/or does need to be considered further.

[3] For more information: The Conservation of Habitats and Species Regulations 2017 - www.legislation.gov.uk/uksi/2017/1012/regulation/63

[4] For more information: The Conservation of Offshore Marine Habitats and Species Regulations 2017 - www.legislation.gov.uk/uksi/2017/1013/regulation/28

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);
- ICES rectangle level fishing effort data in days (reference: MMO1264);
- expert opinion from inshore fisheries and conservation officers; and
- swept area ratio (SAR) data.

For more information about the above evidence sources, please see the Stage 3 MPA Site Assessment Methodology document[5], which describes each type of fishing activity evidence and summarises the strengths and limitations of each source.

[5] Stage 3 MPA Site Assessment Methodology document: www.gov.uk/government/publications/stage-3-site-assessments (last accessed 08 August 2023)

Table 2: Fishing activities covered by this assessment present in VMS records (2016-2021) and landings data (2016-2020) for the MMO portion of Margate and Long Sands MPA.

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

3.2 Pressures and activities screened out

This section identifies activities or pressures that are **occurring but do not need to be considered** for the MMO portion of Margate and Long Sands MPA.

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

- **Midwater gears:** although the use of midwater gears does occur within Margate and Long Sands 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 Margate and Long Sands MPA is not considered to be capable of affecting the designated features other than insignificantly and is not considered further within this assessment.
- **Miscellaneous gear:** 'other gear' has been declared as having been used to land fish from ICES statistical rectangles overlapping the site. 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 these gears are not considered further within this assessment.

3.3 Pressures to be taken forward to Part B

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

- Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines[6]
- Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear[7]; and
- Stage 3 Fishing Gear MPA Impacts Evidence Traps[8].

[6] Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 08 August 2024).
[7] Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 08 August 2024).
[8] Stage 3 Fishing Gear MPA Impacts Evidence Traps: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 08 August 2024).

To determine whether a pressure should be taken forward for this particular site, **Table 3** uses the information from the Impacts Evidence documents, alongside site level information, including sensitivity assessments, risk profiling of pressures from conservation advice packages, and Natural England 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 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 the feature is not sensitive.

Table 3: Summary of pressures on designated features of Margate and Long Sands MPA to be taken forward to Part B.

Potential pressures	Designated features								
	Annex I: Sandbanks which are slightly covered by sea water all the time								
	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 polycyclic aromatic hydrocarbon (PAH) contamination									
Introduction of light									
Introduction of microbial pathogens									
Introduction or spread of invasive non-indigenous species									
Litter									
Organic enrichment									
Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion									
Physical change (to another sediment type)									
Removal of non-target species									
Removal of target species									
Smothering and siltation rate changes (light)									
Synthetic compound contamination									
Transition elements and organo-metal contamination									

4 Part B - Fishing activity assessment

Part B of this assessment was carried out in a manner that is consistent with the 'appropriate assessment' required by regulation 63 of the Conservation of Habitats and Species Regulations 2017[3] and regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017[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 Margate and Long Sands MPA conservation advice package[1] and are shown in **Table 4**.

Table 4: Relevant favourable condition targets for identified pressures on sandbanks which are slightly covered by sea water all the time and its sub-features subtidal coarse sediment, subtidal mixed sediments and subtidal sand.

Attribute	Target	Relevant pressures
Distribution: presence and spatial distribution of biological communities	Maintain the presence and spatial distribution of 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; and • smothering and siltation rate changes (light).
Extent and distribution	Maintain the total extent and spatial distribution.	
Structure and function: presence and abundance of key structural and influential species	Maintain OR Recover OR Restore the abundance of listed typical species, to enable each of them to be a viable component of the habitat.	
Structure: sediment composition and distribution	Maintain the distribution of sediment composition types across the feature (and each of its sub-features).	
Structure: species composition of component communities	Maintain the species composition of component communities.	
Structure: topography*	Maintain the presence of topographic features, while allowing for natural responses to hydrodynamic regime, by preventing erosion or deposition through human-induced activity.	
Structure: volume*	Maintain the existing (where no previous evidence exists) or best-known (where some evidence exists) volume of sediment in the sandbank, allowing for natural change.	
Supporting processes: water quality - turbidity (habitat)	Maintain natural levels of turbidity (for example concentrations of suspended sediment, plankton and other material) across the habitat.	

Attributes marked with superscript symbol (*) are relevant to the annex I 'Sandbanks which are slightly covered by sea water all the time' designated feature only (and not its sub-features subtidal coarse sediment, subtidal mixed sediments and subtidal sand).

4.1 Fisheries access and existing management

Non-UK vessels can operate within Margate and Long Sands MPA, provided that they have a licence issued by the UK to do so. As Margate and Long Sands MPA lies entirely within the 12 nm zone, the only non-UK vessels that can operate within the site are Belgian and French vessels licensed by the UK to do so. Nationalities which fished within the MPA from 2016 to 2020 include Belgian and UK vessels. VMS records indicate that Belgian vessels are most prevalent.

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

Margate and Long Sands MPA is subject to the following relevant legislative catch restrictions that are applicable to fisheries occurring in the site:

The Margate and Long Sands European Marine Site (Specified Areas) Bottom Towed Fishing Gear Byelaw 2017[10]

The purpose of the 'Margate and Long Sands European Marine Site (Specified Areas) Bottom Towed Fishing Gear Byelaw 2017' is to protect two specified areas of sandbank in Margate and Long Sands MPA from the impacts of bottom towed fishing gear. This was based on biotope maps in the Grab Sampling of Margate and Long Sands SAC report written by the Institute of Estuarine and Coastal Studies for Natural England (Bhatia, 2015), which identified the most stable and sensitive areas within the MPA.

4.2 Fishing activity summary

Table A1. 1 to **Table A1.7** in **Annex 1** display a detailed breakdown of fishing activity within the MMO portion of Margate and Long Sands MPA. The following analysis considers only fishing activities not screened out in Part A of this assessment. VMS record counts and under 12 m UK fishing effort (days) were available from 2016 to 2021 and landings data and SAR values were available from 2016 to 2020. When discussing weights from landings in this section, figures used are a total of weights from UK and EU member states.

For vessels under 12 m in length, landings data have been used to determine activity in the absence of VMS records. These data are recorded at ICES rectangle level and have been attributed to the MMO portion of Margate and Long Sands MPA based on

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

[10] The Margate and Long Sands European Marine Site (Specified Areas) Bottom Towed Fishing Gear Byelaw 2017 - www.gov.uk/government/publications/the-margate-and-long-sands-european-marine-site-specified-areas-bottom-towed-fishing-gear-byelaw (last accessed 26 July 2023)

the 6.89 % of the ICES rectangle intersected by the MMO portion of the MPA. Because of this, there are limitations on the accuracy of this data, as it is only possible to estimate how much activity is occurring in the MPA based on the average activity across the entire rectangle, rather than at specific locations within the site. Fishing effort days are derived from logbooks and are also collected at ICES rectangle level and then apportioned accordingly.

The gear group with the highest under 12 m landings within the MMO portion of Margate and Long Sands MPA was traps, averaging approximately 13 tonnes (t) per year. Landings from traps were highest in 2017 (26 t) and then decreased to 13 t in 2020. Fishing effort for under 12 m vessels using traps averaged approximately 21 days per year. Under 12 m landings from dredges were the next most prevalent, averaging approximately 11 t per year, with highest landings in 2018 (31 t), decreasing to 1 t in 2020. Fishing effort for under 12 m vessels using dredges, however, only averaged approximately 1 day per year. There were similar levels of under 12 m landings from anchored nets and lines and demersal trawls, both averaging approximately 8 t per year. Landings from anchored nets and lines by under 12 m vessels per year were mainly from gill nets (3 t), set gill nets (2 t) and trammel nets (2 t). Fishing effort for under 12 m vessels using anchored nets and lines averaged approximately 54 days per year. Demersal trawl landings from under 12 m vessels were mainly from bottom otter trawls, averaging approximately 6 t. Fishing effort for under 12 m vessels using demersal trawls averaged approximately 41 days.

Demersal trawls accounted for 99% of the total VMS records between 2016 and 2021 for over 12 m vessels in the MMO portion of Margate and Long Sands MPA with an annual average of 97 records, landing an apportioned total of approximately 6 t per year. Demersal trawl records were concentrated in the northeastern tip of the site and the southeastern corner of the MMO portion of the site. Records were highest in 2016 (354 records) and 2017 (188 records) and then decreased dramatically over subsequent years to just 10 records in 2020 and 0 records in 2021. Demersal trawl VMS records were previously concentrated in the northeastern tip and the southeastern corner of the offshore portion of the MPA until The Margate and Long Sands European Marine Site (Specified Areas) Bottom Towed Fishing Gear Byelaw 2017[10] was brought into force in August 2017.

SAR analysis of demersal trawl activity produced mean surface and subsurface SAR values for C-squares intersecting the MMO portion of Margate and Long Sands MPA of 0.99 and 0.31 respectively in 2016, and 0.11 and 0.05 respectively in 2020. An SAR value of 1 would mean that on average these C-squares were passed over completely by demersal trawls once every year. Maximum surface and subsurface SAR values for C-squares intersecting the MMO portion of Margate and Long Sands MPA for demersal trawls were 7.1 and 2.09 respectively in 2016, and 1.32 and 0.43 respectively in 2020. 60 % of demersal trawl records were for beam trawls,

averaging approximately 5 t of landings per year. The remaining 40 % were from bottom otter trawls, averaging approximately 2 t per year. There were only 4 VMS records for dredges within the site and these occurred in 2020, landing a total of 1 t, which averages approximately 0.2 t per year.

There was no evidence of the use of demersal seines in the site.

4.3 Pressures by gear type

The Stage 3 Fishing Gear MPA Impacts Evidence documents for anchored nets and lines[6], bottom towed gear[7] and traps[8] collate and analyse the best available evidence on the impacts of different fishing gears on MPA features. This section summarises the analyses and conclusions of those documents, and considers these alongside site level information, including the nature and condition of the habitats and species present, conservation objectives, intensity of fishing activity taking place and exposure to natural disturbance.

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

Information about the biotopes in the site was obtained from the Grab Sampling of Margate and Long Sands SAC report written by the Institute of Estuarine and Coastal Studies for Natural England (Bhatia, 2015). Biotopes were screened out of this assessment if maps from this report indicated they were only present in the inshore (0 to 6 nm) portion of the site. The biotopes considered in this assessment are shown in **Table 5** alongside their sensitivities to the relevant pressures from anchored nets and lines, bottom towed gear, and traps, which were obtained from Natural England's conservation advice[1].

In the context of MPA assessment, the pressures removal of target and non-target species refer to any damage, loss, or removal of species defined as a designated feature or integral to the integrity of a designated feature (for example key structural or influential species). This may occur through intentional or unintentional catch associated with the act of commercial fishing. For the purposes of benthic feature assessments, the physical effects of fishing gears on seabed communities are best addressed through the assessment of abrasion and penetration pressures. As there are no designated species features associated with Margate and Long Sands MPA, and the detail of key structural and influential species is yet to be fully defined, MMO concludes that, in most cases, the impacts from target and non-target removal pressures can be scoped out from further assessment of this site. Where separate consideration of these pressures is required, this has been stated. MMO acknowledges that these pressures may require further consideration as a result of

any future evidence review, in conjunction with updated conservation advice from Natural England.

Table 5. Sediment biotopes found in the MMO portion of Margate and Long Sands MPA and their resistance, resilience and sensitivity to the relevant pressures from anchored nets and lines, bottom towed gear, and traps.

Broad-scale habitats	Biotopes	Resistance	Resilience	Sensitivity
Subtidal coarse sediment	Dense *Lanice conchilega* and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand (McQuillan and Tillin, 2006)	• Low resistance to removal of non-target species from all gears; and • high resistance to remaining pressures and gears.	High resilience to all pressures and gears	Not sensitive or low sensitivity to all pressures and gears
Subtidal sand	*Abra alba* and *Nucula nitidosa* in circalittoral muddy sand or slightly mixed sediment (Tillin and Budd, 2023)	• Low resistance to removal of non-target species from all gears; • low resistance to removal of target species from dredges and traps; and • medium resistance to remaining pressures and gears.	• Medium resilience to removal of target species from dredges and traps; and • high resilience to remaining pressures and gears.	• Medium sensitivity to removal of target species from dredges, and traps; and • low sensitivity to remaining pressures and gears.
	Fabulina fabula and *Magelona mirabilis* with venerid bivalves and amphipods in infralittoral compacted fine muddy sands (Tillin and Rayment, 2022)			
	Infralittoral mobile clean sand with sparse fauna (Tillin et al., 2019)	• Low resistance to the abrasion and removal of non-target species pressures from all gears; and • medium resistance to the changes in suspended solids and penetration pressures from bottom towed gears; and	High resilience to all pressures and gears	Not sensitive or low sensitivity to all pressures and gears

Broad-scale habitats	Biotopes	Resistance	Resilience	Sensitivity
		• high resistance to the smothering pressure from bottom towed gear.		
	Nephtys cirrosa and *Bathyporeia* spp. in infralittoral sand (Tillin and Garrard, 2022)	• Low resistance to the abrasion and removal of non-target species pressures from all gears; and • medium resistance to the changes in suspended solids pressure from bottom towed gears; and • high resistance to the smothering pressure from bottom towed gear.		Not sensitive or low sensitivity to all pressures and gears
	Circalittoral fine sand	No information available		
	Infralittoral fine sand			
Subtidal mixed sediments	Polychaete worm reefs on sublittoral sediment			

Definitions of resistance, resilience and sensitivity are detailed in MarLIN's Marine Evidence based Sensitivity Assessment (Tyler-Walters et al., 2018).

4.3.1 Anchored nets and lines

The main pressure from anchored nets and lines on the site's feature 'Annex I sandbanks which are slightly covered by sea water all the time' and its sub-features 'subtidal coarse sediment', 'subtidal mixed sediments' and 'subtidal sand' was identified in **Table 3** as abrasion or disturbance of the substrate on the surface of the seabed.

Impacts on sandbanks and their sediment sub-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.

Section 4.2 describes fishing activity within the MMO portion of Margate and Long Sands MPA and notes that there were no VMS records for anchored nets and lines in the site and landings data for UK under 12 m vessels averaged approximately 8 t and 56 days per year.

The only data showing fishing activity using these gears in the site is from under 12 m landings and UK under 12 m fishing effort (days), which are both collected at ICES rectangle level and then apportioned to the site based on percentage overlap. This reduces the confidence in the actual levels of activity taking place within the site, as it suggests fishing activity is distributed equally across the rectangle. As this data does not indicate where the activity occurs within the site, if it occurs at all, the use of anchored nets and lines may or may not be occurring over all three sediment sub-features.

Abrasion impacts are greater on subtidal mixed sediments and subtidal coarse sediment compared to subtidal sand, as the coarser habitats often contain populations of sessile epifauna. As per section 9.3 of the anchored nets and lines Impacts Evidence document[6], 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. 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 (Hall et al., 2008).

All the relevant biotopes are either not sensitive or have low sensitivity to the relevant pressure from anchored nets and lines. The site is subject to the high hydrodynamic energy of the Southern North Sea. It is likely that biological communities that dominate in Margate and Long Sands MPA are acclimatised to some level of disturbance and will therefore have a degree of resilience to abrasion pressures. Given the relatively low intensity of anchored nets and lines activity within the site, together with the low scale of footprint for impacts from anchored nets and lines, and no current evidence to suggest sensitive biotopes are present; the risk of abrasion is considered unlikely to occur above the pressure benchmark for the sediment sub-features of the site.

Therefore, **MMO concludes that the ongoing use of anchored nets and lines, at the activity levels described will not result in an adverse effect on site integrity for Margate and Long Sands MPA.**

4.3.2 Bottom towed gear

The main pressures from bottom towed gear on the site's feature 'Annex I sandbanks which are slightly covered by sea water all the time' and its sub-features 'subtidal coarse sediment', 'subtidal mixed sediments' and 'subtidal sand' were identified in **Table 3** and are:

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

Pressures marked with matching superscript symbols (Δ and *) have been consolidated due to the similar nature of their impacts on the sediment features.

Section 4.2 describes fishing activity within the MMO portion of Margate and Long Sands MPA and notes that the use of demersal trawls and dredges in the site appears to be declining. As a result, the mean surface SAR value for demersal trawls declined from 0.99 in 2016 to 0.11 in 2020.

Communities in subtidal coarse sediment are 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 gear leading to reduced diversity, abundance and occurrence. There is limited information on the impacts of bottom towed gear on subtidal sand, but 'clean' sand and 'well sorted' sediments generally appear to have greater resilience to and recovery from, fishing disturbance. As the mud fraction of sand increases (for example muddy sand vs coarse sand) recovery times also increase, making muddy sediments more sensitive.

As per section 8.4 of the bottom towed gear Impacts Evidence document[7], the abrasion and penetration pressures from this gear type can have both biological and physical impacts. Physical impacts are unlikely, however, to significantly impact the large-scale topography of the sandbank feature. 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. Furthermore, the close contact interaction between the fishing gear and seabed can also alter the habitat structure and attract short-term scavengers.

Contact of bottom towed gear with the seabed mixes the top layer of sediment and may cause suspension of these sediments in the water column and smothering of biological communities. Sediments and faunal communities react differently to this pressure depending on grain size, the degree of sediment impaction and frequency/severity of the pressure upon them. At certain levels of intensity this pressure has the potential to impact on the species of a site, however the communities that live in sediment habitats will be adapted to some level of sedimentation in accordance with rates of natural disturbance.

The subtidal coarse sediment biotope, 'Dense *Lanice conchilega* and other polychaetes in tide-swept infralittoral sand and mixed gravelly sand' (McQuillan and Tillin, 2006), is listed as having no sensitivity to abrasion, penetration, and smothering from bottom towed gear (**Table 5**). It should be noted, however, that this sensitivity assessment is based on a benchmark of a single physical pressure event. Exposure to consecutive pressure events before the biotope has fully recovered, would increase its sensitivity. This biotope also has high resilience to all pressures from all relevant gears, but it should be noted that high resilience is defined as full recovery from a single physical pressure event within two years. As described in **section 4.2**, maximum surface SAR values for demersal trawls in the site ranged from 7.10 in 2016 to 1.32 in 2020 (**Table A1. 6**), which shows that some areas of the site were passed over by demersal trawls seven times a year in 2016 and more than once a year in 2020. These areas would not have had the two years required to fully recover between each trawl event, which would impact the attributes of the designated features in the site with recover condition targets.

L. conchilega (sand mason worms) also have the potential to stabilise sediments and allow for the colonisation of highly sensitive *S. spinulosa* reefs, and so are considered an important supporting feature in the site. Sediment sub-features are not delineated with clear boundaries but with more of a gradient as one sub-feature transitions into another. The sand mason worms in the subtidal coarse sediment sub-feature may therefore support the colonisation of the 'polychaete worm reefs on sublittoral sediment' biotope within the subtidal mixed sediments sub-feature. Although sensitivity information is unavailable for this biotope's habitat level, it is available at the next habitat level for the biotope '*S. spinulosa* on stable circalittoral mixed sediment' (Tillin et al., 2022) and *S. spinulosa* has been identified in the MMO portion of the site (Bhatia, 2015). This biotope is known to be particularly sensitive to bottom towed gears (Kaiser et al., 2006) and can potentially take substantial time to recover.

The subtidal sand biotopes with medium sensitivity to the removal of target species pressure from dredges (**Table 5**) are characterised by a number of bivalve species that are often targeted by commercial fishers. Dredges that target these bivalves are likely to be efficient at removing them. The removal of enough of these bivalves could lead to a change in biotope to one more dominated by polychaetes. Fishing with demersal trawls

generally also causes damage and mortality to the characterising species of these biotopes via the abrasion and penetration pressures. Beam trawling, for example, decreases the density of common echinoderms, polychaetes and molluscs (Tillin and Budd, 2023). Studies suggest, however, that the biological assemblages of these biotopes can recover rapidly so they are listed as having high resilience and low sensitivity to abrasion and penetration from demersal trawls and demersal seines.

The site is subject to the high hydrodynamic energy of the Southern North Sea, so it is likely that biological communities that predominate in Margate and Long Sands MPA are acclimatised to some level of disturbance. This could explain why the majority of biotopes present within the site are listed as having low sensitivity to abrasion and penetration from bottom towed gear. However, this dominance could be the result of decades of bottom towed fishing activity that have shifted baselines for biological community structures towards more resilient, endemic fauna. The first pass of a trawl has the largest and most damaging initial impact on biomass and production of sediments, causing high levels of mortality (Hiddink et al., 2006). Subsequent passes have additional effects and repeated passes allow little time for species to recover. This contributes to a shift in the biological community, removing the most sensitive species while allowing resilient organisms to remain, suggesting that infrequent trawling may be sufficient to maintain a community in an altered state. Despite the majority of the biotopes in the site being listed as either not sensitive or having low sensitivity to the relevant pressures, SAR values indicate that some areas of the site are being exposed to consecutive demersal trawl events before they have had the opportunity to fully recover. This suggests that they are being maintained in an altered state where sensitive species are not given the opportunity to colonise.

Margate and Long Sands MPA was first designated as a Site of Community Importance (SCI) in 2010 because of its sandbank feature. The specific biotopes for the site were later identified by surveys conducted in 2014 (Bhatia, 2015). Scientific literature suggests that a reduction in physical disturbance to the medium sensitivity biotopes within the site may lead to the development of a community with larger, more fragile species including large bivalves (Tillin and Rayment, 2022; Tillin and Budd, 2023). This change in biotopes could signify the returning of the site back to its natural state before the industrialisation of fishing in the 1920s caused severe damage to North Sea sandbank macrofauna communities (Plumeridge and Roberts, 2017).

Bottom towed gear contacts a much larger area of the seabed than static gears meaning that they have an impact on a spatial scale much larger than anchored nets and lines or traps. They have the ability to change community assemblages and therefore cause shifts in the sediment biotopes of a site. The site’s biotopes were only fully mapped in 2014 (Bhatia, 2015), meaning they had already been subjected to decades of bottom towed gear activity. This could be why the site is now dominated by low sensitivity biotopes. There is therefore a risk of the abrasion and penetration pressures having an adverse effect on the conservation objectives for

the sub-features subtidal coarse sediment, subtidal mixed sediments and subtidal sand.

With regards to the discussion above, the assessed activity levels and the evidence available for the impact of bottom towed gear, **MMO concludes that impacts of abrasion or disturbance and penetration from ongoing use of bottom towed gear on the sandbank feature and its sediment sub-features at the activity levels described may result in an adverse effect on site integrity for Margate and Long Sands MPA.**

4.3.3 Traps

The main pressure from traps on the site's feature 'Annex I sandbanks which are slightly covered by sea water all the time' and its sub-features 'subtidal coarse sediment', 'subtidal mixed sediments' and 'subtidal sand' was identified in **Table 3** as abrasion or disturbance of the substrate on the surface of the seabed.

Impacts on these features relating to abrasion or disturbance of the substrate on the surface of the seabed occur primarily during the setting and retrieval of traps and their associated ropes, weights and anchors, as well as by their movement over the seabed during rough weather. As per section 9.4 of the traps Impacts Evidence document[8], abrasion impacts from this gear type are unlikely to be a concern unless they occur where particularly sensitive species are present or when fishing occurs at damaging levels of intensity.

Section 4.2 describes fishing activity within the MMO portion of Margate and Long Sands MPA and notes that, according to VMS and landings data, the use of traps appears minimal.

The only data showing fishing activity using traps in the site is from under 12 m landings and UK under 12 m fishing effort (days), which are both collected at ICES rectangle level and then apportioned to the site based on percentage overlap. This reduces the confidence in the actual levels of activity taking place within the site, as it suggests fishing activity is distributed equally across the rectangle. As this data does not indicate where the activity occurs within the site, if it occurs at all, the use of traps may or may not be occurring over all three sediment sub-features.

All biotopes are listed as either not sensitive or have low sensitivity to the relevant pressures from traps. The site is subject to the high hydrodynamic energy of the Southern North Sea. It is likely that biological communities that dominate in Margate and Long Sands MPA are acclimatised to some level of disturbance and will therefore have a degree of resilience to abrasion pressures. Given the relatively low intensity of trap activity within the site, together with the low scale of footprint for impacts from traps, and no current evidence to suggest sensitive biotopes are present; the risk of abrasion is considered unlikely to occur above the pressure benchmark for the sediment sub-features of the site.

Therefore, **MMO concludes that the ongoing use of traps at the activity levels described will not result in an adverse effect on site integrity for Margate and Long Sands MPA.**

4.4 Part B conclusion

The assessment of anchored nets and lines and traps on the feature ‘sandbanks which are slightly covered by sea water all the time’ and the sub-features ‘subtidal coarse sediment’, ‘subtidal mixed sediments’ and ‘subtidal sand’ of the MMO portion of Margate and Long Sands MPA has concluded that these fishing activities will not result in an adverse effect on site integrity at the activity levels described. As such MMO concludes that management measures to restrict fishing activities using anchored nets and lines, and traps are not required in the MMO portion of Margate and Long Sands MPA.

The assessment of bottom towed gear on the designated features in the MMO portion of Margate and Long Sands MPA has concluded that these fishing activities may result in an adverse effect on the site integrity of the MPA at the activity levels described. Management measures will therefore be implemented for bottom towed gear in the MMO portion of the site to ensure that there is no adverse effect on site integrity for Margate and Long Sands 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 have an adverse effect on the site integrity; and
- other activities: such as marine development infrastructure plans and projects that occur in the MPA.

ArcGIS software has been used to check relevant activities that occur within, or adjacent to, the assessed site where there could be a pathway for impact. To determine relevant activities to be included in this part of the assessment, a distance of 5 km was selected as suitable to capture any potential way in which the activity could impact the site in-combination effects with those of the fishing activities assessed. Margate and Long Sands MPA straddles the 6 nm limit and therefore, only activities that are within 5 km of the portion of the site seawards of the 6 nm limit were considered. This assessment considers the in-combination impacts of marine licensable activities that are ongoing or upcoming, and 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 gear was identified in **Part B** as requiring management to avoid adverse effects to site integrity. Anchored nets and lines and traps are the only remaining fishing activities occurring within Margate and Long Sands 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 eleven active marine licences, within the 5 km buffer applied. **Table 6** shows these licences and

the relevant categories from the JNCC Pressures-Activities Database (PAD)[11]. Details on these licences can be viewed on the public register of marine licence applications and decisions by searching for the marine licence case reference number[12].

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

Marine licence case reference number	PAD Category	Description
32945/050608/39	Offshore wind: construction	London Array Offshore Wind Farm. The construction of 175 turbines was completed in December 2012 and the London Array became fully operational in April 2013. It covers an area of 100km^2 and has two offshore substations. It intersects with a large section of the MMO portion of Margate and Long Sands MPA. In February 2014, further construction and expansion of the wind farm was terminated. **No direct or indirect pressure pathway for in-combination impact as construction has been completed and ongoing pressures from infrastructure do not overlap with pressures from fishing. Therefore, no in-combination effects possible.**
MLA/2017/00096/3	Offshore wind: operation and maintenance	London Array Offshore Wind Farm. It intersects with a large section of the MMO portion of Margate and Long Sands MPA.

[11] JNCC Pressures-Activities Database (PAD): hub.jncc.gov.uk/assets/97447f16-9f38-49ff-a3af-56d437fd1951 (last accessed 28 March 2024).

[12] Public register of marine licence applications and decisions: marinelicensing.marinemanagement.org.uk/mmofox5/fox/live/MMO_PUBLIC_REGISTER (last accessed 11 March 2024)

Marine licence case reference number	PAD Category	Description
		Possible in-combination effects.
MLA/2018/00042	Offshore wind: operation and maintenance	London Array Offshore Wind Farm. This licence is for the cables connecting the wind farm to mainland UK. It intersects with a large section of the MMO portion of Margate and Long Sands MPA. **Possible in-combination effects.**
MLA/2021/00536	Offshore wind: construction Power cable: construction	London Array Offshore Wind Farm. It intersects with a large section of the MMO portion of Margate and Long Sands MPA. In February 2014, further construction and expansion of the wind farm was terminated. **No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**
MLA/2022/00041 MLA/2015/00095/5	Offshore wind: operation and maintenance Power cable: operation and maintenance	London Array Offshore Wind Farm. This licence is for the wind farm cable array. It intersects with a large section of the MMO portion of Margate and Long Sands MPA. **Possible in-combination effects.**
MLA/2021/00168	Wave: Operation and maintenance Offshore wind: operation and maintenance	London Array Offshore Wind Farm. It intersects with a large section of the MMO portion of Margate and Long Sands MPA. **Possible in-combination effects.**
MLA/2016/00145	Dredge and spoil disposal	Thames Estuary Channel Management - Medium Term

Marine licence case reference number	PAD Category	Description
		Maintenance of the Thames estuary approaches is fundamental to the future viability of the Port of London. The Thames Estuary Channel Management project was set up to deliver short, medium and long term solutions to management of approach channels within the Thames Estuary. This licence relates to the dredging of the estuary approach channels and subsequent disposal of arisings in the next 10 years (medium term). This activity for this licence is in the 5 km buffer area to the north of the MMO portion of the site. **Table 3** shows that designated features within the MPA are not sensitive to the pressures changes in suspended solids (water clarity) and smothering and siltation rate changes (light) from static gears, so there is no pathway for in-combination effects caused by sedimentation from suspended dredge or spoil materials entering the MPA. **No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**
MLA/2013/00298/2	Physical Sampling Aggregate dredging	Marine aggregate extraction by Britannia Aggregates Limited. This activity intersects with the east of the MMO portion of Margate and Long Sands MPA. **Possible in-combination effects.**
MLA/2013/00296/3	Physical Sampling	Marine aggregate extraction by Tarmac Marine Dredging Limited

Marine licence case reference number	PAD Category	Description
	Aggregate dredging	This activity intersects with the east of the MMO portion of Margate and Long Sands MPA. This licence also covers two additional areas located entirely within the 5 km buffer north of the MPA. It also intersects with the 5 km buffer area north of the site. **Possible in-combination effects.**
MLA/2013/00297/5	Physical Sampling Aggregate dredging	Marine aggregate extraction by CEMEX UK Marine Limited This activity intersects with the east of the MMO portion of Margate and Long Sands MPA. This licence also covers an area located entirely within the 5 km buffer east of the MPA. **Possible in-combination effects.**
MLA/2019/00488/3	Dredge and spoil disposal Power cable: operation and maintenance; laying, burial and protection.	NeuConnect: GB Offshore Scheme. The NeuConnect Project includes the installation, operation and maintenance of a 1400 MW electricity interconnector between the electricity networks of Great Britain and Germany. The cable route runs approximately 58km along the northern boundary of Margate and Long Sands MPA. This activity therefore intersects with the entire northern boundary of the MMO portion of Margate and Long Sands MPA. **Possible in-combination effects.**

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

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

	Non-fishing activities						Fishing activities	
Potential pressures	**Offshore wind:** • **construction;** • **operation and maintenance**	**Dredge and spoil disposal**	**Power cable:** • **construction;** • **operation and maintenance;** • **laying, burial and protection.**	**Wave: Operation and maintenance**	**Physical sampling**	**Aggregate dredging**	**Anchored nets and lines**	**Traps**
Abrasion or disturbance of the substrate on the surface of the seabed	Y	Y	Y	Y	Y	Y	Y	Y
Removal of non-target species						Y	Y	Y

5.1 Fishing vs Fishing in-combination pressures

Fisheries vs fisheries in-combination pressures will be considered in this section.

5.1.1 Abrasion and disturbance of the substrate on the surface of the seabed and Removal of non-target species

As noted in **section 4.3**, impacts from the removal of non-target species pressure are not being considered in detail in this assessment. In-combination impacts from the removal of non-target species pressure are more fully assessed under the abrasion pressure, as the detail of key structural and influential species is yet to be fully defined. Therefore, the removal pressure is not considered further in this in-combination assessment. The pressure 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 the MMO portion of Margate and Long Sands MPA and notes that there were no VMS records for anchored nets and lines or traps within the site. Landings data for under 12 m vessels using anchored nets and lines in the MMO portion of the site averaged approximately 8 t and 54 days per year. Landings data for under 12 m vessels using traps in the MMO portion of the site averaged approximately 13 t and 21 days per year. This results in a combined annual average from anchored nets and lines and traps of 21 t and 75 days.

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, under 12 m landings and UK under 12 m fishing effort (days) are both collected at ICES rectangle level and then apportioned to the site based on percentage overlap. This reduces the confidence in the actual levels of activity taking place within the MMO portion of the MPA, as it suggests fishing activity is distributed equally across the rectangle.

To support the in-combination assessment of Margate and Long Sands MPA, MMO sought additional advice from Kent and Essex IFCA. Kent and Essex IFCA officer knowledge and Kent and Essex IFCA whelk landings data suggest that whelk potting is the most common static fishing activity occurring within ICES rectangle 32F1, which overlaps the MMO portion of the MPA. Whelk landings data from 2019 to 2024 suggest that whelk potting is occurring in three of the ICES sub-rectangles that overlap with the MMO portion of the MPA (32F1-n, 32F1-j, and 32F1-g) but may not be occurring within the MPA and only 5 vessels in the last five years used those areas, so the spatial footprint of this activity is low. Officers are aware of whelk potting in Black Deep (an area of deeper water between sandbanks which overlaps with ICES sub-rectangle 32F1-j and the length of the northern boundary of the MPA) but it is unknown whether this activity is actually occurring inside the MPA. There is also potential for some gill netting in Black Deep as the ground is quite consistent,

which means there could be some overlap between whelk pots and gill nets. Officers advised, however, that under 12 m vessels deploying whelk pots are less likely to fish offshore of 6 nm, as their gear is often damaged by trawlers in this area.

Given the activity level described, the low scale of footprint for impacts from both these static gear groups, and no current evidence to suggest biotopes sensitive to static gear are present within the sediment features (**section 4.3.1** and **section 4.3.3**), MMO does not consider the in-combination effect from these activities as likely to result in an adverse effect on site integrity.

Therefore, MMO concludes that the combined pressures from anchored nets and lines and traps will not result in an adverse effect on site integrity for Margate and Long Sands MPA at the activity levels described.

5.2 Fishing vs non-fishing activities in-combination pressures

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

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

As noted in **section 4.3**, impacts from the removal of non-target species pressure are not being considered in detail in this assessment. In-combination impacts from the removal of non-target species pressure are more fully assessed under the abrasion pressure, as the detail of key structural and influential species is yet to be fully defined. Therefore, the removal pressure is not considered further in this in-combination assessment. The pressure may require further consideration as future evidence becomes available, in conjunction with updated conservation advice from Natural England.

The designated features of Margate and Long Sands 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.

Activities associated with the London Array Offshore Wind Farm (MLA/2017/00096/3, MLA/2018/00042, MLA/2022/00041 and MLA/2021/00168) which might cause abrasion or disturbance of the seabed relate to offshore wind operation and maintenance, power cable operation and maintenance and wave operation and maintenance.

The licence MLA/2017/00096/3 expires on 01 July 2039 and covers the maintenance of existing works, such as removal of marine growth, the painting and replacement of wind farm components and alterations to the J-tubes and cable protection system during inter-array cable repair and replacement. J-tubes support and protect cables

between the seabed and the offshore wind foundation, where they are connected to the substation or the turbine. They are not buried. There will therefore not be any in-combination impacts from this activity with fishing activity in the site via the abrasion pressure.

The licence MLA/2018/00042 expires on 01 July 2040 and covers the maintenance of existing works, such as cable repair, cable remediation, jacking up, replacement of existing cable protection or placed rock, removal of marine growth, replacement of corrosion protection anodes, paintings or other coatings, or modification of J-tubes.

The licence MLA/2022/00041 expires on 31 December 2036 and is intended to supplement the existing wind farm lifetime cable repair and replacement under MLA/2015/00095/5, which was awarded on 05 May 2016 and is valid for the lifetime of the wind farm until 2039. These licences cover array cable repair and replacement.

Abrasion or disturbance from these licences (MLA/2018/00042 and MLA/2022/00041) will be contained within the existing consented cable corridor. These impacts will be minimised where possible, but cable repair may involve excavating the cable. Where possible this would be done by gently pulling the cable free from the seabed. If this is unsuccessful, it may be necessary to use a mass flow excavator or a diver propelled injector from a vessel mounted dive platform. Water jetting tools including mass flow excavators may also be used during cable remediation. If required, cable re-burial will be carried out by a jetting system, or a mass flow excavator system suspended approximately 1 to 2 m above the seabed. A target burial depth of 1.5 to 2 metres is sought via these operations. In the first instance, the original cable route will be used to re-lay the cable. If this cannot be achieved then the cable will be placed as close to the original trench, and no more than 5 m from the original trench. Where jetting and/or mass flow excavator use is not technically feasible, trenching could be undertaken with the use of a backhoe dredger as a last resort. Jack up installation vessels that use their legs to lift the vessel above sea level may also be required for cable repairs along lengths of the export cable offshore. During the replacement of existing cable protection, additional material will not compromise the minimum required water depth and the material will only be placed up to the seabed level.

The licence MLA/2021/00168 expires on 01 October 2036 and covers the deployment of a scientific instrument within the London Array wind farm site to inform existing wave and current models of the site, to facilitate operational and safety decision making. The scientific instrument may be deployed during the period 01 April to 01 October each year with the option to relocate the scientific buoy up to a maximum of ten times, so that monitoring can be undertaken within the vicinity of any vessel-based survey or operational and maintenance works being completed. The system will be deployed using a 250 kg clump weight connected to the surface unit by polypropylene rope and bungee cord. The clump weight will be deployed in a

controlled manner using a vessel crane. All items deployed will be recovered once the required information has been collected.

Activities associated with the Marine aggregate extraction by Britannia Aggregates Limited (MLA/2013/00298/2), Tarmac Marine Dredging Limited (MLA/2013/00296/3) and CEMEX UK Marine Limited (MLA/2013/00297/5), which might cause abrasion or disturbance of the seabed relate to physical sampling and aggregate dredging. All three companies will operate in the same three areas (508, 509/3 and 510/1) and submitted exactly the same information so will be considered together. All three licences expire in December 2035. Aggregate dredging in the site may slightly deepen an existing depression in the sandbank system of Margate and Long Sands but is not going to introduce a new feature to the area that would noticeably change the wider or regional dynamics of the system. The main abrasion impact from this activity is sediment removal causing loss of or damage to benthic habitats and the communities those habitats support.

Activities associated with the NeuConnect Project electricity interconnector (MLA/2019/00488/3) which might cause abrasion or disturbance of the seabed relate to dredge and spoil disposal, power cable operation and maintenance and power cable laying burial and protection. The licence expires on 25 March 2037 and covers the installation, operation and maintenance of a 1400-megawatt electricity interconnector between the electricity networks of Great Britain and Germany. The cable route runs approximately 58km along the northern boundary of Margate and Long Sands MPA. The applicant proposes to install the cable via an open cut trench created using either a plough, mechanical trencher or excavator and may have potential anchoring whilst cables are being joined. The total area which is likely to be affected by preparation and installation works equates to approximately 0.890km^2, this includes both the sand wave clearance (0.0813km^2) and trenching works (0.808km^2). The total area of known examples of Annex I sandbank which could potentially be affected is predicted to be approximately 0.66 km^2 throughout the entire cable corridor.

As detailed in **section 5.1.1**, anchored nets and lines and traps at the activity levels described are not considered to be causing significant pressure through abrasion and disturbance. It is possible that the activities linked to the marine licences discussed in this section, in-combination with anchored nets and lines and traps, may increase the potential for the abrasion pressure to have negative cumulative effects on these features of the MPA. However, the laying, burial and protection of the NeuConnect cable will be a one-time event and the operation and maintenance of this cable, the London Array offshore wind farm and its cables, and the buoy to monitor wave and current activity in the site will all be temporary and localised events with small footprints on the seabed. The aggregate dredging within the site only intersects with the east of the MMO portion of the MPA.

As sandbanks are highly dynamic features which are known to exhibit high rates of recovery, the underlying character of the habitat is likely to remain similar to that before all these activities and the seabed will immediately be available for re-establishment by biological communities. All the relevant biotopes known to occur within the sandbank sub-features of the site are either not sensitive or have low sensitivity to abrasion from anchored nets and lines (**section 4.3.1**) and traps (**section 4.3.3**) and the site is subject to the high hydrodynamic energy of the Southern North Sea. It is therefore likely that the biological communities that dominate in Margate and Long Sands MPA are acclimatised to some level of disturbance and will therefore have a degree of resilience to the abrasion pressure. As also noted in **section 4.3.1** and **section 4.3.3** the footprint of static gear impacts is low, in combination with the low effort within the site, the spatial scale of abrasion impacts is limited. As there are no VMS recordings within this site and there is no data available for the distribution of under 12 m vessels, spatial overlap between static gear activity and non-fishing activities cannot be ruled out. However, due to the low fishing effort via static gear within the site, the resilience and low sensitivity of biotopes present to abrasion from this gear and the localised and temporary nature of the licenced activities described it is unlikely therefore that there would be a significant in-combination 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.

Therefore, MMO concludes that the combined pressures from anchored nets and lines and traps and other relevant activities will not result in an adverse effect on site integrity for Margate and Long Sands MPA.

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 an adverse effect on the site integrity for Margate and Long Sands MPA.

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

6 Conclusion and proposed management

Part A of this assessment concluded that bottom towed gear, anchored nets and lines and traps may result in an adverse effect on site integrity for the MMO portion of Margate and Long Sands MPA.

Part B of this assessment concluded that the ongoing use of bottom towed gear on the sandbank feature of the MMO portion of Margate and Long Sands MPA at the activity levels described may result in an adverse effect on site integrity as a result of the impacts from abrasion or disturbance, penetration, changes in suspended solids and smothering and siltation rate changes.

Part C of this assessment concluded that the ongoing use of anchored nets and lines and traps at the activity levels described, alone or in combination, will not result in an adverse effect on site integrity of the MMO portion of Margate and Long Sands MPA.

To ensure that fishing activities do not result in an adverse effect on site integrity of the MPA, MMO will implement a byelaw to prohibit the use of bottom towed gear throughout the MMO portion of Margate and Long Sands 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[5] document

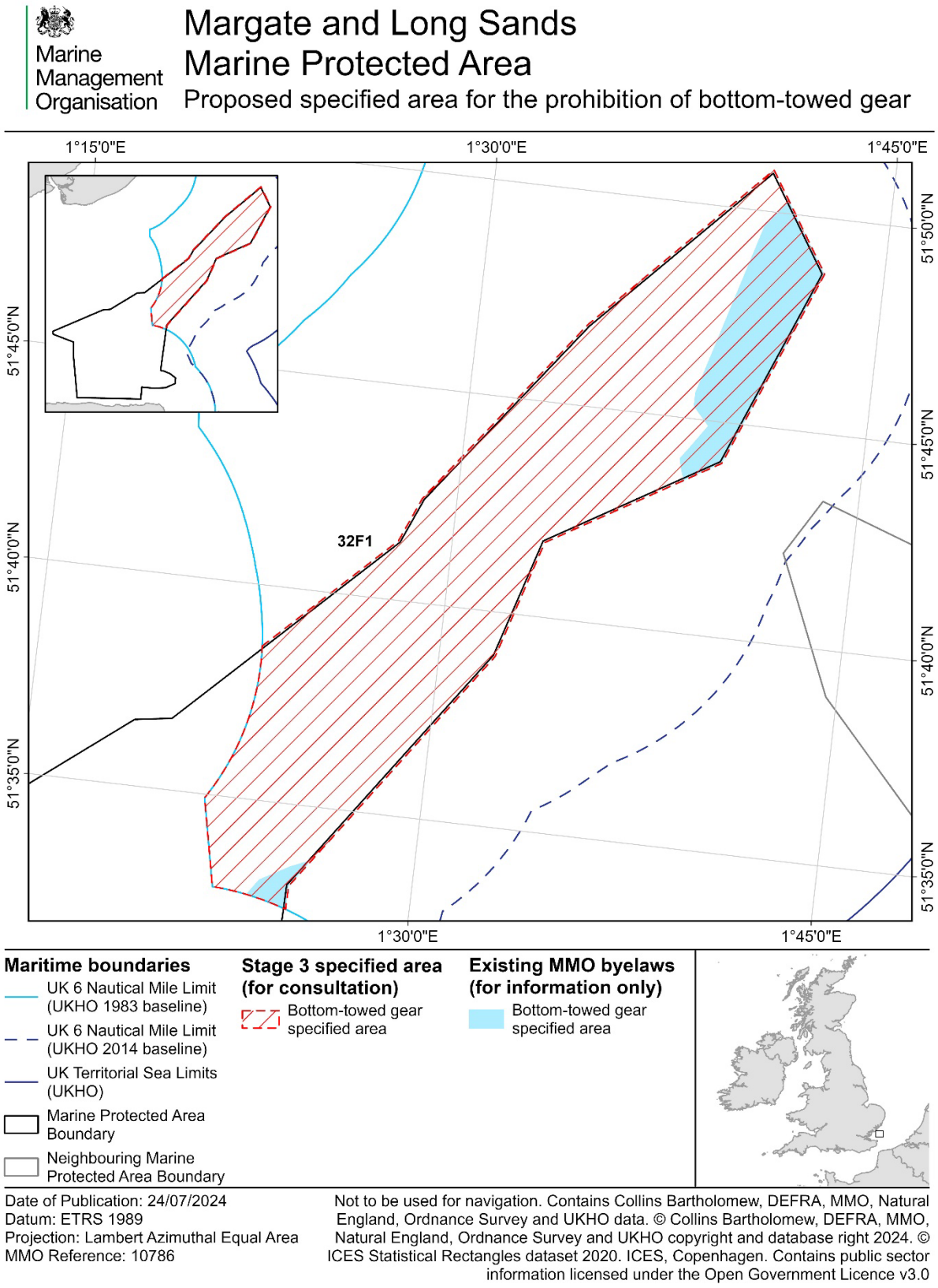

Figure 2: Map of proposed management.

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

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

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Annexes

Annex 1: Fishing activity data

Table A1.1: VMS record count per nation group (UK and EU Member State) and proportional activity (%), per gear, per gear group, per year (2016 to 2021), totals and annual average (2016 to 2021) for the MMO section of Margate and Long Sands MPA.

			2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
Gear group	**Gear code**	**Nation group**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**	**%**	**Count**
Demersal trawl	**OTB**	EU Member State	99	88	119	98	0	0	0	0	1	50	0	0	219	93	37
	OTB	UK	14	12	2	2	0	0	0	0	1	50	0	0	17	7	3
	OTB total		**113**	**32**	**121**	**64**	**0**	**0**	**0**	**0**	**2**	**20**	**0**	**0**	**236**	**40**	**39**
	TBB	EU Member State	240	99	67	100	28	100	4	100	8	100	0	0	347	100	58
	TBB	UK	1	1	0	0	0	0	0	0	0	0	0	0	1	0	0
	TBB total		**241**	**68**	**67**	**36**	**28**	**100**	**4**	**100**	**8**	**80**	**0**	**0**	**348**	**60**	**58**
Demersal trawl total			**354**	**100**	**188**	**100**	**28**	**100**	**4**	**100**	**10**	**71**	**0**	**0**	**584**	**99**	**97**
Dredge	**DRB**	UK	0	0	0	0	0	0	0	0	4	100	0	0	4	100	1
	DRB Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**100**	**0**	**0**	**4**	**100**	**1**
Dredge total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4**	**29**	**0**	**0**	**4**	**1**	**1**

			2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
Gear group	Gear code	Nation group	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Grand total			354	100	188	100	28	100	4	100	14	100	0	100	588	100	98

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

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Demersal trawl	OTB	0.68	0.19	0.00	0.00	0.12	0.99	0.20
	TBB	0.12	0.00	0.00	0.00	0.00	0.12	0.02
Demersal trawl total		**0.80**	**0.19**	**0.00**	**0.00**	**0.12**	**1.12**	**0.22**
Dredge	DRB	0.00	0.00	0.00	0.00	1.02	1.02	0.20
Dredge total		**0.00**	**0.00**	**0.00**	**0.00**	**1.02**	**1.02**	**0.20**
Grand total		**0.80**	**0.19**	**0.00**	**0.00**	**1.14**	**2.14**	**0.43**

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

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Demersal trawl	OTB	3.63	3.65	0.00	0.00	0.11	7.39	1.48
Demersal trawl	TBB	15.53	5.22	1.96	0.30	0.42	23.42	4.68
Demersal trawl total		**19.15**	**8.87**	**1.96**	**0.30**	**0.53**	**30.82**	**6.16**
Grand total		**19.15**	**8.87**	**1.96**	**0.30**	**0.53**	**30.82**	**6.16**

Table A1.4: Percentage of each ICES rectangle intersected by the MMO section of Margate and Long Sands MPA.

ICES rectangle	Percentage overlap (%)
32F1	6.8890198

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

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Anchored nets and lines	GEN	0.27	0.09	0.00	0.00	0.00	0.36	0.07
	GN	2.57	5.08	2.46	2.83	2.75	15.70	3.14
	GNS	0.45	0.57	2.64	2.78	5.03	11.47	2.29
	GTR	3.07	1.54	1.46	0.55	1.45	8.07	1.61

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
	LL	0.60	1.05	0.33	0.63	0.95	3.56	0.71
	LLS	0.00	0.05	0.45	0.05	0.00	0.55	0.11
Anchored nets and lines total		**6.97**	**8.37**	**7.35**	**6.84**	**10.18**	**39.70**	**7.94**
Demersal trawl	OT	1.91	0.68	0.00	0.00	0.00	2.59	0.52
	OTB	0.44	6.72	8.09	7.49	7.54	30.27	6.05
	OTT	3.89	1.32	0.00	0.00	0.00	5.22	1.04
	TBB	0.02	0.05	0.04	0.00	0.00	0.12	0.02
Demersal trawl total		**6.27**	**8.78**	**8.13**	**7.49**	**7.54**	**38.20**	**7.64**
Dredge	DRB	0.06	0.98	31.30	21.20	0.84	54.38	10.88
Dredge total		**0.06**	**0.98**	**31.30**	**21.20**	**0.84**	**54.38**	**10.88**
Midwater gill drift	GND	0.94	1.01	5.52	3.63	0.78	11.88	2.38
Midwater gill drift total		**0.94**	**1.01**	**5.52**	**3.63**	**0.78**	**11.88**	**2.38**
Midwater hook/lines	LHP	0.11	0.12	0.32	0.99	0.11	1.64	0.33
	LX	0.00	0.01	0.00	0.04	0.02	0.07	0.01
Midwater hook/lines total		**0.11**	**0.13**	**0.32**	**1.03**	**0.12**	**1.71**	**0.34**
Midwater trawl	OTM	0.00	0.00	1.86	8.88	0.13	10.87	2.17
	PTM	0.00	0.00	0.01	0.00	0.00	0.01	0.00
Midwater trawl total		**0.00**	**0.00**	**1.87**	**8.88**	**0.13**	**10.88**	**2.18**
Traps	FPO	12.38	25.80	8.99	2.73	13.04	62.94	12.59
Traps total		**12.38**	**25.80**	**8.99**	**2.73**	**13.04**	**62.94**	**12.59**
Unknown	MIS	0.00	0.00	0.00	0.00	0.94	0.94	0.19
Unknown total		**0.00**	**0.00**	**0.00**	**0.00**	**0.94**	**0.94**	**0.19**
Grand total		**26.73**	**45.06**	**63.47**	**51.79**	**33.58**	**220.62**	**44.12**

Table A1. 6: Mean annual surface and subsurface SAR values for C-squares intersecting the MMO section of Margate and Long Sands MPA (2016 to 2020).

Gear group	SAR category	2016		2017		2018		2019		2020	
		Mean	Max	Mean	Max	Mean	Max	Mean	Max	Mean	Max
Demersal seines	Surface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Subsurface	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demersal trawls	Surface	0.99	7.10	0.58	4.40	0.15	1.84	0.10	1.67	0.11	1.32
	Subsurface	0.31	2.09	0.19	1.43	0.08	0.84	0.04	0.51	0.05	0.43
Dredges	Surface	<0.01	0.09	0.00	0.00	<0.01	0.02	<0.01	0.01	<0.01	0.01
	Subsurface	<0.01	0.09	0.00	0.00	<0.01	0.02	<0.01	0.01	<0.01	0.01
Bottom towed gear total	**Surface**	**1.00**	**7.19**	**0.58**	**4.40**	**0.15**	**1.86**	**0.10**	**1.68**	**0.11**	**1.33**
	Subsurface	**0.32**	**2.18**	**0.19**	**1.43**	**0.08**	**0.86**	**0.04**	**0.52**	**0.05**	**0.44**

Table A1.7: Fishing effort (days) recorded by UK vessels under 12 m in length, separated by gear type for the area of Margate and Long Sands MPA that intersects the marine portion of ICES rectangle 32F1 (2016 to 2021). ICES rectangle level data has been apportioned to the MPA based on the percentage area of the ICES rectangle that intersects the MPA (Table A1.4).

Gear group	Fishing effort (days at sea)							
	2016	2017	2018	2019	2020	2021	Total (2016 to 2021)	Annual average (2016 to 2021)
Demersal trawl	50.15	54.08	38.13	41.16	36.31	28.93	248.76	41.46
Dredge	0.17	0.52	2.82	1.96	0.41	0.14	6.03	1.00
Bottom towed gear total	**50.32**	**54.60**	**40.96**	**43.13**	**36.72**	**29.07**	**254.79**	**42.47**
Midwater gill drift	14.16	11.12	14.11	12.70	10.23	5.96	68.27	11.38
Midwater trawl	0	0.07	0.96	4.24	0.41	0.07	5.75	0.96
Midwater hooks and lines	0.83	2.51	2.51	6.10	1.52	0.48	13.95	2.33
Midwater gear total	**14.98**	**13.70**	**17.59**	**23.03**	**12.16**	**6.51**	**87.97**	**14.66**
Traps	20.16	37.74	19.94	13.94	15.99	20.19	127.97	21.33
Anchored nets and lines	46.74	53.72	48.67	49.58	65.09	57.98	321.79	53.63
Static gear total	**66.91**	**91.47**	**68.61**	**63.52**	**81.08**	**78.18**	**449.76**	**74.96**
Unknown	0	0	0	0	0.52	1.03	1.55	0.26
Unknown total	**0**	**0**	**0**	**0**	**0.52**	**1.03**	**1.55**	**0.26**
MPA total	**132.21**	**159.76**	**127.16**	**129.67**	**130.47**	**114.79**	**794.07**	**132.34**