Marine Management Organisation

MMO Stage 3 Site Assessment: North-East of Haig Fras MPA (DRAFT)

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Title: MMO Stage 3 Site Assessment: North-East of Haig Fras MPA

Contents

Executive Summary

This assessment analyses the impact of anchored nets and lines, bottom towed gear and traps on the designated features subtidal coarse sediment, subtidal sand and subtidal mud in North-East of Haig Fras Marine Protected Area (MPA) to determine whether a significant risk of hindering the conservation objectives of the site can be excluded. The assessment sets out the evidence considered and analyses the quality of that evidence.

The assessment finds that fishing activity from bottom towed gear will result in a significant risk of hindering the conservation objectives of North-East of Haig Fras MPA. As such Marine Management Organisation (MMO) conclude that management measures are required for bottom towed gear.

1 Introduction

This assessment considers whether fishing activities are compatible with the conservation objectives of North-East of Haig Fras 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, 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 Joint Nature Conservation Committee (JNCC) site information and Department for Environment Food and Rural Affairs (Defra) factsheet were used for background on site geography, designations, features, conservation objectives and general management approaches:

- JNCC Site Information - North-East of Haig Fras MCZ[1]
- Defra Factsheet - North-East of Haig Fras MCZ[2]

North-East of Haig Fras MPA is an offshore site located 100 kilometres (km) off the south-west coast of England in the Western Channel and Celtic Sea region, and is found to the north of the Isles of Scilly. The western edge of the site follows the boundary of the UK Exclusive Economic Zone (EEZ) between the UK and Ireland. The site covers an area of approximately 464 km^2 (**Figure 1**), with depths ranging between 50 and 100 metres (m).

[1] JNCC conservation advice – North East of Haig Fras MCZ. jncc.gov.uk/our-work/north-east-of-haig-fras-mpa/ (last accessed 01 June 2023)

[2] Defra factsheet – North East of Haig Fras MCZ. assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/915258/mcz-north-east-haig-fras-2019.pdf (last accessed 01 June 2023)

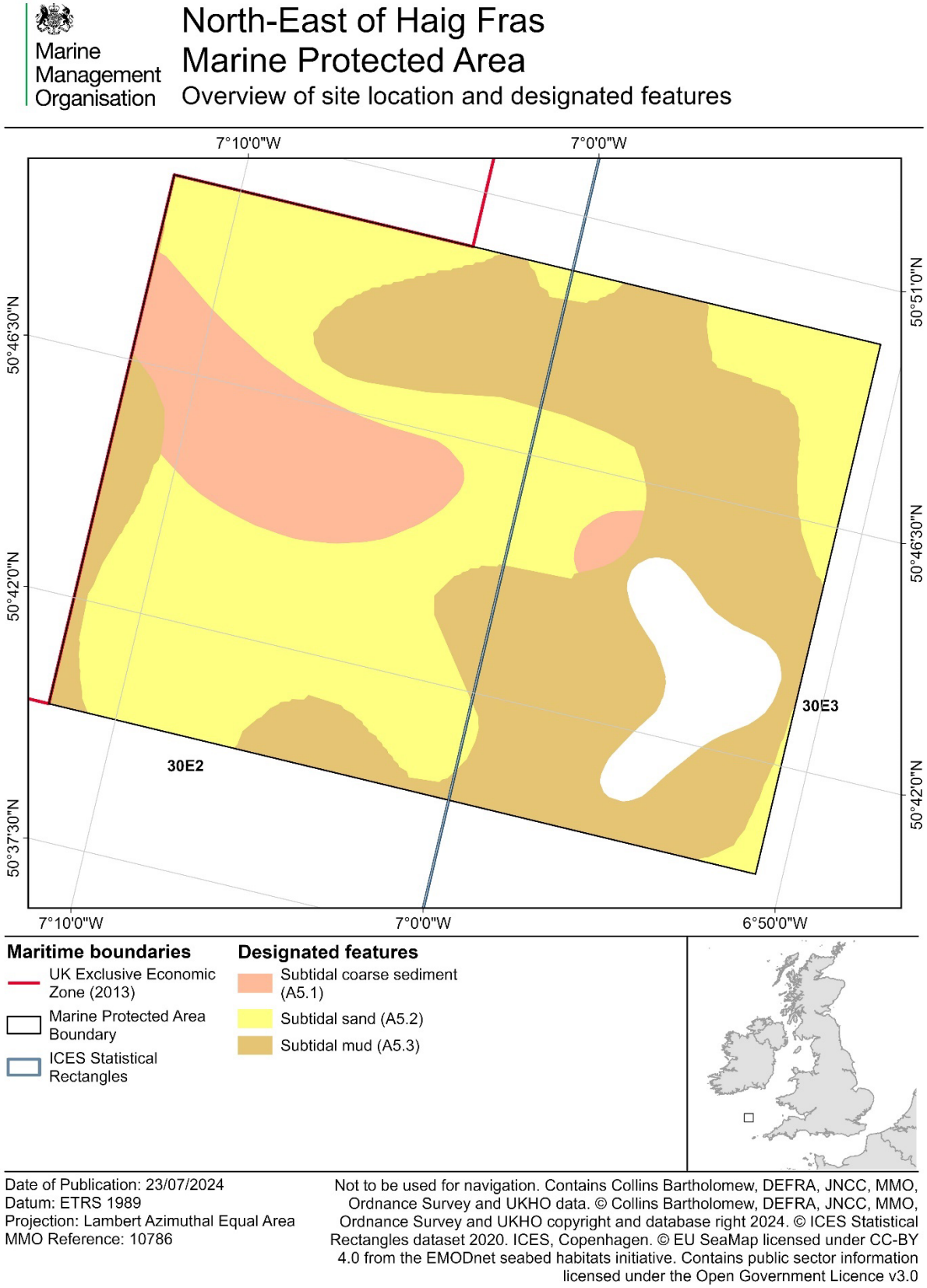

Figure 1: Site overview map.

North-East of Haig Fras MPA was designated as a MCZ in 2019 for the designated features subtidal coarse sediment, subtidal sand and subtidal mud. Subtidal mud and subtidal sand are evenly distributed throughout the site, with a band of subtidal coarse sediment extending from the western edge to the centre of the site. These features support communities made up of sponges, molluscs, segmented worms, and echinoderms including starfish and sea urchin. The site also acts as an important nursery and spawning ground for fish species and may support crustaceans and cnidarians such as anemones. The designated features and their general management approaches are set out in **Table 1**.

The general management approaches for the features of North-East of Haig Fras MPA have been set based on evidence available at pre- and post-consultation for designation (JNCC, 2016, 2018).

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

Designated feature	General management approach
Subtidal coarse sediment	Recover to favourable condition.
Subtidal sand	
Subtidal mud	

There is no feature condition assessment available for this site; in its absence, JNCC's view of feature condition for the site is provided by the pre- and post-consultation for designation evidence (JNCC, 2016, 2018). The initial assessment of recommended MPAs (JNCC and Natural England, 2012) proposed an initial general management approach of 'Recover' for the sediment features. Pre- and post-consultation advice (JNCC, 2016, 2018) supported maintaining the original general management approach of 'Recover'.

2.2 Scope of this assessment

The scope of this assessment covers fishing activities alone, and relevant plans or projects 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[3].

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:

- 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.

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

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

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

3.1 Activities taking place

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

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

- VMS data;
- fisheries landings data (logbooks and sales records);
- MMO catch recording project data;
- ICES rectangle level fishing effort data in days (reference: MMO1264); and
- swept area ratio (SAR) data.

For more information about the above evidence sources, please see the Stage 3 MPA Site Assessment Methodology document[4], which describes each type of fishing activity evidence and summarises the strengths and limitations of each source.

Table 2: Fishing activities covered by this assessment present in VMS records (2016 to 2021) and landings data (2016 to 2020) for North-East of Haig Fras MPA.

Gear type	Gear name	Gear code	Justification
Anchored nets and lines	Gill nets (not specified)	GN	Present in VMS records and UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
	Longlines (demersal)	LLS	Present in VMS records.
	Set gillnet (anchored)	GNS	Present in VMS records and UK and non-UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
	Combined gillnets-trammel nets	GTN	Present in VMS records.

[4] Stage 3 MPA Site Assessment Methodology document: www.gov.uk/government/publications/stage-3-site-assessments (last accessed 30 August 2024).

	Trammel net	GTR	Present in VMS records and UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
	Beam trawl	TBB	Present in VMS records.
Gear type	**Gear name**	**Gear code**	**Justification**
Bottom towed gear	Bottom otter trawl	OTB	Present in VMS records and non-UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
	Otter trawls (unspecified)	OT	Present in UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
	Pair seine	SPR	Present in VMS records.
	Towed dredge	DRB	Present in VMS records and non-UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
	Twin bottom otter trawl	OTT	Present in VMS records.
Midwater gear	Drift gillnet	GND	
	Encircling gillnet	GNC	Present in UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
	Hand-operated pole-and-line	LHP	Present in VMS records and UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
	Hook and line (unspecified)	LX	Present in UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
	Longlines (pelagic)	LLD	Present in VMS records.
	Midwater otter trawl	OTM	
	Purse seine (ring net)	PS	
Traps	Pot/Creel	FPO	Present in VMS records and UK and non-UK under 12 m landings data for the ICES statistical rectangles that overlap the site.
Unknown	Not known	NK	Present in VMS records.

3.2 Pressures, features and activities screened out

This section identifies activities or pressures that are **occurring but do not need to be considered** for North-East of Haig Fras 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 North-East of Haig Fras 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 North-East of Haig Fras MPA is not considered to be capable of affecting the designated features other than insignificantly and is not considered further within this assessment.
- **Unknown gear**: 'other gear' has been declared as having been used to land fish from this ICES statistical rectangle. The gear code used to report these landings does not provide any further information relating to the fishing method used. It is therefore not possible to assess the likelihood of this fishing method interacting with the seabed and it is not considered further within this assessment.

3.3 Pressures to be taken forward to Part B

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

- Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines[5];
- Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear[6]; and
- Stage 3 Fishing Gear MPA Impacts Evidence Traps[7].

[5] Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 30 August 2024)

[6] Stage 3 Fishing Gear MPA Impacts Evidence Bottom Towed Gear: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 30 August 2024)

[7] Stage 3 Fishing Gear MPA Impacts Evidence Traps: www.gov.uk/government/publications/stage-3-impacts-evidence (last accessed 30 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 and risk profiling of pressures from conservation advice packages, and JNCC advice to assess the sensitivities of pressures on the designated features of the site.

The table 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.
	Light grey highlighting indicates that there is insufficient evidence to make sensitivity conclusions, or that a sensitivity assessment has not been made for this feature to this pressure from the gear type.
	If there is no highlighting within a cell, this indicates that the pressure from the gear type is not relevant to the feature, or that the feature is not sensitive to the pressure.

Table 3: Summary of pressures on designated features of North-East of Haig Fras MPA to be taken forward to Part B.

Potential pressures	Designated features								
	Subtidal coarse sediment			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 (PAH) contamination									
Introduction of light									
Introduction of microbial pathogens									
Introduction or spread of invasive non-indigenous species									
Litter									
Nutrient enrichment									
Organic enrichment									
Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion									
Physical change (to another seabed type)									
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									

Potential pressures	Designated features								
	Subtidal coarse sediment			Subtidal mud			Subtidal sand		
	A	B	T	A	B	T	A	B	T
Underwater noise changes									
Visual disturbance									

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[3].

Table 3 shows the fishing activities and pressures identified in Part A which have been included for assessment in Part B. The features and their associated attributes were identified with JNCC's conservation advice supplementary advice tables (JNCC, 2021), and are shown in **Table 4**. These attributes should be clearly capable of identifying a change in condition. There are no associated targets available for these attributes in the JNCC supplementary advice on conservation objectives (JNCC, 2021).

Table 4: Relevant favourable condition targets for identified pressures.

Feature	Attribute	Target	Relevant pressures
Subtidal coarse sediment, subtidal sand and subtidal mud	Extent and distribution	There are no targets available for the site in the JNCC supplementary advice on conservation objectives (JNCC, 2021).	• abrasion or disturbance of the substrate on the surface of the seabed; • changes in suspended solids (water clarity); • 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.
	Structure and function		
	Supporting processes		

4.1 Fisheries access and existing management

Non-UK vessels can operate within North-East of Haig Fras MPA, provided that they have a licence issued by the UK to do so. Nationalities which fished within the MPA include vessels from 2016 to 2020 include the UK, Spain, France, Ireland, and Portugal. VMS records indicate that Irish and French vessels are most prevalent.

There are no management measures currently in place in North-East of Haig Fras MPA.

4.2 Fishing activity summary

Table A1. 1 to **Table A1. 8** in Annex 1: display a detailed breakdown of fishing activity within North-East of Haig Fras MPA. Of the fishing activities not screened out in Part A of this assessment, the most prevalent gears operating within the site are beam trawls and bottom otter trawls.

Demersal trawls are the most common gear type used by over 12 m vessels in North-East of Haig Fras MPA. Between 2016 and 2021 there were a total of 5,685 VMS records for demersal trawls, with an annual average of 948 records. The records peak in 2018 (1,167 records), and gradually declined to 909 records in 2020, rising slightly in 2021 to 954 records. Landings for EU over 12 m vessels fluctuate between approximately 73 tonnes (t) in 2017 and 2019, and approximately 91 tonnes in 2018 and 2020. There is a very small amount of trawling activity from under 12 m vessels. The surface SARs fluctuate between 0.63 and 1.04 between 2016 to 2020, with an average of 0.82. A SAR value of 1 means that each area C-square experiences a pass of fishing gear on average once a year. Therefore, a value of 0.82 means that at this current level of activity it would take approximately one year and one month for the surface of the whole site to be swept once.

Dredges are only used by EU over 12 m vessels with an annual average of 62 VMS records and 0.04 live weight landings tonnage. There is minimal fishing activity from demersal seines in the site, with 2 total VMS records observed only in 2016 and one surface SAR value recorded in 2020 at 0.004. A value of 0.004 means that at this current level of activity it would take over 200 years for the surface of the whole site to be swept once.

Anchored nets and lines are the most common gear type used by under 12 m length vessels in North-East of Haig Fras MPA. Between 2016 and 2020, 5.81 tonnes total were landed from UK and EU under 12 m vessels. Landings increase from 0.28 tonnes in 2016 to 1.54 tonnes in 2017 for UK vessels and then remain relatively constant through to 2020. Landings for EU vessels peak at 0.3 tonnes in 2019 and fluctuate between 0 and 0.03 tonnes in previous years before dropping to 0.03 tonnes again in 2020. Fishing effort data suggests that anchored nets and lines were used in the site a total of 6.03 days from 2016 to 2021.There was an annual average of 27 VMS records for over 12 m vessels using anchored nets and lines in the site between 2016 and 2021. These vessels landed approximately 6.80 tonnes on average per year between 2016 and 2021 across gill nets (unspecified), set gillnet (anchored), combined gillnets-trammel nets, trammel net and longlines (demersal).

There were no VMS records for vessels using traps within the site. Under 12 m data indicates that fishing activity from traps in the site is limited, with 0.05 tonnes of landings total for UK and non-UK under 12 m vessels and 0.08 days of total fishing effort from 2016 to 2021.

4.3 Pressures by gear type

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

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

In the context of MPA assessment, the pressures removal of target and non-target species refer to any damage, loss, or removal of species defined as a designated feature or integral to the integrity of a designated feature (for example key structural or influential species). This may occur through intentional or unintentional catch associated with the act of commercial fishing. 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 North-East of Haig Fras MPA, and the detail of key structural and influential species is yet to be fully defined, we conclude that impacts from target and non-target removal pressures can be scoped out from further assessment of this site. These pressures may require consideration as a result of any future evidence review, in conjunction with updated conservation advice from JNCC and Natural England.

Information about the biotopes in the site was provided by the Biotope Presence-Absence spreadsheet of JNCC Report No.647 (Tillin et al., 2020), which listed European Nature Information System (EUNIS) biotopes that were present, likely to be present, or absent from each UK offshore bioregion based on survey data, environmental information, species records, literature and expert judgement. Biotopes were screened out if they were not located in the same region as North-East of Haig Fras MPA, and if they were not found at the depth range for the site (50 to 100 m). **Table 5** highlights the biotopes for the Western Channel and Celtic Sea region that have been screened into the assessment, as they are found in the same region and depth range as North-East of Haig Fras MPA. Information about the depth range of each biotope was listed in the Biotope Database of JNCC Report No. 647 (Tillin et al., 2020). Where it was not available, information from The Marine Life

Information Network (MarLIN)[8] pages for each biotope were used to determine the depth range. If the range was also unavailable on MarLIN, it was left as 'not available'.

[8] MarLIN – EUNIS habitats list. www.marlin.ac.uk/habitats/eunis (last accessed 16 June 2023)

Table 5: Biotopes in the Western Channel and Celtic Sea region to be screened into this assessment.

Feature	Biotope name	Depth range (m)	Justification for screening in
Subtidal coarse sediment	*Branchiostoma lanceolatum* in circalittoral coarse sand with shell gravel (Tillin and Watson, 2023)	20-100	Evidence for the biotope in the region and the biotope is in the correct depth range for North-East of Haig Fras MPA.
	Scallops on shell gravel and sand with some sand scour	Not available	Some evidence that the biotope is in the region, screen in to be precautionary.
	Glycera lapidum, *Thyasira* spp. and *Amythasides macroglossus* in offshore gravelly sand (Tillin, 2016)	Deep circalittoral coarse sediment has a depth range of 20-100	Evidence that Deep circalittoral coarse sediment, where this biotope is found, is in the region, and this sediment has the correct depth range for North-East of Haig Fras MPA.
	Hesionura elongata and *Protodorvillea kefersteini* in offshore coarse sand (Tillin and Ashley, 2016)		
Subtidal sand	*Echinocyamus pusillus*, *Ophelia borealis* and *Abra prismatica* in circalittoral fine sand (Tillin, 2022b)	30-200	Evidence for the biotope in the region and the biotope is in the correct depth range for North-East of Haig Fras MPA.
	Abra prismatica, *Bathyporeia elegans* and polychaetes in circalittoral fine sand (Tillin, 2022a)	20-100	Evidence for the biotope in the region and the biotope is in the correct depth range for North-East of Haig Fras MPA.
	Maldanid polychaetes and *Eudorellopsis deformis* in deep circalittoral sand or muddy sand (Ashley, 2016)	Not available	Evidence that Deep circalittoral sand, where this biotope is found, is in the region, so this biotope is also likely to be present.

	Owenia fusiformis and *Amphiura filiformis* in deep circalittoral sand or muddy sand (De-Bastos, 2023b)		
Feature	**Biotope name**	**Depth range (m)**	**Justification for screening in**
Subtidal mud	*Thyasira* spp. and *Ennucula tenuis* in circalittoral sandy mud (De-Bastos and Watson, 2023b)	20-100	Evidence for the biotope in the region and the biotope is in the correct depth range for North-East of Haig Fras MPA.
	Amphiura filiformis and Ennucula *tenuis* in circalittoral and offshore muddy sand (De-Bastos and Watson, 2023a)	50-100	
	Lagis koreni and *Phaxas pellucidus* in circalittoral sandy mud (De-Bastos, 2023a)	10-100	Evidence for the biotope in the region and the biotope is in the correct depth range for North-East of Haig Fras MPA.
	Burrowing megafauna and *Maxmuelleria lankesteri* in circalittoral mud (Durkin and Tyler-Walters, 2022)		
	Brissopsis lyrifera and *Amphiura chiajei* in circalittoral mud (De-Bastos and Budd, 2016)	20-100	
	Ampharete falcata turf with *Parvicardium ovale* on cohesive muddy sediment near margins of deep stratified seas (De-Bastos and Hill, 2016)	50-100	
	Foraminiferans and *Thyasira* spp. in deep circalittoral soft mud (Tillin and Riley, 2016)		
	Capitella capitata, *Thyasira* spp. and *Ophryotrocha dubia* inorganically-enriched offshore circalittoral mud or sandy mud (Tillin, 2018)	Not available	Some evidence that the biotope is in the region, screen in to be precautionary.

	Levinsenia gracilis and *Heteromastus filifirmis* in offshore circalittoral mud and sandy mud (De-Bastos, 2016a)		
Feature	**Biotope name**	**Depth range (m)**	**Justification for screening in**
Subtidal mud	*Paramphinome jeffreysii*, *Thyasira* spp. and *Amphiura filiformis* in offshore circalittoral sandy mud (De-Bastos, 2016c)	Not available	Some evidence that the biotope is in the region, screen in to be precautionary.
	Myrtea spinifera and polychaetes in offshore circalittoral sandy mud (De-Bastos, 2016b)		

4.3.1 Anchored nets and lines

Subtidal coarse sediment, subtidal sand and subtidal mud features of North-East of Haig Fras MPA have been considered in relation to pressures from anchored nets and lines.

The relevant pressures on subtidal sediment features of North-East of Haig Fras 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;
- removal of non-target species; and
- removal of target species.

As noted above, impacts from target/non-target removal pressures have been scoped out from this assessment, as they are assessed more completely within the abrasion and penetration pressures.

The impacts of abrasion or disturbance of the seabed on sediment features are most likely to occur during the hauling of gear and from movement of the gear along the seabed as a result of strong tides, currents, and storms. However, according to section 9.4 of the Anchored nets and lines Impacts Evidence document[5], assuming correct deployment of the gears, abrasion pressures from the use of anchored nets and lines are unlikely to hinder the conservation objectives of subtidal sediment habitats in this site.

Subtidal sand and subtidal coarse sediment

The impacts from abrasion pressures on subtidal sand and coarse sediment are dependent on the intensity of fishing and the resistance of species to physical damage, disturbance, or removal of sensitive species, such as sessile epifauna. According to the available evidence on the JNCC conservation advice package[1], there are no known sensitive species found in North-East of Haig Fras MPA. However, this information is limited, so the possible presence of sensitive species in the site cannot be ruled out. **Table 5** highlights the biotopes that are likely to be present in the region where North-East of Haig Fras MPA is located. Of the seven biotopes for subtidal sand and subtidal coarse sediment that have sensitivity information available on MarLIN (Ashley, 2016; Tillin, 2016, 2022b, 2022a; Tillin and Ashley, 2016; De-Bastos, 2023b; Tillin and Watson, 2023), two have medium or high sensitivity to abrasion pressures (Ashley, 2016; De-Bastos, 2023b). There is no sensitivity information available on MarLIN for the biotope 'Scallops on shell gravel and sand with some scour'.

Subtidal mud

For subtidal mud, the impacts from abrasion described in the Traps Impacts Evidence document[7] are in relation to sensitive epifauna such as sea-pen. According to the available evidence on the JNCC conservation advice package[1], there are no

known sensitive species found in North-East of Haig Fras MPA. However, this information is limited, so the possible presence of sensitive species in the site cannot be ruled out. **Table 5** highlights the biotopes that are likely to be present in the region where North-East of Haig Fras MPA is located. Only ten of the biotopes for subtidal mud have sensitivity information available on MarLIN (De-Bastos, 2016a, 2016c, 2016b, 2023a; De-Bastos and Budd, 2016; De-Bastos and Hill, 2016; Tillin and Riley, 2016; Durkin and Tyler-Walters, 2022; De-Bastos and Watson, 2023b, 2023a). Of these, eight have medium or high sensitivity to abrasion pressures (De-Bastos, 2016a, 2016c, 2016b; De-Bastos and Budd, 2016; De-Bastos and Hill, 2016; Durkin and Tyler-Walters, 2022; De-Bastos and Watson, 2023b, 2023a). There is no sensitivity information available on MarLIN for the biotope '*Capitella capitata, Thyasira* spp. and *Ophryotrocha dubia* inorganically-enriched offshore circalittoral mud or sandy mud' (Tillin, 2018). However, the sensitivity of these species are likely to be similar to other biotopes with polychaetes and bivalve characterising species.

In total, there are ten biotopes in North-East of Haig Fras MPA that are considered to have medium or high sensitivity to abrasion from anchored nets and lines (Ashley, 2016; De-Bastos, 2016a, 2016c, 2016b, 2023b; De-Bastos and Budd, 2016; De-Bastos and Hill, 2016; Durkin and Tyler-Walters, 2022; De-Bastos and Watson, 2023b, 2023a). The resilience of these species is generally medium as the polychaetes, bivalves, burrowing megafauna and brittlestars burrow and are therefore able to avoid surface level damage from abrasion. Sea-pens could be found as a part of some of these biotopes, which are resilient to anchored nets and lines as they are able to reinsert themselves if removed by the gear[5]. These features are also exposed to the high hydrodynamic energy of the Western Channel and Celtic Sea region, and the biological communities present in the site are likely to be adapted to a level of natural disturbance. However, resistance of these characterising species is generally low as fishing gears are likely to penetrate the surface and can damage important feeding or tube structures of these species.

Recovery rates are species-specific, and different biotopes will recover more quickly following damage or removal from abrasion pressures. According to the Anchored nets and lines Impacts Evidence document[5], subtidal sediments are likely to recover more slowly from damage from static gears if the activity levels are high and sustained for long periods of time. However, as per **section 4.2**, the level of fishing activity for UK under 12 m vessels from anchored nets and lines has largely remained constant since 2017, with an annual average of 1.09 tonnes of landings. It is also not possible to determine any spatial overlap between this activity and the presence of sensitive biotopes as survey information is not currently available for the

site. In addition, the Anchored nets and lines VMS webmap[9] shows that the activity is sparse across the site, so no feature is more at risk from abrasion than another. Therefore, at this described level of activity, **MMO conclude that the ongoing use of anchored nets and lines does not pose a significant risk of hindering the achievement of the conservation objectives of North-East of Haig Fras MPA.**

4.3.2 Bottom towed gear

Subtidal coarse sediment, subtidal sand and subtidal mud features of North-East of Haig Fras MPA have been considered in relation to pressures from bottom towed gear.

The relevant pressures on subtidal sediment features of North-East of Haig Fras MPA from bottom towed gear were identified in **Table 4** and are:

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

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

Abrasion and penetration pressures from bottom towed gear can result in both physical and biological impacts on subtidal sediment features that vary based on the levels of fishing activity and intensity. However, according to the Bottom towed gear Impacts Evidence document[6], the impacts to biological communities through damage and mortality of epifauna as the gears pass over the seabed are more likely to hinder the conservation objectives of North-East of Haig Fras MPA depending on the levels of fishing activity. Abrasion from dredges can result in direct mortality of species on the seabed, whereas abrasion from demersal seines can disturb, damage and remove mobile and sessile epifauna from the seabed during the closure of the seine nets when herding demersal fish. As per **section 4.2**, fishing activity from demersal seines and dredges is limited within the MPA, with a total of 2 and

[9] Anchored Nets and Lines VMS Webmap: defra.maps.arcgis.com/apps/dashboards/e6e92d9301f74da4b8300cf64bd67593 (last accessed 30 August 2024)

372 VMS records respectively between 2016 and 2021. For dredges, this equates to a total of 0.19 tonnes of landings. Abrasion from demersal trawls can reduce the habitat complexity and can permanently alter the biological community and state of the habitat following periods of high intensity trawling. **Section 4.2** highlights that demersal trawls are the most common gear type used by over 12 m length vessels in the site, with an annual average of 948 VMS records between 2016 and 2021. Therefore, abrasion and penetration pressures from bottom towed gears pose a risk of hindering the conservation objectives of North-East of Haig Fras MPA.

The Bottom towed gear Impacts Evidence document[6] outlines that changes in suspended solids, smothering and siltation rate pressures can cause disturbance to the upper layers of sediments when they come into contact with bottom towed gear, causing sediments to become re-suspended. These impacts vary depending on the species present within the habitats, as suspended particles can affect the ability of suspension feeders and/or deposit feeding bivalves to breathe and feed. However, these impacts are only likely to be significant if there is a chronic and sustained change in water turbidity from background levels.

Subtidal sand and subtidal coarse sediment

The impacts from the listed pressures on subtidal coarse sediment and subtidal sand are dependent on the sensitivity of the species present. There is limited evidence for the impacts of bottom towed gear on subtidal sand, however evidence in the Bottom towed gear Impacts Evidence document[6] suggests that negative effects have been observed in communities located in muddier sands or gravel habitats. Subtidal sand in the site is likely to be muddier in nature due to the presence of subtidal mud throughout the site. As the sand gets muddier towards the east of the site, community restoration becomes slower following disturbance from bottom towed gear, and tracks can become more noticeable.

Coarse sediment is considered to be sensitive to fishing activity from bottom towed gear, as characterising species such as long-lived bivalves and sessile epifauna can be removed or damaged by the pass of the gear, reducing the diversity and abundance of these populations. **Table 5** highlights the biotopes that are likely to be present in the region where North-East of Haig Fras MPA is located. Of the seven biotopes for subtidal sand and subtidal coarse sediment that have sensitivity information available on MarLIN (Ashley, 2016; Tillin, 2016, 2022b, 2022a; Tillin and Ashley, 2016; De-Bastos, 2023b; Tillin and Watson, 2023), three have medium or high sensitivity to abrasion and penetration pressures (Ashley, 2016; De-Bastos, 2023b; Tillin and Watson, 2023) and four have medium sensitivity to heavy levels of smothering pressures (Tillin, 2016, 2022b, 2022a; De-Bastos, 2023b); where ‘heavy’ is categorised by up to 30 cm of fine material deposited on the seabed from a single

activity[10]. The Bottom towed gear Impacts Evidence document[6] suggests that the recoverability of coarse sediment depends on factors such as the size and weight of gears, the extent of the area fished and the depth of the gears. Demersal trawling is occurring all over the site, with a concentrated strip of heavy trawling across the centre of the site that largely overlaps with the subtidal coarse sediment feature. As per **section 4.2**, the annual average SAR value for demersal trawls between 2016 to 2020 is 0.82, which means it takes just over a year to sweep the whole site once. Therefore, if the current activity of bottom towed gear persists, it would hinder the conservation objectives of North-East of Haig Fras MPA.

Subtidal mud

Abrasion pressures from bottom towed gear can flatten out the natural small scale topographic features found in subtidal mud, resulting in a flattened seafloor with high relief features created from the penetration of otter boards attached to the gears. According to the Bottom towed gear Impacts Evidence document[6], the depths that gears penetrate in muddy habitats are deeper than those for sandy habitats (30 to 60 mm versus 10 mm respectively), which reduces the ability of the sediments to recover. As mentioned above, as sediments get muddier the rate of community restoration gets slower. Consistent disturbance events from the passage of gear can lead to permanent changes in the biogeochemistry of subtidal mud, leaving muds in a state of permanent recovery from a disturbance event. This results in reduced biomass, diversity and species richness of the habitat, with recovery times depending on the level of natural disturbance and the intensity of fishing activity.

Table 5 highlights the biotopes that are likely to be present in the region where North-East of Haig Fras MPA is located. Only ten of the biotopes for subtidal mud have sensitivity information available on MarLIN (De-Bastos, 2016a, 2016c, 2016b, 2023a; De-Bastos and Budd, 2016; De-Bastos and Hill, 2016; Tillin and Riley, 2016; Durkin and Tyler-Walters, 2022; De-Bastos and Watson, 2023b, 2023a). There is no sensitivity information available on MarLIN for the biotope '*Capitella capitata, Thyasira* spp. and *Ophryotrocha dubia* inorganically-enriched offshore circalittoral mud or sandy mud' (Tillin, 2018). However, the sensitivity of these species are likely to be similar to other biotopes with polychaetes and bivalve characterising species.

Of these ten, eight biotopes have medium or high sensitivity to abrasion and penetration pressures (De-Bastos, 2016a, 2016c, 2016b; De-Bastos and Budd, 2016; De-Bastos and Hill, 2016; Durkin and Tyler-Walters, 2022; De-Bastos and Watson, 2023b, 2023a), and six have medium sensitivity to heavy levels of

[10] MarLIN – MarESA pressures and benchmarks. www.marlin.ac.uk/sensitivity/SNCB-benchmarks (last accessed 19 June 2023)

smothering (De-Bastos, 2016a, 2016c, 2016b; Tillin and Riley, 2016; De-Bastos and Watson, 2023b, 2023a); where 'heavy' is categorised by up to 30 cm of fine material deposited on the seabed from a single activity. These sensitivities have been measured in relation to demersal trawling. As mentioned in **section 4.2**, there is consistent trawling from 2016 to 2020, with SARs ranging from 0.63 to 1.04, and an annual average of 1,010 VMS records for all bottom towed gears between 2016 and 2021. In addition, the presence of sensitive erect epifauna and high densities of infaunal communities typically found in mud habitats are particularly susceptible to trawling disturbance, with direct mortality being observed up to 68 % for some bivalve species from a single passage of a trawl according to section 8.5.3 of the Bottom towed gear Impacts Evidence document[6]. This is consistent with the level of fishing activity throughout the period described in **section 4.2**.

As per **section 2.1**, the 'Recover' general management approach for the site was set based on aggregated VMS data for demersal trawls. Based on the updated data from 2016 to 2021 in **section 4.2**, the levels of trawling within North-East of Haig Fras MPA are consistent with the pre-consultation evidence (JNCC, 2016). In addition, bottom towed gear activity is occurring throughout the extent of the site and is particularly heavy over the sensitive subtidal coarse sediment feature. Therefore, **MMO conclude that the ongoing use of bottom towed gear poses a significant risk of hindering the achievement of the conservation objectives of North-East of Haig Fras MPA.**

4.3.3 Traps

Subtidal coarse sediment, subtidal sand and subtidal mud features of North-East of Haig Fras MPA have been considered in relation to pressures from traps.

The relevant pressures on subtidal sediment features of North-East of Haig Fras MPA from bottom towed gear were identified in **Table 4** and are:

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

As noted above, impacts from target/non-target removal pressures have been scoped out from this assessment, as they are assessed more completely within the abrasion and penetration pressures.

The impact of abrasion and disturbance pressures from traps and their associated anchors and lines is most likely to occur from the interaction between the gear and the seabed during hauling, or as a result of strong tides, currents and storms.

According to section 9.4 of the Traps Impacts Evidence document[7], primary evidence suggests that there are physical impacts of traps on subtidal sediments from the snagging of gear or entanglement and damage to sensitive epifauna.

Subtidal sand and subtidal coarse sediment

The impacts from abrasion pressures on subtidal sand and coarse sediment are dependent on the stability of the sediments and the sensitivity of the species present, as there is potential for the snagging of gear and entanglement to cause damage to fragile epifauna. According to the available evidence on the JNCC conservation advice package[1], there are no known sensitive species found in North-East of Haig Fras MPA. However, this information is limited, so the possible presence of sensitive species in the site cannot be ruled out. **Table 5** highlights the biotopes that are likely to be present in the region where North-East of Haig Fras MPA is located. Of the seven biotopes for subtidal sand and subtidal coarse sediment that have sensitivity information available on MarLIN (Ashley, 2016; Tillin, 2016, 2022b, 2022a; Tillin and Ashley, 2016; De-Bastos, 2023b; Tillin and Watson, 2023), two have medium or high sensitivity to abrasion pressures (Ashley, 2016; De-Bastos, 2023b). There is no sensitivity information available on MarLIN for the biotope 'Scallops on shell gravel and sand with some scour'.

Subtidal mud

For subtidal mud, the impacts from abrasion described in the Traps Impacts Evidence document[7] are in relation to sensitive epifauna such as sea-pen. According to the available evidence on the JNCC conservation advice package[1], there are no known sensitive species found in North-East of Haig Fras MPA. However, this information is limited, so the possible presence of sensitive species in the site cannot be ruled out. **Table 5** highlights the biotopes that are likely to be present in the region where North-East of Haig Fras MPA is located. Only ten of the biotopes for subtidal mud have sensitivity information available on MarLIN (De-Bastos, 2016a, 2016c, 2016b, 2023a; De-Bastos and Budd, 2016; De-Bastos and Hill, 2016; Tillin and Riley, 2016; Durkin and Tyler-Walters, 2022; De-Bastos and Watson, 2023b, 2023a). Of these, eight have medium or high sensitivity to abrasion pressures (De-Bastos, 2016a, 2016c, 2016b; De-Bastos and Budd, 2016; De-Bastos and Hill, 2016; Durkin and Tyler-Walters, 2022; De-Bastos and Watson, 2023b, 2023a). There is no sensitivity information available on MarLIN for the biotope '*Capitella capitata, Thyasira* spp. and *Ophryotrocha dubia* inorganically-enriched offshore circalittoral mud or sandy mud' (Tillin, 2018). However, the sensitivity of these species are likely to be similar to other biotopes with polychaetes and bivalve characterising species.

The Traps Impacts Evidence document[7] states that stable epifauna in all subtidal sediment features found in this MPA are either not considered sensitive to or are likely to have low sensitivity to all but intense levels of potting. As per **section 4.2**, the fishing activity from potting within North-East of Haig Fras MPA is low in the site, with 0.05 tonnes total landed for UK and non-UK under 12 m length vessels. Therefore, **MMO conclude that the ongoing use of traps does not pose a**

significant risk of hindering the achievement of the conservation objectives of North-East of Haig Fras MPA.

4.4 Part B conclusion

The assessment of anchored nets and lines, bottom towed gear and traps on subtidal coarse sediment, subtidal sand and subtidal mud features of North-East of Haig Fras MPA has concluded that the ongoing use of bottom towed gear may result in a significant risk of hindering the achievement of the conservation objectives of the MPA. Management measures will therefore be implemented for bottom towed gear for North-East of Haig Fras 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 development infrastructure plans and projects that occur in the MPA.

ArcGIS software has been used to check relevant activities that occur within, or adjacent to, the assessed site where there could be a pathway for impact. To determine relevant activities to be included in this part of the assessment, a distance of 5 km was selected as suitable to capture any potential way in which the activity could impact the benthic features of the site in combination with effects of the fishing activities assessed. A 5 km buffer was therefore applied to the site boundary to identify relevant activities. This assessment considers the in-combination impacts of marine licensable activities that are ongoing or upcoming, with the same medium to high-risk pressure impact pathways as permitted fishing activity. As the models were run using ArcGIS in August 2023, any licences that ended before this date were screened out of the assessment.

The North Sea Transition Authority (NSTA) is responsible for regulating the oil, gas and carbon storage industries, and as such these activities fall outside of MMO's marine licensing remit. Oil, gas and carbon storage industry activities are not currently considered in this draft assessment, as information on the potential pressures exerted by associated activities is currently under review, and the likelihood of these activities resulting in an in-combination significant risk of hindering the achievement of the site's conservation objectives with fishing is expected to be very low. Following formal consultation, relevant oil, gas and carbon storage industry activities that could impact the site in-combination with the effects of assessed fishing activities will be included before finalising this assessment, alongside marine licence applications submitted after August 2023.

There may be operational submarine cables within this MPA, these cables are already in-situ and are unlikely to have any residual abrasion/removal pressure in-combination with the assessed fishing activity. Any abrasion/removal pressure from submarine cable operation and maintenance activity will be temporary with limited seabed impacts and is therefore unlikely to have significant in-combination effects with assessed fishing.

Bottom towed gears were identified in Part B as requiring management to avoid posing a significant risk of hindering the achievement of the site conservation objectives. Anchored nets and lines and traps are the only remaining fishing

activities occurring within North-East of Haig Fras 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 one project, within the 5 km buffer applied. **Table 6** shows this activity and the relevant category from the JNCC Pressures-Activities Database (PAD)[1].

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

Marine licence case reference number[2]	PAD Category	Description
MLA/2022/00239	Anchorage and moorings: Construction	Installation of 4 sets of floating buoy FLiDAR/seabed mooring with upward looking ADCP at a maximum of four locations to collect metocean data (wave and currents). Known as the Celtic Sea Metocean survey. Areas of search, 3 and 4 overlap with the 5 km buffer of North-East of Haig Fras MPA; specific locations for installation within these areas will be identified prior to deployment. Outside the site boundary. **No direct or indirect pressure pathway for impact and therefore, no in-combination effects possible.**

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

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

5.1 In-combination pressure sections

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

5.2 Fishing vs Fishing in-combination pressures

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

As noted in Part B (**Section 4.3.1** nets and lines and **Section 4.3.3** traps), impacts from the removal of target and non-target species pressure is not being considered in detail in this assessment. In-combination impacts from the removal of target and non-target species pressures are more fully assessed under the pressure abrasion, as the detail of key structural and influential species is yet to be fully defined. Therefore, the removal pressures are not considered further in this in-combination assessment. The pressures may require further consideration as future evidence becomes available, in conjunction with updated conservation advice from JNCC and Natural England.

The annual average VMS records for over 12 m vessels within the MPA totalled 27 (anchored nets and lines), there were no VMS records for vessels using traps within the MPA. 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 1.02 days (0.01 days for traps, 1.01 days for anchored nets and lines, Annex 1, calculated from **Table A1. 8**). For the same period (2016-2020), the total fishing effort (under 12s) estimated to have been derived from the MPA were 6.11 days (0.08 days for traps, 6.03 days for anchored nets and lines (Annex 1, calculated from **Table A1. 8**)). The fishing effort data is further supported by the estimated live weight landings for under 12 m vessels that total 5.86 tonnes, 0.05

tonnes for traps and 5.81 tonnes for anchored nets and lines, between 2016 and 2020 (**Section 4.2**).

The combined impacts from anchored nets and lines and traps could potentially increase the risk of negative effects from the pressure abrasion and disturbance of the substrate on the surface of the seabed. However, as there are no VMS records for vessels using traps, there is no spatial overlap between the gear types for over 12 m vessels. In addition, due to the annual average trap effort being low (0.01 days) and the minimal landings for this gear type, any in-combination impact is considered insignificant.

Therefore, MMO concludes that the combined pressures from anchored nets and lines and traps will not result in a significant risk of hindering the achievement of the conservation objectives for the East of Haig Fras MPA at the levels described.

5.3 Fishing vs non-fishing in-combination pressures

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

The designated features of the North-East of Haig Fras 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 installation of floating buoy moorings which might cause abrasion or disturbance of the seabed relate to anchorage of buoys. These will be in-situ for a period of up to 12 months, with occasional maintenance visits planned in that period. These anchoring solutions can smother or impede the growth of biological communities within their footprint and have the potential to cause localised physical damage through abrasion and scouring of the substrate in which they are located, particularly in the highly hydrodynamic conditions of the Celtic Sea and Western Channel.

As detailed in **section 4.3** abrasion and disturbance of seabed surface substrate, at the described 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 gravity based mooring solution, 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. However, the buoys and gravity based mooring solutions will be installed adjacent to and not within the boundary of the MPA. Therefore, there are no medium to high-risk pressure pathways associated with these marine licensable activities that could have an

impact on the designated features within the site boundary and are therefore not considered further in this in-combination assessment.

Therefore, MMO concludes that the combined pressures from anchored nets and lines and traps and other relevant activities will not result in a significant risk of hindering the achievement of the conservation objectivise for the North-East of Haig Fras 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 North-East of Haig Fras MPA.

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

6 Conclusion and proposed management

Part A of this assessment concluded that bottom towed gear, anchored nets and lines and traps are capable of affecting (other than insignificantly) the designated features of North-East of Haig Fras MPA.

Part B of this assessment concluded that ongoing use of bottom towed gear on the subtidal coarse sediment, subtidal sand and subtidal mud features of North-East of Haig Fras MPA may result in a significant risk of hindering the achievement of the conservation objectives of the MPA. Part B also concluded that the ongoing use of anchored nets and lines and traps at the described levels does not pose a significant risk of hindering the achievement of the conservation objectives.

Part C of this assessment concluded that combined pressures from anchored nets and lines and traps and other relevant activities do not pose a significant risk of hindering the achievement of the conservation objectives of the MPA.

To ensure that fishing activities do not result in a significant risk of hindering the conservation objectives, MMO propose to implement a byelaw to prohibit the use of bottom towed gear on the subtidal coarse sediment, subtidal sand and subtidal mud features of North-East of Haig Fras MPA.

Figure 2 shows the proposed management area in line with the conclusions set out above.

The boundaries of the proposed management area include an appropriate buffer zone to prevent direct damaging physical interactions between fishing activities and the designated features to be protected. The rationale for determining buffer size can be found in in Annex 2 of the Stage 3 MPA Site Assessment Methodology document[4].

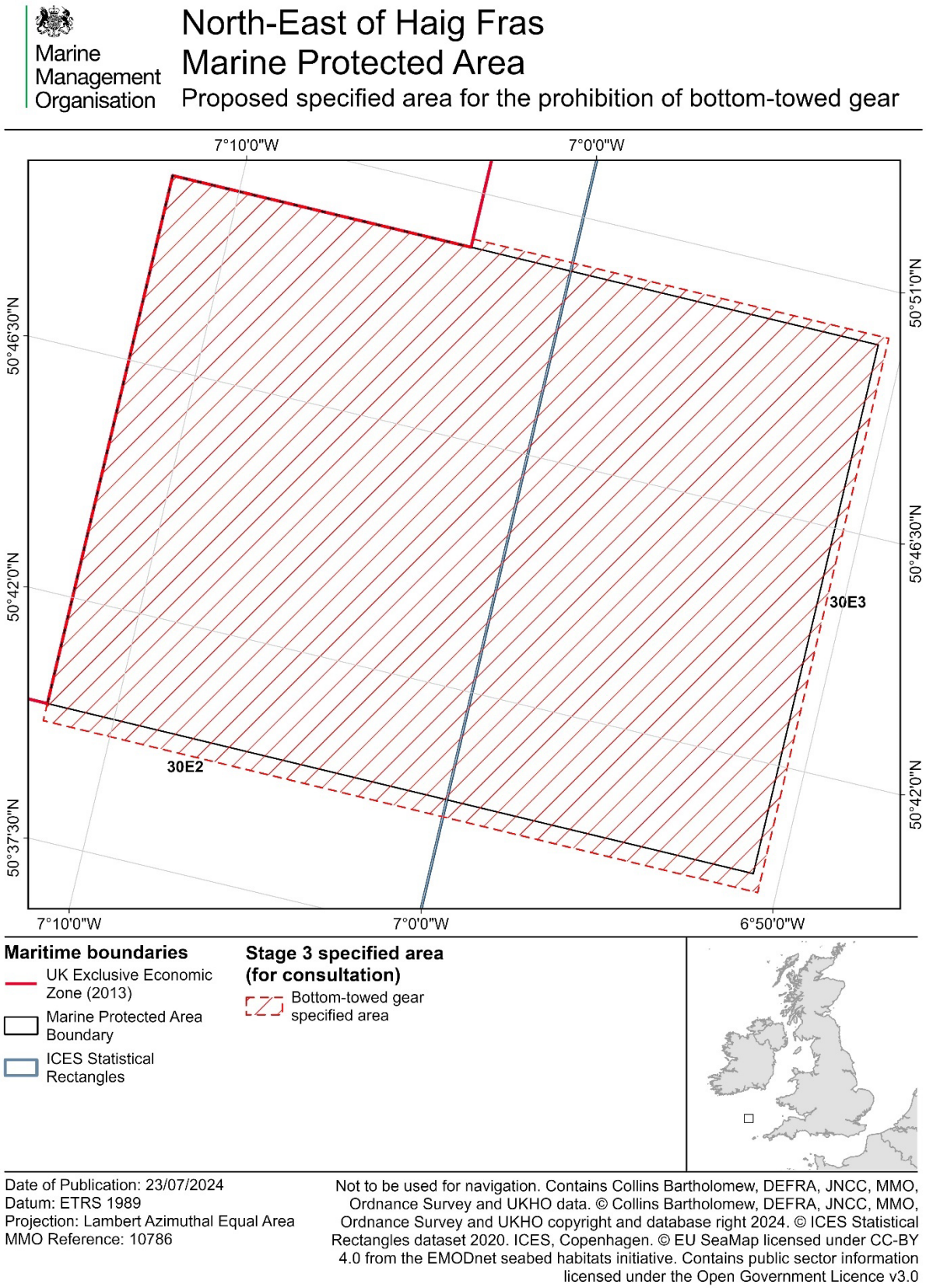

Figure 2: Map of proposed management.

7 Review of this assessment

MMO will review this assessment every five years, or earlier if significant new information is received. Such information could include:

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

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

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Annexes

Annex 1: Fishing activity data

Table A1. 1: VMS record count per nation group (UK and EU Member State) and proportional activity (%), per gear, per gear group, per year (2016 to 2021), totals and annual average (2016 to 2021) for North-East of Haig Fras MPA. All numbers are rounded to the nearest whole number.

Gear group	Gear code	Nation group	2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
			Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Anchored Net/Line	**GN**	UK	0	0	0	0	7	100	7	100	8	100	7	100	29	100	5
	GN Total		**0**	**0**	**0**	**0**	**7**	**50**	**7**	**30**	**8**	**23**	**7**	**18**	**29**	**18**	**5**
	GNS	EU	7	100	1	2	7	100	6	86	5	22	0	0	26	29	4
	GNS	UK	0	0	44	98	0	0	1	14	18	78	29	100	92	71	15
	GNS Total		**7**	**100**	**45**	**100**	**7**	**50**	**7**	**30**	**23**	**66**	**29**	**76**	**118**	**72**	**20**
	GTN	EU	0	0	0	0	0	0	0	0	0	0	1	100	1	100	0
	GTN Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**3**	**1**	**1**	**0**
	GTR	EU	0	0	0	0	0	0	3	100	4	100	0	0	7	100	1
	GTR Total		**0**	**0**	**0**	**0**	**0**	**0**	**3**	**13**	**4**	**11**	**0**	**0**	**7**	**6**	**1**
	LLS	EU	0	0	0	0	0	0	6	100	0	0	1	100	7	100	1
	LLS Total		**0**	**0**	**0**	**0**	**0**	**0**	**6**	**26**	**0**	**0**	**1**	**3**	**7**	**5**	**1**
Anchored Net/Line Total			**7**	**1**	**45**	**4**	**14**	**1**	**23**	**2**	**35**	**3**	**38**	**4**	**162**	**2**	**27**
Demersal Seine	**SPR**	EU	2	100	0	0	0	0	0	0	0	0	0	0	2	100	0
	SPR Total		**2**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**100**	0
Demersal Seine Total			**2**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2**	**0**	**0**

Gear group	Gear code	Nation group	2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
			Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
Demersal trawl	**OTB**	EU	299	98	405	100	291	100	588	100	581	100	330	100	2,494	100	416
	OTB	UK	5	2	0	0	1	0	0	0	0	0	0	0	6	0	1
	OTB Total		**304**	**49**	**405**	**41**	**292**	**25**	**588**	**56**	**581**	**64**	**330**	**35**	**2,500**	**44**	417
	OTT	EU	29	100	61	100	19	100	13	100	2	100	9	100	133	100	22
	OTT Total		**29**	**5**	**61**	**6**	**19**	**2**	**13**	**1**	**2**	**0**	**9**	**1**	**133**	**2**	22
	TBB	EU	256	90	395	75	789	92	408	91	324	99	615	100	2,787	91	465
	TBB	UK	28	10	129	25	67	8	39	9	2	1	0	0	265	9	44
	TBB Total		**284**	**46**	**524**	**53**	**856**	**73**	**447**	**43**	**326**	**36**	**615**	**64**	**3,052**	**54**	509
Demersal trawl Total			**617**	**78**	**990**	**83**	**1,167**	**93**	**1,048**	**93**	**909**	**86**	**954**	**94**	**5,685**	**88**	**948**
Dredge	**DRB**	EU	83	100	140	100	57	100	36	100	56	100	0	0	372	100	62
	DRB Total		**83**	**100**	**140**	**100**	**57**	**100**	**36**	**100**	**56**	**100**	**0**	**0**	**372**	**100**	62
Dredge Total			**83**	**11**	**140**	**12**	**57**	**5**	**36**	**3**	**56**	**5**	**0**	**0**	**372**	**6**	**62**
Midwater - Gill Drift	**GND**	EU	0	0	0	0	0	0	3	100	0	0	0	0	3	100	1
	GND Total		**0**	**0**	**0**	**0**	**0**	**0**	**3**	**100**	**0**	**0**	**0**	**0**	**3**	**100**	1
Midwater - Gill Drift Total			**0**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**0**	**0**	**0**	**0**	**3**	**0**	**1**
Midwater - surrounding	**PS**	EU	0	0	1	100	0	0	0	0	0	0	0	0	1	100	0
	PS Total		**0**	**0**	**1**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**100**	0
Midwater - surrounding Total			**0**	**0**	**1**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1**	**0**	**0**
Midwater Hook/Lines	**LHP**	EU	0	0	0	0	0	0	1	100	12	100	0	0	13	100	3
	LHP Total		**0**	**0**	**0**	**0**	**0**	**0**	**1**	**100**	**12**	**100**	**0**	**0**	**13**	**46**	3
	LLD	EU	0	0	0	0	15	100	0	0	0	0	0	0	15	100	3

Gear group	Gear code	Nation group	2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Annual average (2016 to 2021)
			Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count	%	Count
	LLD Total		**0**	**0**	**0**	**0**	**15**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**54**	3
Midwater Hook/Lines Total			**0**	**0**	**0**	**0**	**15**	**1**	**1**	**0**	**12**	**1**	**0**	**0**	**28**	**1**	**6**
Midwater Trawl	**OTM**	EU	80	100	17	100	8	100	10	100	50	100	0	0	165	100	33
	OTM Total		**80**	**100**	**17**	**100**	**8**	**100**	**10**	**100**	**50**	**100**	**0**	**0**	**165**	**100**	33
Midwater Trawl Total			**80**	**10**	**17**	**1**	**8**	**1**	**10**	**1**	**50**	**5**	**0**	**0**	**165**	**3**	**33**
Unknown	**NK**	EU	0	0	0	0	0	0	0	0	0	0	27	100	27	100	5
	NK Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**100**	**27**	**100**	**5**
Unknown Total			**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**27**	**3**	**27**	**0**	**5**
Grand Total			**789**	**1**	**1,193**	**2**	**1,261**	**2**	**1,121**	**2**	**1,062**	**2**	**1,019**	**2**	**6,445**	**2**	**1,074**

Table A1. 2: UK live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of North-East of Haig Fras 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	0	3.74	1.07	2.06	6.87	1.37
	GNS	0	23.96	0	0.22	2.95	27.13	5.43
	GTR	0	0	0	0	0	0	0
Anchored Net/Line Total		**0**	**23.96**	**3.74**	**1.30**	**5.00**	**34.00**	**6.80**
Demersal trawl	OTB	0.35	0	0.03	0	0	0.38	0.08
	TBB	3.95	18.99	11.17	2.86	0.03	37.00	7.40
Demersal trawl Total		**4.30**	**18.99**	**11.20**	**2.86**	**0.03**	**37.39**	**7.48**
Grand Total		**4.30**	**42.94**	**14.95**	**4.16**	**5.03**	**71.38**	**14.28**

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

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Anchored Net/Line	GNS	0.03	<0.01	0.06	0.24	0.35	0.68	0.14
	LLS	0	0	0	0.06	0	0.06	0.01
Anchored Net/Line Total		**0.03**	**0**	**0.06**	**0.30**	**0.35**	**0.74**	**0.15**
Demersal trawl	OTB	20.22	24.13	15.80	30.61	49.77	140.52	28.10
	OTT	5.65	5.49	3.50	2.64	0.18	17.47	3.49
	TBB	33.37	43.63	71.81	39.90	41.67	230.38	46.08

Demersal trawl Total		**59.24**	**73.25**	**91.11**	**73.15**	**91.62**	**388.38**	**77.68**
Dredge	DRB	0.06	0	0	0.12	0	0.19	0.04
Dredge Total		**0.06**	**0**	**0**	**0.12**	**0**	**0.19**	**0.04**
Midwater Hook/Lines	LLD	0	0	16.38	0	0	16.38	3.28
Midwater Hook/Lines Total		**0**	**0**	**16.38**	**0**	**0**	**16.38**	**3.28**
Midwater Trawl	OTM	0	5.07	5.88	0	0	10.95	2.19
Midwater Trawl Total		**0**	**5.07**	**5.88**	**0**	**0**	**10.95**	**2.19**
Grand Total		**59.34**	**78.32**	**113.43**	**73.57**	**91.97**	**416.63**	**83.33**

Table A1. 4: Percentage of each ICES rectangle intersected by the MMO section of North-East of Haig Fras MPA.

ICES rectangle	Percentage overlap (%)
30E2	6.67
30E3	5.14

Table A1. 5: UK live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the MMO section of North-East of Haig Fras 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	0.19	1.34	0.93	0.73	1.46	4.65	0.93
	GNS	0.10	0.10	0.26	0.26	0	0.71	0.14
	GTR	0	0.10	0	0	0	0.10	0.02
Anchored Net/Line Total		**0.28**	**1.54**	**1.18**	**0.99**	**1.46**	**5.46**	**1.09**
Demersal trawl	OT	0	0	0	0	0	0	0
Demersal trawl Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Midwater - Gill Encircling	GNC	0	0	0	0	0.17	0.17	0.03
Midwater - Gill Encircling Total		**0**	**0**	**0**	**0**	**0.17**	**0.17**	**0.03**
Midwater Hook/Lines	LHP	0	0	0	0.01	0	0.01	<0.01
	LX	0	0	0	0	0	0	0
Midwater Hook/Lines Total		**0**	**0**	**0**	**0.01**	**0**	**0.01**	**<0.01**
Traps	FPO	0	0.01	0	0	0	0.01	<0.01
Traps Total		**0**	**0.01**	**0**	**0**	**0**	**0.01**	**<0.01**
Grand Total		**0.28**	**1.55**	**1.18**	**0.99**	**1.64**	**5.65**	**1.13**

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

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
Anchored Net/Line	GNS	0	0.03	0	0.30	0.03	0.35	0.07
Anchored Net/Line Total		**0**	**0.03**	**0**	**0.30**	**0.03**	**0.35**	**0.07**
Demersal trawl	OTB	0	0	0	0.01	0	0.01	<0.01
Demersal trawl Total		**0**	**0**	**0**	**0.01**	**0**	**0.01**	**<0.01**
Dredge	DRB	0	0	0	0	0	0	0
Dredge Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**
Traps	FPO	0	0	0.02	0.02	0	0.04	0.01
Traps Total		**0**	**0**	**0.02**	**0.02**	**0**	**0.04**	**0.01**
Grand Total		**0**	**0.03**	**0.02**	**0.33**	**0.03**	**0.40**	**0.08**

Table A1. 7: Mean annual surface and subsurface SAR values for C-squares intersecting the MMO section of North-East of Haig Fras MPA (2016 to 2020).

Gear group	SAR category	2016	2017	2018	2019	2020
Demersal Seines	Surface	0	0	0	0	<0.01
	Subsurface	0	0	0	0	0
Dredges	Surface	0	0	0	0	0
	Subsurface	0	0	0	0	0
Demersal Trawls	Surface	0.64	0.95	0.63	1.04	0.85
	Subsurface	0.20	0.28	0.26	0.21	0.15
All Bottom Towed Gear	Surface	0.64	0.95	0.63	1.04	0.86
	Subsurface	0.20	0.28	0.26	0.21	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 North-East of Haig Fras MPA that intersects the marine portion of ICES rectangles 30E2 and 30E3 (2016 to 2021). ICES rectangle level data has been apportioned to the MPA based on the percentage area of the ICES rectangle that intersects the MPA (see Table A1. 4). All numbers are rounded to the nearest two decimal places.

Gear group	Fishing effort (days at sea)							
	2016	2017	2018	2019	2020	2021	Total (2016 to 2021)	Annual average (2016 to 2021)
Midwater gill encircling	0	0	0	0	0.15	0	0.15	0.03
Midwater hooks and lines	0	0	0	0.07	0	0	0.07	0.01
Midwater gear total	**0**	**0**	**0**	**0.07**	**0.15**	**0**	**0.22**	**0.04**
Traps	0	0.03	0	0	0	0.05	0.08	0.01
Anchored nets and lines	0.51	1.41	1.03	0.98	1.40	0.70	6.03	1.01
Static gear total	**0.51**	**1.43**	**1.03**	**0.98**	**1.40**	**0.75**	**6.11**	**1.02**
MPA total	**0.51**	**1.43**	**1.03**	**1.04**	**1.56**	**0.75**	**6.34**	**1.06**