

Marine Management Organisation

MMO Stage 3 Site Assessment: Haig Fras MPA (DRAFT)

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Title: MMO Stage 3 Site Assessment: Haig Fras MPA (Draft) Contents

Exec	cutive Summary	.1
1	Introduction	. 2
2	Site information	. 3
3	Part A - Identified pressures on the MPA	. 6
4	Part B - Fishing activity assessment	11
5	Part C – In-combination assessment	18
6	Conclusion and proposed management	21
7	Review of this assessment	22
Refe	rences	23
Anne	ex 1: Fishing activity data	25
Anne	ex 2: Biotope information	31

Executive Summary

This assessment analyses the impact of anchored nets and lines and traps on the designated features circalittoral rock in Haig Fras 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 these fishing gears will not result in an adverse effect on the site integrity.

1 Introduction

This assessment considers whether fishing activities are compatible with the conservation objectives of Haig Fras 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 force.

2 Site information

2.1 Overview

The following Joint Nature Conservation Committee (JNCC) site information was used for background on site geography, designations, features, and conservation objectives in this assessment:

JNCC Site Information - Haig Fras SAC¹

Haig Fras MPA is an isolated, fully submarine granite bedrock outcrop located in the Celtic Sea, 95 km north-west of the Isles of Scilly and covering an area of approximately 476 km² (Figure 1). Fishing activity in the site is regulated by MMO. JNCC (beyond 12 nautical miles (nm)) are the relevant Statutory Nature Conservation body for the site.Haig Fras MPA was designated as a SAC in 2015.

Haig Fras supports a diverse assemblage of fauna. On the uppermost parts, the exposed bedrock is dominated by jewel anemones, encrusting sponges and bryozoans, as well as mobile fauna such as the sea urchin. The shallowest parts of the site support small patches of encrusting pink coralline algae. At depths of between 60 m and 70 m, the shoal bedrock is slightly covered in silt and supports cup corals and a few mobile species such as crinoids. At the base of the shoal, the rock was covered with a thin layer of fine calcareous sand and mud and supports cup sponges, erect branching sponges and crinoids. The boulders and cobbles around the base of the shoal supported encrusting sponges and crinoids, brittlestars, squat lobster and the Ross coral.

The conservation objectives for the features of Haig Fras MPA have been set based on a vulnerability assessment.

The view of the condition of the qualifying features in Haig Fras MPA is currently unfavourable. The designated features and their conservation objectives are set out in **Table 1**.

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.

¹ JNCC site information – Haig Fras SAC: <u>https://jncc.gov.uk/our-work/haig-fras-mpa/</u> (last accessed 3 July 2023)



Datum: ETRS 1989

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Figure 1: Site overview map.

Designated feature	Conservation objective
	Recover to favourable condition
	For the feature to be in favourable condition thus ensuring site integrity in
	Favourable Conservation Status of Annex I Reefs.
Annex 1 reefs	
Circalittoral rock	This contribution would be achieved by maintaining or restoring, subject to natural change:
	aualifying babitat in the site:
	 • The structure and function of the qualifying habitat in the site; and • The supporting processes on which the qualifying habitat relies.

Table 1: Designated features and conservation objectives.

2.2 Scope of this assessment

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

Bottom towed gear interactions with the features moderate energy circalittoral rock has not been included in this assessment as it has already been addressed in the <u>MMO Stage 2 assessment of Haig Fras MPA²</u> and prohibited by the <u>MMO Marine</u> <u>Protected Areas Bottom Towed Fishing Gear Byelaw 2023</u>³. Stage 2 assessed the impacts of fishing using bottom towed gears on rock, rocky and biogenic reef in 13 MPAs.

² Stage 2 MPA Fisheries Assessment: <u>www.gov.uk/government/publications/marine-protected-areas-bottom-towed-fishing-gear-byelaw-2023</u> (last accessed 21 August 2024)

³ MMO Marine Protected Areas Bottom Towed Fishing Gear Byelaw 2023: <u>www.gov.uk/government/publications/marine-protected-areas-bottom-towed-fishing-gear-byelaw-2023</u> (last accessed 21 August 2024)

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 2017⁴ and regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017⁵.

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.

3.1 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);

⁴ www.legislation.gov.uk/uksi/2017/1012/regulation/63

⁵ www.legislation.gov.uk/uksi/2017/1013/regulation/28

- 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 <u>Stage 3</u> <u>MPA Site Assessment Methodology document</u>⁶, 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 Haig Fras MPA.

Gear type	Gear name	Gear code	Justification			
Anchored nets and	Trammel net	GTR	Present in VMS data.			
lines	Longlines (demersal)	LLS				
	Set gillnet (anchored)	GNS	Present in VMS records and under 12 m vessel landings			
	Gill nets (not specified)	GN	rectangles that overlap the site.			
Midwater gear	Purse seine (ring net)	PS	Present in VMS data.			
	Midwater pair trawl	PTM				
	Midwater otter trawl	ОТМ				
	Longlines (midwater)	LLD				
	Hand-operated pole-and-line	LHP				
Traps	Pot/Creel	FPO	Present in VMS records and under 12 m vessel landings			

⁶ Stage 3 MPA Site Assessment Methodology document:

<u>www.gov.uk/government/publications/stage-3-site-assessments</u> (last accessed 16 September 2024)

	data for ICES statistical
	rectangles that overlap the site.

3.2 Pressures, features and activities screened out

This section identifies activities or pressures that are **occurring but do not need to be considered** for 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 Haig Fras MPA, there is no feasible pathway for gears of this type to interact with benthic designated features as part of normal operation (not considering gear failure or net loss). These gears are not designed to operate on or near the seabed and are deployed entirely within the water column. Therefore, the use of midwater gear within 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 and traps <u>Impacts</u> <u>Evidence documents</u>:

- Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines⁷; and
- Stage 3 Fishing Gear MPA Impacts Evidence Traps⁸.

⁷ Stage 3 Fishing Gear MPA Impacts Evidence Anchored Nets and Lines: <u>www.gov.uk/government/publications/stage-3-impacts-evidence</u> (last accessed 21 August 2024)

⁸ Stage 3 Fishing Gear MPA Impacts Evidence Traps:

<u>www.gov.uk/government/publications/stage-3-impacts-evidence</u> (last accessed 21 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 JNCC advice to assess the sensitivities of pressures on the designated features of the site.

Table 3 details the pressures for each gear type - anchored nets and lines (A) to be assessed in Part B, taking into account the pressures screened in and out in **sections 3.1 and 3.2.**

Кеу	
	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.

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

	Desig fea	gnated ture
Potential pressures	Circa ro	littoral ock
	A	
Above water noise		
Abrasion of disturbance of the substrate on the surface of the seabed		
Changes in suspended solids (water slority)		
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		
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 'appropriate assessment' required by regulation 63 of the Conservation of Habitats and Species Regulations 2017⁴ and regulation 28 of the Conservation of Offshore Marine Habitats and Species Regulations 2017⁵.

Table 3 shows the fishing activities and pressures identified in Part A which have been included for assessment in Part B. The important targets for favourable condition were identified within JNCC's conservation supplementary advice tables and are shown in Table 4. 'Important' in this context means only those targets relating to attributes that will most efficiently and directly help to define condition. These attributes should be clearly capable of identifying a change in condition.

Attribute	Target	Relevant pressures
Extent and distribution: presence and spatial distribution of biological communities Structure and function: presence and abundance of key structural and influential species	Recover to favourable condition	 Relevant to: abrasion or disturbance of the substrate on the surface of the seabed removal of non-target species removal of target species

4.1 Fisheries access and existing management

Non-UK vessels can operate within Haig Fras MPA, provided that they have a licence issued by the UK to do so. Nationalities which fished within the MPA from 2016 to 2021 include UK, Spain, France, Ireland, and Portugal. VMS records indicate that UK, Irish and French vessels were most prevalent.

More information on non-UK vessel access to UK waters can be found on MMO's <u>Single Issuing Authority</u> page⁹.

Haig Fras MPA is subject to the following relevant legislative restrictions that are applicable to fisheries occurring in the site:

1. Marine Protected Areas Bottom Towed Fishing Gear Byelaw 2023³

The MMO Marine Protected Areas Bottom Towed Fishing Gear Byelaw 2023³ prohibits bottom towed gear activity within Haig Fras MPA.

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

4.2 Fishing activity summary

Table A1. 1 to **Table A1. 8** in Annex 1 display a detailed breakdown of fishingactivity within Haig Fras MPA. When discussing weights from landings in thissection, figures used are a total of weights from UK and EU member states.

Of the fishing activities not screened out in Part A of this assessment or already subject to management, VMS and landings data show that the most prevalent gears operating within the site are anchored nets and lines.

Anchored nets and lines:

According to VMS and landings data for over 12 m vessels, the use of anchored nets and lines in the site is the most prevalent gear type deployed in the site with an average VMS count of 198 between 2016 and 2021, and approximately 29.14 tonnes landed on average between 2016 and 2020 across gillnets (unspecified), gillnets (anchored), trammel nets and long lines (demersal). Under 12 m vessels using anchored nets and lines landed approximately 0.35 tonnes (t) per year on average between 2016 and 2020. Under 12 m landings are recorded at ICES rectangle level and have been attributed to the MPA based on the proportion of the ICES rectangle it overlays. Haig Fras MPA covers 0.76 % of ICES rectangle 29E1 and 11.23 % of ICES rectangle 29E2. Fishing effort days are derived from logbooks and is collected at ICES rectangle and then apportioned accordingly. Average fishing effort recorded by UK vessels under 12 m in length using anchored nets and lines between 2016 and 2021 for the area of Haig Fras MCZ that intersects ICES rectangles 29E1 and 29E2 was 0.3 days. VMS density records also indicate that this gear type occurs widely across the whole site.

Traps:

According to VMS and landings data for over 12 m vessels, the use of pots/creels in the site is minimal. Two VMS count records are evident in 2016, however no further activity has been recorded between 2017 and 2021, therefore, on average between 2016 and 2021 the total VMS counts for pots/creels equates to 0. Under 12 m landings data indicate that there is minimal trap activity occurring within the site; all under 12 m vessels deploying traps within the site landed approximately 0.03 tonnes per year on average between 2016 and 2020. No fishing effort data is available vessels under 12 m in length using pots/creels between 2016 and 2021 for the area of Haig Fras MPA that intersects ICES rectangles 29E1 and 29E2.

4.3 Pressures by gear type

The Stage 3 Fishing Gear MPA Impacts Evidence documents for anchored nets and lines 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, conservation objectives, intensity of fishing activity taking place and exposure to natural disturbance.

In the context of MPA assessment, the pressures removal of target and non-target species refer to any damage, loss, or removal of species defined as a designated feature or integral to the integrity of a designated feature (for example key structural or influential species). This may occur through intentional or unintentional catch associated with the act of commercial fishing. For the purposes of benthic feature assessments, the physical effects of fishing gears on seabed communities are best addressed through the assessment of abrasion and penetration pressures. As there are no designated species features associated with the 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. We acknowledge that these pressures may require consideration as a result of any future evidence review, in conjunction with updated conservation advice from JNCC and Natural England.

4.3.1 Anchored nets and lines

The following features of Haig Fras MPA have been considered in relation to pressures from anchored nets and lines.

Circalittoral rock

The relevant pressures on the features of Haig Fras MPA (outlined above) from anchored nets and lines were identified in **Table 4** and are:

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

Section 4.2 describes the fishing activity within Haig Fras MPA and indicates that, according to VMS records and landings data, the use of anchored nets and lines appears to be the most prevalent gear type deployed in the site.

Impacts on these 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.

Biotope data for Haig Fras MPA, a JNCC site, at bioregion level is consolidated in the JNCC Biotope Databases. Biotope data for the Western Channel and Celtic Sea was extracted from the Biotope Presence Absence Database¹⁰ to determine the number of biotopes that are likely to be present at the site. Biotope sensitivity data

¹⁰ JNCC report 647: Biotope Presence-Absence spreadsheet (revised July 2020). Available online: <u>Assigning the EUNIS classifications to UK's Offshore Regional</u> <u>Seas | JNCC Resource Hub</u> (last accessed 28 November 2023).

was then extracted from The Marine Life Information Network (MarLIN) to outline biotope sensitivity for the relevant pressure. No differentiation has been made in the JNCC Conservation Advice Package between high or moderate energy circalittoral rock, therefore for completeness the biotopes present for both high and moderate energy circalittoral rock with high or medium sensitivity to abrasion from anchored nets and lines have been included in this assessment. **Table A2. 1** and **Table A2. 2** of Annex 2 details the list of biotopes that may be found within the circalittoral rock features of the Haig Fras MPA and the likelihood of presence based on depth range.

Fourteen biotopes were identified as potentially present within the high energy circalittoral rock feature in Haig Fras MPA. Two with high sensitivity and five with medium sensitivity to seabed abrasion/disturbance from anchored nets and lines were found. One each from the high and medium sensitivity groups were excluded due to depth range. Seven with low sensitivity were not considered further. Thus, five biotopes with high/medium sensitivity, not excluded by depth, were assessed for abrasion/disturbance from anchored nets, lines, and traps. These are detailed in **Table A2. 1.**

For the moderate energy circalittoral rock feature, 19 biotopes were identified which could be present in Haig Fras MPA. Eleven of these are categorised as having medium sensitivity to abrasion from anchored nets and lines shown in **Table A2. 2** in Annex 2. Furthermore, given the depth range of this site is 39 m to 109 m, it is unlikely that three of the identified biotopes occur within the site. The remaining eight have low sensitivity to abrasion, therefore these have not been considered further within this section.

VMS fishing activity data indicates that anchored nets and lines activity is spread evenly across the site, with slightly higher densities of VMS records occurring in the central section of the site when compared to the peripheral edges and is occurring over the circalittoral rock feature. As the fishing activity data for the under 12 m fleet does not indicate where it occurs within the Haig Fras MPA, the use of anchored nets and lines may be occurring over the circalittoral rock feature, although activity is minimal when compared to vessels over 12 m in length.

As described in section 7.1 of the anchored nets and lines Impacts Evidence document⁷, sensitivity assessments suggest there is the potential for static gear such as anchored nets and lines to cause damage to rocky reefs and sensitive epifauna. Although targeted research on the impacts of netting on reef is extremely limited, there are some literature reviews that state that high levels of netting and associated anchoring can damage reefs and the associated communities through cumulative damage over time. The potential for impact will depend on the intensity of fishing activity taking place, with increasing activity increasing the likelihood of weights and ropes associated with nets and lines damaging, entangling, or removing epifaunal species.

One of the biotopes identified as possibly being present in the MPA has high sensitivity to the impacts of abrasion from anchored nets and lines. MarLiN identified that, given the slow growth rate and lack of observed recovery or recruitment in some axinellids, any perturbation resulting in mortality is likely to result in negligible recovery within 25 years for *Phakellia ventilabrum* and axinellid sponges on deep, wave-exposed circalittoral rock resulting in very low resilience to abrasion impacts (Readman, Lloyd and Watson, 2023f).

The remaining biotopes are considered to have medium sensitivity to the impacts of abrasion from anchored nets and lines. These species have high resilience and good recoverability as they reach sexual maturity quickly, can reproduce asexually to aid recovery of damaged populations, and can undertake resting stages that are very resistant of environmental perturbation. This feature is also subject to high hydrodynamic energy of the Western Channel and Celtic Sea, so it is likely that these biological communities are acclimatised to some level of natural disturbance.

As outlined above, the biotope data is at bioregion level. In addition, there is no site community analysis report which would detail the species and communities present within the site. As a result, there is no direct evidence of biotope presence. However, there is a low risk of impacts on the majority of biotopes associated with this feature relating to abrasion or disturbance of the substrate on the surface of the seabed, and good rates of resilience and recoverability of the majority of biotopes found within this feature due to the highly dynamic offshore environment. For instance, MarLIN outlined that many of the biotopes listed are typically found on wave-exposed circalittoral bedrock or boulders subject to variable tidal streams, ranging from moderate to strong. In addition, sponges are known to be highly resilient to physical damage with an ability to survive severe damage, regenerate and reorganise to function fully again and as such it is likely that these biotopes have some resilience to described levels of anchored nets and lines in the site. Therefore, it is unlikely that the ongoing use of anchored nets and lines at described levels will pose a significant risk of hindering the achievement of the conservation objective of 'recover to favourable condition' of this feature of Haig Fras MPA.

Therefore, MMO conclude that the ongoing use of anchored nets and lines at described levels does not pose a significant risk of hindering the achievement of the conservation objectives of Haig Fras MPA.

4.3.2 Traps

The following features of Haig Fras MPA have been considered in relation to pressures from traps.

Circalittoral rock

• 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.

Traps and anchored nets and lines fishing gear exert similar pressures on the biotopes associated with the circalittoral rock features of the site, therefore the biotopes identified in **Table A2. 1** and **Table A2. 2** of Annex 2 as having high and medium sensitivity to abrasion in the anchored nets and lines section (**section 4.3.1**) also apply here for the traps section.

According to VMS and landings data for over 12 m vessels, the use of pots/creels in the site is minimal. Two VMS count records are evident in 2016, however no further activity has been recorded between 2017 and 2021. VMS activity is on the peripheral edge of the site, with much higher densities of VMS records on the sediment features of the larger Greater Haig Fras MPA. Under 12 m landings data indicate that there is trap activity occurring within the site. As the fishing activity data for the under 12 m fleet does not indicate where it occurs within Haig Fras MPA, the use of pots/creels may be occurring over the circalittoral rock feature, although VMS and landings data indicate that the activity is very minimal.

As described in section 7.3 of the traps Impacts Evidence document⁸, abrasion impacts from this gear type are unlikely to impact the rock substrate itself but may impact biological communities associated with this feature. As identified in the traps Impacts Evidence document⁸, most of the literature before 2015 has suggested that traps are unlikely to significantly impact rocky reef biotopes. However, more recent studies conducted at Lyme Bay suggests that traps could have a negative impact on the biological functions of reef habitats at increased spatial and temporal densities when potting levels are very high. Based on the current levels of potting effort undertaken in Haig Fras MPA, impacts are likely to reflect low levels of potting activity undertaken at Lyme Bay where limited impacts were observed. Studies show that upright and branching species that protrude from the reef (such as sponges or bryozoans) were found to be particularly vulnerable to damage from the hauling of pots. Repeated trap activity could damage biological communities associated with these biotopes through cumulative impact. However, it should be noted that sensitivity to removal via abrasion was predominantly linked to studies using bottom towed gears rather than static gear types such as traps. The physical footprints of traps are much smaller than mobile gears such as trawls and dredges and it is unlikely that they would land, soak and be hauled, in exactly the same location on successive fishing trips.

The majority of biotopes present within the feature have good rates of resilience and recoverability. In addition, as this feature is subject to high hydrodynamic energy from the Western Channel and Celtic Sea the biotopes present are likely acclimatised to some level of natural disturbance. There is limited confidence that those biotopes which have been identified as having high sensitivity to the abrasion

and disturbance pressure, are present within the MPA. Considering this, the low trap effort and small spatial footprint of this gear, there is a low risk of impacts on the majority of biotopes associated with this feature relating to abrasion or disturbance. It is possible that recoverability of sensitive biotopes may be impeded should levels of fishing activity increase. However, at the described trap fishing activity levels, it is unlikely that the ongoing use of traps will pose a significant risk of hindering the achievement of the conservation objective of Haig Fras MPA.

Therefore, MMO conclude that the ongoing use of traps at the described levels does not pose a significant risk of hindering the achievement of the conservation objectives of Haig Fras MPA.

4.4 Part B conclusion

The assessment of anchored nets and lines and traps alone on the Annex I reef feature of Haig Fras MPA has concluded that the ongoing use of these fishing gears at the described levels will not result in an adverse effect on the site integrity.

Management measures will not therefore be implemented for anchored nets and lines and traps for Haig Fras MPA.

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 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, and with 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.

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

No gear types were 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 Haig Fras MPA that interact with the seabed. Incombination effects of these fishing activities as well as these activities incombination with other relevant activities will be assessed in this section.

In accordance with the methodology detailed above, ArcGIS identified no other relevant activities occurring within or adjacent to the Haig Fras MPA, within the 5 km buffer applied. Therefore, only fishing in-combination with other fishing activities are considered hereafter.

Table 3 from **section 3.3**, was used to identify medium-high risk pressures exerted by fishing which require in-combination assessment (**Table 5**).

Table 5 summarises the pressures exerted by fishing and identifies those pressuresexerted by all gears (Y: pressure exerted). Activity-pressure interactions arehighlighted dark blue to indicate an in-combination effect. Only fishing activity with noproposed or current fisheries management in place are considered.

Table 5: Pressures exerted by fishing.

	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

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

5.2 Fishing vs Fishing in-combination pressures

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

As noted in Part B (**Section 4.3.1** nets and lines and **Section 4.3.2** 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 198 (anchored nets and lines), while there were two VMS records for traps in 2016, no further VMS activity was recorded resulting in annual average of 0. For under 12 m vessels, between 2016 and 2020, the annual average fishing effort estimated to have been derived from the MPA anchored nets and lines was 0.3 days, no fishing effort data was available for traps in the relevant ICES rectangles (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 1.78 days (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 equal an annual average of 0.38 tonnes, 0.03 tonnes for traps and 0.35 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. While there is no fishing effort data available for under 12 m vessels using traps, the annual average landings are very low (0.03 tonnes) and there is limited activity from over 12 m vessels; therefore, trap activity within the site is considered to be minimal. The two VMS records for over 12 m vessels using traps are targeting the sediment features of the larger Greater Haig Fras MPA. Consequently, it is unlikely that there is spatial overlap between traps activity and anchored nets and lines within Haig Fras MPA. Anchored nets and lines within Haig Fras MPA. Anchored nets and lines of the larger types, 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 an adverse effect on site integrity for the Haig Fras MPA at the levels described.

5.3 Part C conclusion

MMO concludes that fishing interactions in-combination will not result in an adverse effect on the site integrity for 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 anchored nets and lines and traps are capable of affecting (other than insignificantly) the designated features of Haig Fras MPA.

Part B of this assessment concluded that the ongoing use of anchored nets and lines and traps at the described levels will not result in an adverse effect on site integrity for Haig Fras MPA.

Part C of this assessment conclude 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 Haig Fras MPA.

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

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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Annex 1: Fishing activity data

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

		2016		2017		2018		2019		2020		2021		Total (2016 to 2021)		Average (2016 to 2021)	
Gear group	Gear code	Nation group	Count	%	Count	%	Count										
	GN	UK	52	100	44	100	12	100	30	100	21	100	13	100	172	100	29
	GN Tota	al	52	8	44	19	12	11	30	25	21	57	13	42	172	14	29
	GNS	EU	114	35	74	64	43	73	21	78	7	100	0	0	259	48	43
Appharad	GNS	UK	215	65	41	36	16	27	6	22	0	0	2	100	280	52	47
Net/Line	GNS To	tal	329	50	115	50	59	53	27	22	7	19	2	6	539	45	90
	GTR	UK	66	100	3	100	1	100	23	100	8	100	8	100	109	100	18
	GTR Total		66	10	3	1	1	1	23	19	8	22	8	26	109	9	18
	LLS	EU	210	100	70	100	39	100	42	100	1	100	8	100	370	100	62
	LLS Total		210	32	70	30	39	35	42	34	1	3	8	26	370	31	62
Anchored Net	Line Tot	al	657	77	232	56	111	25	122	46	37	28	31	34	1,190	54	198
	SDN	EU	2	100	2	100	0	0	0	0	0	0	0	0	4	100	1
	SDN To	tal	2	12	2	33	0	0	0	0	0	0	0	0	4	14	1
Demersal	SPR	EU	14	100	4	100	2	100	3	100	0	0	0	0	23	100	4
Seine	SPR To	tal	14	82	4	67	2	100	3	100	0	0	0	0	23	82	4
	SSC	EU	1	100	0	0	0	0	0	0	0	0	0	0	1	100	0
	SSC To	tal	1	6	0	0	0	0	0	0	0	0	0	0	1	4	0
Demersal Seine Total		17	2	6	1	2	0	3	1	0	0	0	0	28	1	5	
Demersal	ОТВ	EU	129	100	141	99	276	100	114	100	44	100	41	100	745	100	124
trawl	ОТВ	UK	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0

		2016 2017		7	2018		2019		2020		2021		Total (2016 to 2021)		Average (2016 to 2021)		
Gear group	Gear code	Nation group	Count	%	Count	%	Count	%	Count								
	ОТВ То	tal	129	82	142	92	276	96	114	95	44	69	41	72	746	89	124
	ΟΤΤ	EU	28	100	13	100	13	100	6	100	20	100	16	100	96	100	16
	OTT To	tal	28	18	13	8	13	4	6	5	20	31	16	28	96	11	16
Demersal traw	I Total		157	18	155	37	289	65	120	45	64	48	57	62	842	38	140
Midwater -	PS	EU	0	0	1	100	0	0	2	100	0	0	0	0	3	100	1
surrounding	PS Tota	d	0	0	1	100	0	0	2	100	0	0	0	0	3	100	1
Midwater - sur	roundin	g Total	0	0	1	0	0	0	2	1	0	0	0	0	3	0	1
	LHP	EU	0	0	0	0	7	100	1	100	16	100	0	0	24	100	4
Midwater	LHP To	LHP Total		0	0	0	7	21	1	14	16	100	0	0	24	43	4
Hook/Lines	LLD	EU	0	0	0	0	26	100	6	100	0	0	0	0	32	100	5
	LLD Tot	LLD Total		0	0	0	26	79	6	86	0	0	0	0	32	57	5
Midwater Hoo	k/Lines T	fotal	0	0	0	0	33	7	7	3	16	12	0	0	56	3	9
	ОТМ	EU	22	100	16	100	5	100	14	100	13	100	4	100	74	100	12
Midwater	OTM To	otal	22	100	16	73	5	71	14	100	13	87	4	100	74	88	12
Trawl	РТМ	EU	0	0	6	100	2	100	0	0	2	100	0	0	10	100	2
	РТМ То	tal	0	0	6	27	2	29	0	0	2	0	0	0	10	12	2
Midwater Traw	/I Total		22	3	22	5	7	2	14	5	15	11	4	4	84	4	14
Trans	FPO	EU	2	100	0	0	0	0	0	0	0	0	0	0	2	100	0
Парз	FPO To	tal	2	100	0	0	0	0	0	0	0	0	0	0	2	100	0
Traps Total			2	0	0	0	0	0	0	0	0	0	0	0	2	0	0
Grand Total			855	1	416	1	442	1	268	0	132	0	92	0	2,205	1	367

Table A1. 2: UK live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of Haig Fras MPA (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016 to 2020)	Average (2016 to 2020)
	GN	11.19	10.26	3.31	5.26	8.91	38.93	7.79
Anchored Net/Line	GNS	68.13	22.08	4.60	0.41	0	95.22	19.04
	GTR	5.26	0.49	1.25	3.84	0.72	11.56	2.31
Anchored Net/Line Total		84.58	32.83	9.16	9.51	9.63	145.70	29.14
Domorsal trawl	ОТВ	0	0.18	0	0	0	0.18	0.04
Demersal trawi	TBN	0	0	0	0	0	0	0
Demersal trawl Total		0	0.18	0	0	0	0.18	0.04
Grand Total		84.58	33.02	9.16	9.51	9.63	145.89	29.18

Table A1. 3: EU27 live weight landings tonnage (t) estimates by gear from vessels over 12 m in length in the MMO section of Haig Fras MPA (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016-2020)	Average (2016-2020)
Anchored Net/Line	GNS	0.02	0.07	0.38	0.07	0.01	0.55	0.11
	LLS	12.57	7.20	1.18	1.87	0.05	22.88	4.58
Anchored Net/Line Total		12.59	7.27	1.56	1.94	0.06	23.43	4.69
Demorsal Seine	SDN	0.23	0.35	0	0	0	0.57	0.11
Demersal Seine	SSC	0.02	0	0	0	0	0.02	<0.01
Demersal Seine Total		0.25	0.35	0	0	0	0.60	0.12
Domorsal trawl	OTB	8.12	9.00	13.46	4.68	2.64	37.91	7.58
Demersal trawi	OTT	7.68	2.93	4.08	4.12	3.06	21.88	4.38
Demersal trawl Total		15.81	11.94	17.55	8.80	5.70	59.79	11.96
Midwater - surrounding	PS	0	0	0	0	0	0	0

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016-2020)	Average (2016-2020)
Midwater - surrounding Total		0	0	0	0	0	0	0
Midwater Hook/Lines	LLD	0	0	15.06	3.66	0	18.73	3.75
Midwater Hook/Lines Tota	İ	0	0	15.06	3.66	0	18.73	3.75
Midwator Trowl	OTM	0	0.01	0.04	0	0	0.05	0.01
Midwater Trawi	PTM	0	80.81	14.31	0	0	95.12	19.02
Midwater Trawl Total		0	80.83	14.34	0	0	95.17	19.03
Grand Total		28.65	100.38	48.52	14.40	5.77	197.71	39.54

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

ICES rectangle	Percentage overlap (%)
29E1	0.76
29E2	11.23

Table A1. 5: UK live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the MMO section of Haig Fras MPA (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016-2020)	Average (2016-2020)
Anchored Net/Line	GN	0	0.07	0	0	0.86	0.93	0.19
	GNS	0	0	0	0	0	0	0
Anchored Net/Line Total		0	0.07	0	0	0.86	0.93	0.19
Grand Total		0	0.07	0	0	0.86	0.93	0.19

Table A1. 6: EU27 live weight landings tonnage (t) estimates by gear from vessels under 12 m in length for the MMOsection of Haig Fras MPA (2016 to 2020). All numbers are rounded to two decimal places.

Gear group	Gear code	2016	2017	2018	2019	2020	Total (2016-2020)	Average (2016-2020)
Anchored Net/Line	GNS	0	0.01	0	0.78	0	0.79	0.16
Anchored Net/Line Total		0	0.01	0	0.78	0	0.79	0.16
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
Traps	FPO	0	0	0.13	0.01	0	0.13	0.03
Traps Total	•	0	0	0.13	0.01	0	0.13	0.03
Grand Total		0	0.01	0.13	0.78	0	0.91	0.18

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

Gear group	SAR category	2016	2017	2018	2019	2020
Demorrael Coince	Surface	<0.01	0.02	0	0	0.05
Demersal Semes	Subsurface	0	0	0	0	0
Due due e	Surface	0	0	0	0	0
Dieuges	Subsurface	0	0	0	0	0
Dama and Travila	Surface	1.06	1.09	0.84	0.58	0.40
Demersal Hawis	Subsurface	0.13	0.13	0.10	0.10	0.03
Dettern Toward Coor	Surface	1.06	1.11	0.83	0.58	0.45
Bollon Towed Gear	Subsurface	0.13	0.13	0.10	0.10	0.04

Table A1. 8: Fishing effort (days) recorded by UK vessels under 12 m in length, separated by gear type for the area of Haig Fras MPA that intersects the marine portion of ICES rectangles 29E1 – 29E2 (2016 to 2021). ICES rectangle level data has been apportioned to

		Fishing effort (days at sea)									
Gear group	2016	2017	2018	2019	2020	2021	Total (2016 to 2021)	Average (2016 to 2021)			
Anchored nets and lines	0	0.11	0	0	0.70	0.96	1.78	0.30			
Static gear total	0	0.11	0	0	0.70	0.96	1.78	0.30			
MPA total	0	0.11	0	0	0.70	0.96	1.78	0.30			

Annex 2: Biotope information

Table A2. 1: High energy circalittoral rock biotopes that may be found within Haig Fras MPA with high / medium sensitivity to the abrasion/disturbance of the substrate on the surface of the seabed pressure from anchored nets and lines and traps.

Biotope	Sensitivity	Justification
Bryozoan turf and erect sponges on tide-swept circalittoral rock (Readman, Lloyd and Watson, 2023a)	Abrasion: Medium Removal of non- target species: Medium	Records of presence
<i>Phakellia ventilabrum</i> and axinellid sponges on deep, wave-exposed circalittoral rock (Readman, Lloyd and Watson, 2023f)	Abrasion: High Removal of non- target species: High Removal of target species: High	Within depth range
<i>Eunicella verrucosa</i> and <i>Pentapora foliacea</i> on wave- exposed circalittoral rock (Readman, Jackson, <i>et al.</i> , 2023)	High Removal of non- target species: High Removal of target species: High	Not within depth range
Mixed turf of bryozoans and erect sponges with <i>Dysidia</i> <i>fragilis</i> and <i>Actinothoe</i> <i>sphyrodeta</i> on tide-swept wave-exposed circalittoral rock (Readman, Lloyd and Watson, 2023e)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Not relevant	Not within depth range
Mixed turf of bryozoans and erect sponges with <i>Sagartia</i> <i>elegans</i> on tide-swept circalittoral rock (Readman, Lloyd and Watson, 2023d)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Not relevant	Within depth range
Sparse sponges, <i>Nemertesia</i> spp., and <i>Alcyonidium</i> <i>diaphanum</i> on circalittoral mixed substrata (Readman, Lloyd and Watson, 2023g)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Medium	Included on precautionary basis (depth range uncertain)
Sponges and anemones on vertical circalittoral bedrock (Readman, Lloyd and Watson, 2023h)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Not relevant	Within depth range

Table A2. 2: Moderate energy circalittoral rock biotopes that may be found within Haig Fras MPA with medium sensitivity to the abrasion/disturbance of the substrate on the surface of the seabed pressure from anchored nets and lines and traps.

Biotope	Sensitivity	Justification
Brittlestars overlying coralline crusts, <i>Parasmittina trispinosa</i> and <i>Caryophyllia smithii</i> on wave-exposed circalittoral rock (De-Bastos, Williams and Hill, 2023)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Not relevant	Records of presence
<i>Caryophyllia smithii</i> and <i>Swiftia</i> <i>pallida</i> on circalittoral rock (Readman, Durkin, <i>et al.</i> , 2023)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: High	Within depth range
Caryophyllia smithii, Swiftia pallida and Alcyonium glomeratum on wave-sheltered circalittoral rock (Readman, Lloyd and Watson, 2023b)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: High	Within depth range
<i>Caryophyllia smithii</i> , <i>Swiftia pallida</i> and large solitary ascidians on exposed or moderately exposed circalittoral rock (Readman, Lloyd and Watson, 2023c)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: High	Within depth range
<i>Urticina felina</i> and sand- tolerant fauna on sand-scoured or covered circalittoral rock (Tillin and Hiscock, 2016)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Not relevant	Within depth range
Brittlestars on faunal and algal encrusted exposed to moderately wave-exposed circalittoral rock (De-Bastos <i>et</i> <i>al.</i> , 2023)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Not relevant	Within depth range

Biotope	Sensitivity	Justification
<i>Sabellaria spinulosa</i> encrusted circalittoral rock (Tillin, Marshall, Gibb, Lloyd, <i>et al.</i> , 2023a)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Not relevant	Within depth range
Sabellaria spinulosa with a bryozoan turf and barnacles on silty turbid circalittoral rock (Tillin, Marshall, Gibb, Lloyd, <i>et</i> <i>al.</i> , 2023b)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Not sensitive	Within depth range
Sabellaria spinulosa, didemnid and small ascidians on tide- swept moderately wave- exposed circalittoral rock (Tillin, Marshall, Gibb, Williams, <i>et al.</i> , 2023)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Not sensitive	Not within depth range
<i>Mytilus edulis</i> beds with hydroids and ascidians on tide- swept exposed to moderately wave-exposed circalittoral rock (Tyler-Walters, Mainwaring and Williams, 2022)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Low	Not within depth range
<i>Musculus discors</i> beds on moderately exposed circalittoral rock (Tyler-Walters, 2023)	Abrasion: Medium Removal of non- target species: Medium Removal of target species: Low	Not within depth range