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Sussex Inshore Fisheries and **Conservation Authority (IFCA)**

Marine Conservation Zone Fisheries Assessment (Part A & B)

Marine Protected Area:

Selsey Bill and the Hounds MCZ

Features:

Bracklesham Bay geological feature Short snouted seahorse (Hippocampus hippocampus) Subtidal mixed sediment Subtidal sand High energy infralittoral rock Low energy infralittoral rock Moderate energy infralittoral rock Moderate energy circalittoral rock Peat and clay exposures

Broad gear type(s): All gear types

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1. Introduction

1.1 The need for an MCZ assessment

This assessment has been undertaken by Sussex IFCA in order to document and determine whether management measures are required to achieve the conservation objectives of the Selsey Bill and the Hounds Marine Conservation Zone (MCZ). Sussex IFCA has duties under section 154 (protection of MCZs) of the Marine and Coastal Access Act 2009 which states:

(1)The authority for an IFC district must seek to ensure that the conservation objectives of any MCZ in the district are furthered.

(2)Nothing in section 153(2) is to affect the performance of the duty imposed by this section.

(3)In this section—

(a) "MCZ" means a marine conservation zone designated by an order under section 116; (

b)the reference to the conservation objectives of an MCZ is a reference to the conservation objectives stated for the MCZ under section 117(2)(b).

Section 125 of the 2009 Act also requires that public bodies (which includes the IFCA) exercise its functions in a manner to best further (or, if not possible, least hinder) the conservation objectives for MCZs.

This MCZ assessment will complement Sussex IFCA's assessment of commercial fishing activities in European Marine Sites (EMS) – designated to protect habitats and species in line with the EU Habitats Directive and Birds Directive. To bring fisheries in line with other activities, the Department for Environment, Food and Rural Affairs (DEFRA) announced on the 14th August 2012 a new approach to manage fishing activities within EMSs. This change in approach will promote sustainable fisheries while conserving the marine environment and resources, securing a sustainable future for both.

MCZ and EMS management work helps achieve the government's commitment to creating a wellmanaged, ecologically coherent network of Marine Protected Areas around the UK.

1.2 Documents reviewed to inform this assessment

- Selsey Bill and the Hounds MCZ factsheet
- Selsey Bill and the Hounds MCZ Designation Order 2019
- Natural England's Supplementary Advice on Conservation Objectives for Beachy Head West MCZ, Cromer Shoal Chalk Beds MCZ and Beachy Head East MCZ (which contain similar features to those of Selsey Bill and the Hounds MCZ). Note: Draft advice for Selsey Bill and the Hounds received further to draft assessment and subsequently incorporated

2. Information about the MCZ

2.1 Overview and designated features

Selsey Bill and the Hounds MCZ is an inshore site which covers an area of approximately 16 km² and is located by the town of Selsey in West Sussex on the south coast of England. The landward boundary is at Mean Low Water and the site adjoins the Bracklesham Bay Site of Special Scientific Interest. The site lies within the Eastern Channel region of English waters.

The site is well known for its high biodiversity and species richness, supported by a variety of different habitats ranging from rocky habitats to soft sandy sediments. The site provides additional protection for a series of geological interest features that are exposed on, and underlie, the foreshore within Bracklesham Bay. These rock features, known locally as "The Hounds", consist of outcrops of limestone and clay exposures and are representative of a coherent rock system stretching across the MCZ from the northwest corner to the southeast. These rock features provide a range of habitats that support a wide variety of species, with deeper or vertical rock faces dominated by animals such as anemones, sponges, and sea squirts. The site provides regions of high, moderate and low energy infralittoral rock as well as moderate energy circalittoral rock. Both subtidal mixed sediments and subtidal sands can also be found within Selsey Bill and the Hounds MCZ.

Selsey Bill and the Hounds MCZ also provides habitat for the Short-snouted seahorse (*Hippocampus hippocampus*). The site holds one of the best examples of peat and clay exposures on the southeast coast. Within the southeast of the site is the Mixon Hole, a dramatic 20 m drop in the seafloor exposing clay cliffs capped with limestone. This feature supports a rich diversity of habitats and species and has been classed as a marine Site of Nature Conservation Importance by West Sussex County Council.

Selsey Bill and the Hounds was designated as a MCZ in May 2019, a summary of the site's protected features is provided in Table 1, together with the recommended General Management Approach (GMA) for each feature. The GMA states that each feature will either be maintained in a favourable condition (if it is currently in this state), or for it to be recovered to a favourable condition (if it is currently in a damaged state) and then to be maintained in a favourable condition.

Feature	General management approach
Bracklesham Bay geological feature	Maintain in a favourable condition
Short-snouted seahorse (<i>Hippocampus hippocampus</i>)	
Subtidal mixed sediment	
Subtidal sand	
High energy infralittoral rock	Recover to a favourable condition
Low energy infralittoral rock	
Moderate energy infralittoral rock	
Moderate energy circalittoral rock	
Peat and clay exposures	

Table 1: Designated features and General Management Approach



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Figure 1. Selsey Bill and the Hounds MCZ feature map with Channel Coastal Observatory data, broadscale habitat data and Natural England MCZ designated features.

2.2 Conservation objectives

(1) The conservation objective of the Zone is that the protected features:

(a) so far as already in favourable condition, remain in such condition, and

(b) so far as not already in favourable condition, be brought into such condition, and remain in such condition.

(2) In paragraph (1), "favourable condition"(a) with respect to a habitat within the Zone, means that:

(i) its extent is stable or increasing, and

(ii) its structure and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it remains in a condition which is healthy and not deteriorating;

(b) with respect to a feature of geological interest within the Zone, means that:

(i) its extent, component elements and integrity are maintained,

(ii) its structure and functioning are unimpaired, and

(iii) its surface remains sufficiently unobscured for the purposes of determining whether the conditions in paragraphs (i) and (ii) are satisfied;

(c) with respect to a species of marine fauna within the Zone, means that the quality and quantity of its habitat and the composition of its population in terms of number, age and sex ratio are such as to ensure that the population is maintained in numbers which enable it to thrive.

(3) In paragraph (2)(a)(ii), the reference to the composition of the characteristic biological communities of a habitat includes a reference to the diversity and abundance of species forming part of or inhabiting that habitat.

(4) For the purposes of paragraph (2)(a)(ii), any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.

(5) For the purpose of determining whether a feature of geological interest is sufficiently unobscured within the meaning of paragraph (2)(b)(iii), any obscurement of that feature brought about entirely by natural processes is to be disregarded.

(6) For the purposes of paragraph (2)(c), any temporary reduction of numbers is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery.

(7) For the purpose of determining whether a protected feature is in favourable condition within the meaning of paragraph (2), any alteration to that feature brought about entirely by natural processes is to be disregarded.

3.0 MCZ Assessment process

3.1 Overview of the assessment process

The assessment of commercial fishing activities within Selsey Bill and the Hounds MCZ will be undertaken using a staged process, akin to that proposed by the Marine Management Organisation (MMO) for <u>marine</u> <u>licence applications</u>. The assessment process comprises an initial screening stage to establish whether an activity occurs or is anticipated to occur/has the potential to occur within the site. Activities which are not screened out are subject to a simple 'part A' assessment, similar to the Test of Likely Significant Effect required by Article 6(3) of the Habitats Directive. The aim of this assessment is to identify pressures capable of significantly affecting designated features or their related processes. Fishing activities and their associated pressures which are not screened out in the part A assessment are then subject to a more detailed part B assessment, where assessment is undertaken on a gear type basis. A part B assessment is the equivalent of the Appropriate Assessment process required by Article 6(3) of the Habitats Directive. The aim of this assessment is to determine whether there is a significant risk of the activity hindering the conservation objectives of the MCZ.

Within this stage of assessment, 'hinder' is defined as any act that could, either alone or in combination:

- In the case of a conservation objective of 'maintain', increase the likelihood that the current status of a feature would go downwards (e.g. from favourable to degraded) either immediately or in the future (i.e. they would be placed on a downward trend); or
- In the case of a conservation objective of 'recover', decrease the likelihood that the current status of a feature could move upwards (e.g. from degraded to favourable) either immediately or in the future (i.e. they would be placed on a flat or downward trend).

If the part B assessment is unable to conclude that there is no significant risk of an activity hindering the conservation objectives of the MCZ, then the activity may be subject to management and consideration will be given to whether or not the public benefit of the activity outweighs the risk of damage to the environment; and if so, whether the activity is able to deliver measures of equivalent environmental benefit to the damage that is likely to occur to the MCZ.

3.2 Screening and part A assessment

The aim of the screening stage and part A assessment is to determine whether, under section 125 and 154 of MCAA, fishing activities occurring or those which have the potential to occur within the site are compatible with the conservation objectives of the MCZ.

The screening of commercial fishing activities in Selsey Bill and the Hounds MCZ was undertaken using broad gear type categories. Sightings data collected by the Sussex IFCA, VMS data collected by the MMO, together with officers' knowledge was used to ascertain whether each activity occurs within the site, or has the potential to occur/is anticipated to occur in the foreseeable future. Fishing activities which were identified as occurring, have the potential to occur and/or are anticipated to occur in the foreseeable future within the site were screened with respect to potential pressures upon designated features (Part A assessment). In the absence of a Conservation Advice Package by Natural England for Selsey Bill and the Hounds MCZ at the time of compiling the draft MCZ Assessment, this screening exercise was undertaken using Advice on Operations within Conservation Advice Packages for sites which contain similar features to those of Selsey Bill and the Hounds MCZ, including Beachy Head West MCZ, Cromer Shoal Chalk Beds MCZ and Beachy Head East MCZ. Site specific advice was subsequently received and fed into the assessment in March 2022.

Activities were screened out for further part B assessment if they satisfied one or more of the following criteria:

- The activity does not occur within the site, does not have the potential to occur and/or is not anticipated to occur in the foreseeable future.
- The activity does occur but the pressure(s) does not significantly affect/ interact with the designated feature(s).
- The activity does occur but the designated feature(s) is not sensitive to the pressure(s) exerted by the activity.

The Advice on Operations provides a broad scale assessment of the sensitivity of designated features to different activity-derived pressures, using nationally available evidence on their resilience (an ability to recover) and resistance (the level of tolerance) to physical, chemical and biological pressures. The assessments of sensitivity to these pressures are measured against a benchmark. It should be noted that these benchmarks are representative of the likely intensity of a pressure caused by typical activities, and do not represent a threshold of an 'acceptable' intensity of a pressure. It is therefore necessary to consider how the level of fishing intensity observed within Selsey Bill and the Hounds MCZ compares with these benchmarks when screening individual activities.

Due to the broad-scale nature of the sensitivity assessments provided in Natural England's Advice on Operations, each pressure is assigned a risk profile based upon the likelihood of the pressure occurring and the magnitude of the impact should that pressure occur. These risk profiles have been used, together with site-specific knowledge, to identify those pressures which could significantly affect the protected features.

Table 2 below summarises the screening and part A assessment of fishing activities for Selsey Bill and the Hounds MCZ.

Table 2. A summary of the fishing activities that have been screened and assessed under part A to ascertain if a part B assessment needs to be undertaken

Broad Gear Type (for assessment)	Aggregated Gear Type (EMS Matrix)	Fishing gear type	Does activity occur? If 'no' or 'unknown', could it potentially occur?	Is the activity likely to cause harm to the protected features of the site?	Sources of information	Take to part B?	Justification
Bottom towed Towed (demersal		Beam trawl (whitefish)	IFCO intel suggests absent	These activities can cause harm to the protected features of the site by means of abrasion, penetration, changes in suspended solids (water clarity), smothering and siltation rate changes (Light), visual disturbance, underwater noise and removal of non-target species.	IFCA Byelaw, IFCO intel, IFCA sightings data, VMS data	No	Management has already been introduced which now prohibits towed gear from occurring within the site, under Sussex IFCAs Nearshore Trawling Byelaw, confirmed by the SoS in March 2021.
	(demersal)	Beam trawl (shrimp)	to low towed gear activity within the site over last couple of years.				
		Beam Trawl (pulse/wing)					
		Heavy otter trawl					
		Light otter trawl					
		Multi-rig trawls					
		Pair trawl					
		Anchor seine	IFCO intel indicates activity doesn't occur. Prohibited in Sussex as not a permitted activity under Sussex	N/A	IFCA sightings data, IFCO intel	No	N/A

		Scottish/fly seine	IFCA's Fishing Instruments Byelaw.				
Pelagic towed	Towed	Mid-water trawl (single)	IFCO intel	In shallow sites such as	IFCA Byelaw, IFCA	No	Management has already
I fishing gear	(pelagic)	Mid-water trawl (pair)	indicates that this is a big	Selsey Bill and The Hounds MCZ, there is the potential	sightings data, IFCO intel		been introduced which now prohibits towed gear
		Industrial trawls	scale activity type, which occurs well outside the district.	for pelagic towed gear to interact with the seabed and cause harm to protected features of the site as with bottom towed gear.			(including pelagic trawls) from within the site, under Sussex IFCAs Nearshore Trawling Byelaw, confirmed by the SoS in March 2021.
Bottom towed fishing gear	Dredges (towed)	Scallops	Occurs further offshore outside 3nm, but more outside the 6nm – 12nm. No scallopers observed by IFCOs in this end of the district for at least the last 2 years.	Activity can cause harm to the protected features of the site by means of abrasion, penetration, changes in suspended solids (water clarity), smothering and siltation rate changes (Light), visual disturbance, underwater noise and removal of non- target species.	IFCA Byeaw, IFCA sightings data, IFCO intel, VMS data	No	Scallop dredging is prohibited within 3nm under existing Sussex IFCA Byelaw so already excluded from the site in its entirety.

		Mussels, clams, oysters Pump scoop (cockles, clams)	No – waters not classified for dredging for these types of shellfish within the site and vicinity. Mussel and clam dredges not included as permitted instruments under Sussex IFCA's Fishing Instruments Byelaw.	N/A	IFCO intel, shellfish water classification management in place, IFCA Byelaw.	No	Activity not permitted within the site under existing management measures.
Static gear	Pots/Traps	Pots/Creels (crustacea/gastropods)	Traditional lobster/crab fishery over spring/summer. Cuttle trapping occurs May/June time, but not as many cuttle trappers as used to be, circa 2/3. Some whelking boats. Whelk, crab and lobster pots occur throughout the site, at medium to high intensity	Activity can cause harm to the protected features of the site by means of abrasion, removal of non- target species and removal of target species	IFCA sightings data, IFCO intel, VMS data	Yes	Yes, is known to occur within the site
		Fish Traps	No – Fish trapping isn't known to occur	Activity can cause harm to the protected features of the site by means of	IFCO intel	No	N/A

			throughout the Sussex IFCA district. However, there is still potential for cuttle pots to catch certain species of fish such as wrasse or bream as a form of bycatch.	abrasion, removal of non- target species and removal of target species.			
Demersal nets/lines	Static – fixed nets	Gill nets Trammels Entangling	Small quantities of netting occurs throughout the site, year-round. These numbers vary depending on the time of year. Only 2 /3 boats that exploit this fishery are from Selsey, 2 from Chichester which go into Bracklesham Bay. Use trammels and gill nets	Activity could damage protected features through abrasion, removal of non- target species and removal of target species.	IFCA sightings data, IFCO intel	Yes	Yes, is known to occur within the site
Pelagic nets/lines	Passive – nets	Drift nets (pelagic)	No drift net fishery anymore since bass regulations	Potential for interaction with short snouted seahorses, through the removal of non- target species.	IFCA sightings data, IFCO intel	Yes	Yes, as has the potential to occur

Demersal nets/lines		Drift nets (demersal)	One boat seen once demersal drifting netting – within the MCZ boundary, west of the Bill, near holiday camp. First time ever seen occurring by IFCOs	Potential for interaction with seabed and seahorse features	IFCA sightings data, IFCO intel	Yes	Yes, as has the potential to occur.
1	Lines	Longlines (demersal)	Circa 18months to 2 years ago one fisher known to use two bottom long lines, during the summer. Not known to occur since	No	IFCA sightings data, IFCO intel	No	No harm to protected features predicted.
Pelagic nets/lines		Longlines (Pelagic)	Some drift longlining within the site	No	IFCA sightings data, IFCO intel	No	No harm to protected features predicted.
·		Handlines (rod/gurdy etc.) and rod & line angling.	Occurs year round within the site – autumn for bass targeting, summer months	Where vessels are anchored, this activity can cause harm to the features of the site.	IFCA sightings data, IFCO intel	No	The anchoring of boats is not managed by the IFCA. Would recommend that a code of conduct drawn up

		Jigging/trolling	ad hoc, if the fish are on the ground. Not so much over winter. 3 or 4 commercials with bass entitlement, targeting bass. On and off quite a lot of recreational activity, on a drift basis, not too much anchoring that occurs				to raise awareness of protected features.
Purse Seine	Seine nets and other	Purse seine	No	No	IFCO intel, IFCA sightings data	No	N/A
Diving	Miscellaneou s	Commercial diving	Unknown – but could potentially occur. Recreational diving does occur.	Unlikely to cause harm to the protected features of the site	IFCO intel	No	No recorded observations of hand gathering of target species by divers at the site, but activity could occur. However unlikely to have an impact on the protected features.
Shore based activities		Hand gathering for shellfish	Not known to occur	Has the potential to affect habitats with the intertidal area abutting the site, through abrasion,	IFCO intel, NE conservation advice	No	Activity is not known to occur within the site. In addition, District-wide management has been
		Bait collection	Not known to occur	penetration, changes in habitat structure and the removal of target and non- targets species			developed to manage the intensity of any potential gathering within Sussex, under the proposed Hand Gathering Byelaw made by Sussex IFCA in October 2021 with formal consultation pending.

3.3 Screening and 'Part A' Assessment outcome

Using the screening process detailed in section 3.2, it was established that; pots, static fixed nets and pelagic & demersal drift nets would be taken to 'Part B' Assessment. The resultant activity pressure-feature interactions which have been screened in for the part B assessment are summarised in Tables 3 & 4.

Table 3. Summary of fishing pressure-feature screening for potting and static fixed nets being taken to Part B on the protected features of the site

Feature	Potential Pressures
Bracklesham Bay geological feature Subtidal mixed sediment Subtidal sand High energy infralittoral rock Low energy infralittoral rock Moderate energy infralittoral rock Moderate energy circalittoral rock	Abrasion/disturbance of the substrate on the surface of the seabed Removal of target species Removal of non-target species
Peat and clay exposures	Abrasion/disturbance of the substrate on the surface of the seabed Removal of non-target species
Short-snouted seahorse (Hippocampus hippocampus)	Removal of non-target species

Table 4. Summary of fishing pressure-feature screening for pelagic and demersal drift nets being taken to Part B on the protected features of the site

Feature	Potential pressures
Short-snouted seahorse (Hippocampus hippocampus)	Removal of non-target species

4.0 Part B Assessment

The aim of the part B assessment is for Sussex IFCA to ensure that there is no significant risk of a fishing activity hindering the conservation objectives of the MCZ; and to confirm that the authority is able to exercise its functions to further the site's conservation objectives.

In order to adequately assess the potential impacts of an activity upon a designated feature, it is necessary to consider the relevant attributes of that feature that may be affected. Attributes are provided in Natural England's Supplementary Advice on Conservation Objectives and represent the ecological characteristics or requirements of the designated species and habitats within a site. These attributes are considered to be those which best describe the site's ecological integrity and which if safeguarded will enable achievement of the Conservation Objectives.

Each attribute has an associated target which identifies the desired state to be achieved; and is either quantified or qualified depending on the available evidence. After relevant pressures were identified from the pressure-feature interaction screening, suitable attributes were identified from Natural England's Supplementary Advice. At the time of initial drafting of the assessment this was not available for Selsey Bill and the Hounds MCZ, therefore this was taken from Beachy Head West MCZ, Cromer Shoal Chalk Beds MCZ and Beachy Head East MCZ. Site specific advice was subsequently received and the assessment reviewed in light of this in March 2022.

4.1 Assessment of potting (crustacea/gastropods) and cuttlefish pots in Selsey Bill and the Hounds MCZ

Summary of the fishery

Potting occurs in Selsey Bill and the Hounds MCZ for a wide range of species at various times throughout the year. The potting fisheries focus primarily on species such as the edible crab (*Cancer pagurus*), European lobster (*Homarus gammarus*) and the common whelk (*Buccinum undatum*). Potting for cuttlefish (*Sepia officinalis*) has the potential to occur between the months of May and July when they come inshore to breed, although this hasn't been observed specifically within the site between 2017 and 2021.

Location, effort and scales of fishing activities

The IFCA sightings data for 2017-2021 shows potting has been observed a total of 12 times within Selsey Bill and the Hounds MCZ (Figure 2). Whelk potting has the highest overall fishing effort over the site. Lobster and crab potting has also been observed within the site but at a lower intensity and over a smaller area. Most of the potting activity occurs towards the South-West and East of the MCZ. There has been no cuttlefish potting observed within the MCZ between 2017 and 2021, although it has been observed in nearby regions and therefore has the potential to occur. Due to the absence of cuttlefish potting being observed within the Selsey Bill and the hounds MCZ, there have been no fishing effort maps created for this type of activity. As the IFCA patrol vessel is based in Shoreham, the area around this port is more frequently patrolled, therefore there are likely to be more observations in this area. To remove this bias, fishing effort (the average number of fishing vessels per km2 2015-2019) was calculated by adjusting the number of sightings (up to 2km either side of FPV Watchful's track) by patrol effort (Figure 3 and 4).



Figure 2. Potting sightings data 2017-2021.



Figure 3. Fishing effort for potting (whelk). Average number of fishing vessels per km2 2017-2021.



Figure 4. Fishing effort for potting (crab and lobster). Average number of fishing vessels per km2 2017-2021.

Co-location of fishing activity and designated features

The IFCA sightings data indicates that potting has been observed 1 time over high energy infralittoral rock and 2 times over low energy infralittoral rock between the years of 2017-2021. Potting was also observed 2 times over moderate energy infralittoral rock and thin sediment. Potting was observed 7 times over subtidal coarse sediment. Potting has also been observed within a close proximity to the peat and clay exposures of the site.

Sussex IFCA's Shellfish Permit Byelaw restricts the number of pots that can be used per vessel to 300 pots within 3nm and 600 pots within 6nm, for crab, lobster and whelk pots and 300 pots within 6nm for cuttlefish pots (see Section 5.0 for further information).

Technical gear specifications

The pots used for different target species differ in both construction and size. The gear specifications for the different types of pots used can be found here:

https://www.seafish.org/media/Publications/BFM_August_2015_update.pdf_and for more Sussex specific details: https://secure.toolkitfiles.co.uk/clients/34087/sitedata/files/SUSSEX-IFCA-Marine-Species-Guide.pdf

4.2 Assessment of Pressures from potting

Walmsley et al. (2015) analysed existing literature and ongoing studies on the impacts of potting on different habitats and features as part of a project funded by DEFRA in order to provide conclusions from evidence on whether potting may compromise the achievement of conservation objectives within European Marine Sites. It was found that sources of primary evidence relating to the physical impacts of potting were limited. Most studies demonstrated potting to have no or limited impact on habitats such as subtidal bedrock reef and subtidal cobble and boulder reef. Furthermore, Walmsley et al. (2015) demonstrated that there were significant gaps in evidence relating to the impact of potting on habitats such as subtidal mixed sediments, as well as the effect pot type (i.e. whelk pots and cuttle traps) may have on a feature. Overall, the review of evidence demonstrates that potting is unlikely to have a significant negative impact upon most sub-features, particularly at existing potting intensity levels.

Table 5 summaries the assessment of the pressures on the protected features attributes and outlines any proposed mitigation and management.

4.2.1 Abrasion/disturbance of the surface of the seabed

Potting has been shown to have a number of direct impacts upon benthic communities, most notably through the strike damage caused in the deployment process by the pot or end-weight. Further damage can occur through abrasion of the seabed whereby tidal currents push the potting gear across the seabed (Coleman et al., 2013). Observations in Lyme Bay by Eno et al. (2001) demonstrate that pots can cause damage under strong wind and tidal conditions, especially when the wind was blowing across the tide. Anchor-weights on the end of each string of pots are typically used to prevent dragging when fishing in dynamic areas (Coleman et al., 2013). However, Eno et al. (2001) also demonstrated that when supplied with insufficient lengths of rope, these weights have the tendency to bounce up and down on the seabed during periods of strong tides and large swell. The retrieval of the potting gear may also have a damaging effect upon the benthic environment if the pot is removed by laterally dragging it out of the water (Coleman et al., 2013, JNCC & NE, 2011). This latter scenario is only likely to occur under specific environmental conditions whereby tide, wind or navigational hazard prevents vertical lift, and is generally avoided by fishermen as it has potential to damage gear (Coleman et al., 2013).

There is no primary evidence on the impact of potting on subtidal sand and subtidal mixed sediment environments. Sensitivity assessments indicate that provided pots are deployed correctly, their limited bottom contact means that their impacts are not considered a major concern upon these features. However, snagging of equipment and subsequent damage and entanglement to fragile epifauna may occur, particularly under high levels of fishing activity whereby the density of ropes and anchors increases. Potting may become harmful for specific species of epibenthos, in which case assessments should be based upon the specific species present (Walmsley et al., 2015). Hall et al (2008) assessed dynamic, shallow water fine sands as having low sensitivity to all levels of potting activity. The project demonstrated that high energy waves would have a greater impact on the epifauna than potting, and therefore was of no great concern.

4.2.2 Removal of non-target species

Because pot fishing is highly specific, there tends to be less bycatch of non-target species compared to mobile gear such as trawling and dredging. However, there is still potential for potting to have detrimental effects including mortality due to handling, discarding, and exposure. Furthermore, pot traps have the potential to continue fishing even after discard in a process referred to as "ghost fishing" (Stevens, 2021). However, Coleman et al, 2013 demonstrated that there were no important differences in the assemblage of sessile epifauna (including sponge and anemone species) between areas where potting occurred, compared to areas not fished during the four years of experimental sampling at Lundy. Potting for crustacea on rocky habitats in inshore waters was considered a benign fishery with limited impact on benthic assemblages. However, it is important to note the low effort intensity level in the experimental potting sites and the fact that fishing effort in the fished sites was not formally recorded.

Sponge abundances at three locations around Skomer Marine Nature Reserve showed no significant

relationship with potting density, however, analysis of the data for testing and validation proved inconclusive due to the limited availability of suitable (fit-for-purpose) environmental and pressure data. The surveys were not designed to test changes driven by a wide range of anthropogenic pressures and power to detect such changes was not a consideration of the original sampling design, meaning that existing datasets were not well suited for validation (Haynes et al., 2014).

Monitoring data from 2003 and 2011 (five transects) from the Northumberland coast, analysed by Newcastle University, were compared with maps of density of fishing effort. There were no differences in frequency of biotopes with the level of fishing effort.

Studies on the impacts of potting in Lyme Bay were undertaken by Rees et al, (2018) after the prohibition of the use of bottom towed gear resulted in an increase in the amount of potting. The aims were to: assess the impacts of increasing potting density on sessile reef species and assemblages, to assess the impacts of increasing potting density on benthic macro-mobile species and assemblages and to assess the impacts of increasing potting density on target fishery species. The abundance of sessile reef species was shown to have declined in areas of high potting density (>30 pots per 500m x 500m) over a three-year period. However this reduction under high intensities of potting was only shown in two indicator species; the ross coral (Pentapora folicacea) and the Neptune's Heart sea squirt (Phallusia mammillata). Because of this, it is likely that these species were most likely to be the major contributors in the reduction of overall abundance displayed. The ross coral showed a reduction in abundance at all intensities of potting, while the Neptune's heart sea squirt only reduced in abundance at the medium and high intensities. Despite this however, the impact of potting upon the majority of indicator species was relatively low, with no evidence suggesting potting has an effect upon any mobile species that were investigated. As there was some notable impact on the sessile structural fauna, particularly at high potting densities, this result could be interpreted as a lag between the impact on the sessile benthic habitat and the detection of consequent impacts on associated mobile species and communities.

Reports from fishermen have stated that pots have occasionally had seahorses attached to them when they are hauled in. Accounts suggest the seahorses are returned to the sea alive after the pot is hauled in, although there is not enough evidence to say if this is a significant impact. However even if seahorses are returned to the water after being caught in non-selective gear, they may still experience deleterious effects that include physical injury, habitat damage, removal from home ranges and disturbance of pair bonds (Davis, 2002; Baum *et al.*, 2003) from Ospar 2009.

4.2.3 Removal of target species

Fishing leads to the removal of certain species from an ecosystem. More specifically, potting principally targets edible crab, European lobster, whelk, and cuttlefish, alongside other species which may be favourably retained including the velvet swimming crab. These species are subject to minimum landing sizes and so are only removed above a certain size. Removing top predators, such as lobsters or large edible crabs, may lead to indirect destabilising effects on the ecosystem as a result of alterations to food web interactions (Eno et al., 2001; Stephenson et al., 2016). There is a strong interaction between crustacean target species and other non-target species, thus any removal is likely to have an effect on the structure of benthic communities (Stephenson et al., 2016). Literature on the ecological effects of selective extraction of target species is relatively limited and little studied as a result of the long timescales needed for such studies (Stephenson et al., 2016). The following studies however may give some insight as to the ecological impacts of removing target species through potting.

A study by Hoskin et al. (2011) explored the ecological effects of removing the top-down pressure of potting on target species (edible crab, European lobster, velvet swimming crab), by examining changes in their populations under different fishing scenarios. These included a no-take zone (NTZ) in an area adjacent to Lundy Island which were compared with areas (proximal and distant locations) subject to an experimental Selsey Bill and the Hounds_MCZ Page 23 of 41

potting program (using 240 pots in total) over a four year period (2004-2007). Rapid and large increases in the abundance and size of legal-sized lobsters (*Homarus gammarus*) occurred within the NTZ and there was evidence of spillover of sublegal lobsters into adjacent areas. Legal-sized lobsters were observed to exhibit an effect of the NTZ within 18 months of its designation. Between 2004 and 2007, mean abundance within the NTZ increased by 127%, four years after being designated as a NTZ, whilst abundances in the proximal and distinct location did not change significantly. This equated to legal-sized lobsters being 5 times more abundant in the NTZ than other locations. Sublegal lobsters increased by 97% within the NTZ and by 140% in proximal locations. Over the four year period, the mean size of legal-sized lobsters in the NTZ increased by 5.2%, whilst mean sizes in the proximal and distant locations declined by 2.8% and 2.1% respectively. Small but significant increases of 25% were observed in the size of brown crab (Cancer pagurus), but no apparent effects were seen in abundance. Declines of 65% in the abundance of velvet swimming crab (Necora puber) were also observed within the NTZ, potentially owing to predation and/or predation from lobsters.

Rees et al. (2018) assessed the effects on brown crab and European lobster of different intensities of potting within areas of Lyme Bay. Over time the mean number of brown crabs caught in areas of medium (15-20 pots per 500m x 500m) and high (over 30 pots per 500m x 500m) potting density declined by almost 20% in comparison to areas of low potting (5-10 pots per 500m x 500m) and areas where commercial potting has been removed. Mean individual weight of brown crabs also declined in medium and high potting density areas, while carapace widths remained consistent and similar between potting densities. Therefore the overall condition of brown crab was shown to decline in response to increasing potting density area in comparison to the lower potting density areas, in the last year of the project. Mean individual lobster mean weight and mean carapace lengths were not observed to change in response to different potting densities, so it is concluded that the condition of lobsters is not impacted by increasing potting density. These results were observed in areas exposed to sustained and spatially restricted potting activity.

4.3 Assessment of fixed nets in Selsey Bill and the Hounds MCZ

Summary of the fishery

Static net fishing occurs on a year-round basis throughout the MCZ at a low to medium intensity (Figure 5 and IFCO intel). The fixed net fisheries target a wide range of fish species, such as sole, plaice, bass, cod and rays. Cuttlefish may also be targeted by fixed nets during the spring and summer months.

Location, effort and scales of fishing activities

There has been very little observed fixed netting activity between the years 2017-2021 and has only been observed once within this period within the Selsey Bill and the Hounds site (Figure 5). As the IFCA patrol vessel is based in Shoreham, the area around this port is more frequently patrolled, therefore there are likely to be more observations in this area. To remove this bias, fishing effort (the average number of fishing vessels per km2 2017-2021) was calculated by adjusting the number of sightings (up to 2km either side of FPV Watchful's track) by patrol effort (Figure 6). The only fishing effort for fixed netting demonstrated within the MCZ was at a low level and occurred in the Eastern region of the site.



Figure 5. Fixed netting sightings data 2017-2021.



Figure 6. Fishing effort for netting activity (fixed). Average number of fishing vessels per km2 2017-2021.

Co-location of fishing activity and designated features

The sightings data indicates that fixed netting was observed 1 time over the moderate energy infralittoral rock feature between the years of 2017 and 2021. Fixed netting has also been shown to occur within close proximity to the peat and clay exposures in Selsey Bill and the Hounds MCZ..

Sussex IFCA has made a proposed Netting Permit Byelaw which is currently with Defra for sign off, this will restrict the overall length of individual nets and bring in year-round restrictions on the water depth nets can be set in, further details can be found in section 5.0.

Technical Gear specification

The gear specifications for the different types of nets used can be found here: <u>https://www.seafish.org/media/Publications/BFM_August_2015_update.pdf_and_for_more_Sussex_specific_details:</u> <u>https://secure.toolkitfiles.co.uk/clients/34087/sitedata/files/SUSSEX-IFCA-Marine-Species-Guide.pdf</u>

4.4 Assessment of pressures from fixed netting

Table 5 summaries the assessment of the pressures on the protected features attributes and outlines any proposed mitigation and management.

4.4.1 Abrasion/disturbance of the substrate on the surface of the seabed

Impacts from fixed nets are most likely to occur during the hauling or setting of the nets, or movement during rough weather. However, there is limited primary evidence relating to this. Any direct benthic impacts from gillnet fishing operations is likely to occur only during retrieval of the gear, during which the nets and leadlines are more likely to snag bottom structures. During the process of hauling the gillnet, reef-forming organisms and sessile epibenthic organisms are susceptible to entanglement and damage.

Limited qualitative observations of fish traps, longlines, and gillnets dragged across the seafloor during set and recovery showed results similar to mobile gear such that some types of epibenthos was dislodged; especially emergent species such as erect sponge and coral (High 1992, SAFMC 1991). While the area impacted per unit of effort is smaller for fixed gear than with mobile fishing gear, the types of damage to emergent benthos appear to be similar (but not necessarily equivalent per unit effort) (Auster and Langton, 1998).

4.4.2 Removal of non-target species

Despite demersal fish being the predominant target of fixed gill nets, various non-target species such as marine mammals, birds and other marine life may also become entangled. Once the nets have been discarded, there becomes potential for the nets to carry on fishing in an effect which has been described as "ghost fishing" (Gubbay & Knapman, 1999). Short-snouted seahorses are one of the species with the potential to become entangled within fixed nets. However, more site specific evidence is required on the location of seahorses within the MCZ as well as the frequency of accidental catches by nets.

4.4.3 Removal of target species

Species which form part of the community of features or sub-features such as crabs and lobsters (*Homarus gammarus*) are removed by fixed nets. The removal of these species may be associated with reef features and other species such as whelks (Natural England Advice on Operations).

4.5 Assessment of pelagic and demersal drift netting in Selsey Bill and the Hounds MCZ

Summary of fishery

Pelagic and demersal drift netting is rarely observed within the Sussex IFCA boundary due to restrictions on this type of fishing under the EU bass fishing regulations. However, in November 2021 a boat was observed undertaking demersal drift netting within the MCZ boundary west of the Bill, near the holiday camp. This was the first-time drift netting was observed by IFCOs.

Due to the absence of recorded demersal drift netting activity within the Selsey Bill and the Hounds MCZ, no sightings data fishing effort maps have been created.

Technical gear specifications

The gear specifications for the different types of nets used can be found here: https://www.seafish.org/media/Publications/BFM_August_2015_update.pdf

4.6 Assessment of pressures from drift netting

Table 6 summaries the assessment of the pressures on the protected features attributes and outlines any proposed mitigation and management.

4.6.1 Removal of non-target species

Demersal drift nets have the potential to entangle and bycatch a range of fauna including mammals, turtles, fish, elasmobranchs, crustaceans and other invertebrates and birds, including seahorses. Fishermen have also stated that seahorses are also found entangled within fishing gear. However, further evidence would be required to fully understand this interaction.

5.0 Existing Management Measures

• **Vessel Length Byelaw** – prohibits commercial fishing vessels over 14 metres from the Sussex IFCA district. The reduction in vessel size also restricts the type of gear that can be used, with vessels often using lighter towed gear and restricted to carrying less static gear.

• **Fixed Engine Byelaw** - No fixed engines, other than fyke nets, may be used between 1st May – 30th September, in any area of the district

• Sussex IFCA 'Fishing Instruments' Byelaw - prohibits scallop dredging inside of 3nm at any time of year and restricts what gears can be used inside of the district.

- Scallop Closed Season Byelaw - prohibits scallop dredging from 1st June to 31st October between 3 and 6nm. A closed season for scallop dredge use is intended to protect spawning stock, and promote growth rates. A by-catch provision is included for vessels engaged in trawling (no trawl can remove more than 200 scallops within a 24 hour period during the prohibited season).

• Shellfish Permit Byelaw – all pots must have escape hatches (or holes for whelk pots), sets a pot limitation for the number of pots per vessel within the 3nm and 6nm limits, and a daily bag limit for recreational fishers.

• **Nearshore Trawling Byelaw 2019** – this Byelaw was made by Sussex IFCA authority on 25 July 2019, and was confirmed by the Secretary of State in March 2021. Within Selsey Bill and the Hounds MCZ, it prohibits trawling throughout the site.

• **Proposed Netting Permit Byelaw** - this Byelaw was made by Sussex IFCA authority on 25 July 2019, it is currently with Defra and the MMO awaiting sign off by the Secretary of State. This will mean that set nets will have to have at least 1.5m of water above their headline all year round.

• **Proposed Minimum Size Byelaw 2021** – this Byelaw was made by Sussex IFCA authority on 22 April 2021, it is currently with Defra and the MMO awaiting sign off by the Secretary of State. This introduces minimum retention sizes for commonly caught species of fish and shellfish (fish, crustacea and mollusc) for both commercial and recreational fisheries.

• **Proposed Hand Gathering Byelaw** - this Byelaw was made by Sussex IFCA authority on 28 October 2021, is currently pending formal consultation. This byelaw restricts the quantity of catch obtained through hand gathering. It also places restrictions on certain hand gathering activities in specific locations including Selsey Bill and the Hounds MCZ.

• Other regulations include mesh sizes, catch composition and total allowable catch as dictated by UK/European legislation.

6.0 Site Condition

A condition assessment for Selsey Bill and the Hounds MCZ has not yet been undertaken.

The General Management Approach gives an indication of the vulnerability of the protected features to activities and can be used as a proxy for the potential condition of the protected features.

Table 5. Assessment of potting and fixed net pressures on Selsey Bill and the Hounds MCZ

Feature	Attribute	Target	Potential pressures and associated impacts	Likelihood of impact occurring and level of exposure to pressure	Mitigation measures
Bracklesham Bay geological feature: high conservation	Extent: extent of geological feature	Maintain the total extent of subtidal and coastal exposures	Abrasion/disturba nce of the substrate on the surface of the	IFCA sightings data 2017-2021 shows that there has been very little	No additional management is proposed based on the current available
value where rock and clay formations expose chondrichthyan fossils of early to mid-Eocene age – maintain in favourable condition	Extent of supporting geomorphological processes and associated sediments	Maintain the area of habitat which is likely to support the feature. This is the extent of sediments overlaying the finite buried interests and coastal exposures.	seabed Removal of non- target species Removal of target species	observed fixed netting activity between the years 2017-2021, with only one observation of this activity in the site within this period. This sighting occurred to the east of the Bracklesham	evidence of potential impacts on rock and geological features from potting and fixed nets. Potting effort is currently managed in the district through Sussex IFCA's Shellfish Permit
	Distribution: distribution of geological feature	Maintain the distribution of subtidal exposure and coastal exposures of the interest features.		feature below the mean low water mark, which annexes the Bracklesham Beach SSSI in the far west of the site.	Byelaw. Sussex IFCA's proposed Netting Permit Byelaw will manage netting effort.
	Structure: structure of geological feature	Maintain the stratigraphical, palaeontological. palaeobotanical and archaeological interests of the feature.		IFCA sightings data for 2017-2021 shows potting has been observed a total of 12 times within Selsey Bill and the Hounds	

				MCZ. Most of the potting activity occurs towards the South and East of the MCZ and there is no known overlap with the geological feature to the far west of the site.	
Short snouted seahorse (<i>Hippocampus</i>	Population: population size	Maintain the population size within the site	Abrasion/disturba nce of the substrate on the	Fixed nets and potting have the potential to interact	Management in the form of a code of conduct and
<i>hippocampus</i>) – maintain in favourable condition	Population: recruitment and reproductive capability	Maintain the reproductive and recruitment capability of the species	surface of the seabed Removal of non- target species	with seahorses, there are anecdotal reports from fishermen that they are occasionally found attached to	
	Presence and spatial distribution of the species	Maintain the presence and spatial distribution of the species and their ability to undertake key life cycle stages and behaviours		fishing gear. However, currently is not enough evidence about this interaction.	
	Supporting habitat: extent and distribution	Maintain the extent and spatial distribution of the suitable available supporting habitats			
Subtidal sand – maintain in	Extent and distribution	Maintain the total extent and spatial	Abrasion/disturba nce of the	IFCA sightings data 2017-2021 shows	No additional management of

favourable condition	Distribution: presence and spatial distribution of biological communities Structure and function: Structure/function: presence and abundance of key structural and influential species. Structure: species composition of component communities.	distribution of subtidal sand Maintain the presence and spatial distribution of subtidal sand communities Maintain the abundance of listed species, to enable each of them to be a viable component of the habitat. Maintain the species composition of component communities.	substrate on the surface of the seabed Removal of non- target species Removal of target species	that there has been very little observed fixed netting activity over these years, with only one observation of this activity in the site within this period. Over the same period, sightings data shows potting has been observed a total of 12 times within the site. Mapped activity data indicates no overlap with the subtidal sand feature	fixed nets or pots is proposed.
Subtidal mixed sediment – maintain in favourable condition	Extent and distribution	Maintain the total extent and spatial distribution of subtidal mixed sediment	Abrasion/disturba nce of the substrate on the surface of the seabed	IFCA sightings data 2017-2021 shows that there has been very little observed fixed netting activity	No additional management of fixed nets or pots proposed.
	Distribution: presence and spatial distribution of biological communities Maintain the presence and spatial distribution of subtidal mixed sediment communities Removal of non- target species Removal of target species	Removal of	between the years 2017-2021, with only one observation of this activity in the site during this period, over		
	Structure and function: presence and abundance of	Maintain the abundance of listed species, to		infralittoral rock. The IFCA sightings	

	key structural and influential species Structure: species composition of component communities	enable each of them to be a viable component of the habitat. Maintain the species composition of component communities.		data for 2017-2021 shows potting has been observed a total of 12 times within Selsey Bill and the Hounds MCZ, overlapping with subtidal coarse sediment, infralittoral and circalittoral rock features.	
Moderate/ high/ low energy infralittoral rock – recover to favourable condition Moderate energy circalittoral rock – recover to favourable condition	Extent and distribution Structure: physical structure of rocky substrate.	Recover the total extent and spatial distribution of circalittoral rock and infralittoral rock subject to natural variation in sediment veneer Recover the surface and structural complexity, and the stability of the subtidal rock structure.	Abrasion/disturba nce of the substrate on the surface of the seabed Removal of target species Removal of non- target species	IFCA sightings data 2017-2021 shows that there has been very little observed fixed netting activity between the years 2017-2021, with only one observation of this activity in the site during this period, over infralittoral rock. The IFCA sightings data for 2017-2021	No additional management is proposed based on current available evidence of potential impacts on infralittoral and circalittoral rock from potting and fixed nets. Potting effort is currently managed in the district through the Shellfish Permit Byelaw.
	Distribution: presence and spatial distribution of biological communities	Recover the presence and spatial distribution of circalittoral rock and subtidal rock communities.		shows potting has been observed a total of 12 times within Selsey Bill and the Hounds MCZ. Most of the potting activity occurs towards the South and East of	The proposed Netting Permit Byelaw will manage netting effort.
	Structure and function: presence	Recover the abundance of			

	and abundance of key structural and influential species Structure: species composition of component communities.	listed species, to enable each of them to be a viable component of the habitat. Recover the species composition of component communities.		the MCZ, overlapping with subtidal coarse sediment, infralittoral and circalittoral rock features.	
Peat and Clay Exposures – recover to favourable condition	Extent and distribution	Recover the total extent and spatial distribution of peat and clay exposures [subject to natural variation in sediment veneer]	Abrasion/disturba nce of the substrate on the surface of the seabed Removal of non- target species	IFCA sightings data 2017-2021 shows that there has been very little observed fixed netting activity between the years 2017-2021, with only	There is the potential for fixed netting and potting to occur over this feature, however the evidence does not indicate that this currently needs to be managed. Thus, no additional
	Distribution: presence and spatial distribution of biological communities	Recover the presence and spatial distribution of peat and clay exposure communities.		one observation of this activity in the site during this period, over infralittoral rock and in close proximity to peat and clay	management of fixed nets or pots is proposed.
	Structure: species composition of component communities.	Recover the species composition of component communities.		exposures. The IFCA sightings data for 2017-2021 shows potting has been observed a	
	Structure: physical structure of rocky substrate	Recover the surface and structural complexity, and		total of 12 times within Selsey Bill and the Hounds MCZ. Most of the	

	the stability of the peat and clay exposures	potting activity occurs towards the South and East of the MCZ,	
Structure/function: presence and abundance of key structural and influential species.	Recover the abundance of listed species, to enable each of them to be a viable component of the habitat.	overlapping with subtidal coarse sediment, infralittoral and circalittoral rock features, and in close proximity to peat and clay exposures.	

Table 6. Assessment of drift netting pressures on Selsey Bill and the Hounds MCZ.

Feature	Attribute	Target	Potential pressures and associated impacts	Likelihood of impact occurring and level of exposure to pressure	Mitigation and management
Short snouted seahorse (<i>Hippocampus</i>) – maintain in favourable condition	Population: population size	Maintain the population size within the site	Removal of non-target species	Drift nets have the potential to interact with seahorses, there are anecdotal reports from fishermen that they are occasionally found attached to fishing gear. Pelagic drift netting currently doesn't occur in the site due to the restrictions on catching bass, and only one boat was observed demersal drift netting within the site in November 2021. However, this could change in the future. There currently is not enough evidence about this interaction.	Management in the form of a code of conduct and reporting of sightings is proposed in order to build up an understanding of the number of seahorses found in Selsey Bill and the Hounds MCZ and their interaction with fishing gear.

7.0 Conclusions

In recognition of the potential pressures of bottom towed fishing gear on low, moderate and high energy infralittoral rock, moderate energy circalittoral rock, peat and clay exposures and the Bracklesham Bay geological features, Sussex IFCA encompassed Selsey Bill and the Hounds MCZ in its entirety within its Nearshore Trawling Byelaw, confirmed by the SoS in March 2021. This now prohibits towed gear throughout the site.

Based on current available evidence of potential impacts on rock and sediment features, no additional management to that already in place within the district is proposed for potting or fixed netting. Potting effort is currently managed in the district through Sussex IFCA's Shellfish Permit Byelaw. The Authority's proposed Netting Permit Byelaw will manage netting effort.

Hand gathering management for the shore abutting the MCZ is incorporated within Sussex IFCA's proposed Hand Gathering Byelaw, encompassing bait and shellfish hand collection activities.

Information from divers and fishermen indicate that short snouted seahorses are found fairly frequently off the East Sussex coast. For fishing activities where there is a potential interaction with short snouted seahorses, management in the form of a code of conduct and reporting of sightings is proposed in order to build up an understanding of the number of seahorses found in Selsey Bill and the Hounds MCZ and their interaction with fishing gear.

The anchoring of boats is not managed by the IFCA. The Authority would recommend that a code of conduct is drawn up to raise awareness of protected features.

Table 7 summaries Sussex IFCAs proposed management for Selsey Bill and the Hounds MCZ to ensure that the conservation objectives for the site are not hindered.

Table 7. Summary of proposed mitigation / management

Fishing method	Habitat / species	Proposed mitigation
Bottom towed gear	Low/moderate/high energy	Management introduced to protect
	infralittoral rock	these features under Sussex IFCA's
		Nearshore Trawling Byelaw
	Moderate energy circalittoral rock	
	Peat and clay exposures	
	Bracklesham Bay geological features	

All gear types	Short snouted seahorses	Develop a code of conduct
	(Hippocampus hippocampus)	

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