

Fisheries in EMS Habitats Regulations Assessment for **Amber** and **Green** risk categories

NWIFCA-LD-SAC-002

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European Marine Site: Shell Flat and Lune Deep SCI

European Designated Sites: UK0030376 Shell Flat and Lune Deep Site of Community Importance
(UK9020294 Liverpool Bay/Bae Lerpwl SPA overlaps with this site – assessed separately in NWIFCA-LB-SPA-003)
(UK0013027 Morecambe Bay Special Area of Conservation (SAC)
UK 9005031 Morecambe Bay Special Protection Area (SPA)
and UK11045 Morecambe Bay Ramsar adjoins this site, assessed separately in NWIFCA-MB-EMS-009)

† Lune Deep features only assessed by NWIFCA. MMO to take a lead on Shell Flat feature assessment due to crossing 6 nm boundary.

Qualifying Feature(s):

H1110. Sandbanks which are slightly covered by sea water all the time†

H1170. Reefs

Site sub-feature(s):

Sublittoral mud, sands and mixed sediments †

Reefs- Circalittoral rock, Subtidal stony reef

Generic sub-feature(s):

Sub-tidal muddy sand†, sub-tidal bedrock reef, sub-tidal boulder and cobble reef.

High Level Conservation Objectives:

With regard to the SCI and the natural habitats and/or species for which the site has been designated (the 'Qualifying Features' listed above), and subject to natural change;

Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring;

- The extent and distribution of qualifying natural habitats
- The structure and function (including typical species) of qualifying natural habitats, and
- The supporting processes on which the qualifying natural habitats rely

Fishing activities assessed:

Gear type(s):	Pots/ creels (crustacea/ gastropods)
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1. Introduction

1.1 Need for an HRA assessment

In 2012, the Department for Environment, Food and Rural Affairs (Defra) announced a revised approach to the management of commercial fisheries in European Marine Sites (EMS). The objective of this revised approach is to ensure that all existing and potential commercial fishing activities are managed in accordance with Article 6 of the Habitats Directive.

This approach is being implemented using an evidence based, risk-prioritised, and phased basis. Risk prioritisation is informed by using a matrix of the generic sensitivity of the sub-features of EMS to a suite of fishing activities as a decision making tool. These sub-feature-activity combinations have been categorised according to specific definitions, as red, amber, green or blue.

Activity/feature interactions identified within the matrix as red risk have the highest priority for implementation of management measures by the end of 2013 in order to avoid the deterioration of Annex I features in line with obligations under Article 6(2) of the Habitats Directive.

Activity/feature interactions identified within the matrix as amber risk require a site-level assessment to determine whether management of an activity is required to conserve site features. Activity/feature interactions identified within the matrix as green also require a site level assessment if there are “in combination effects” with other plans or projects.

Site level assessments are being carried out in a manner that is consistent with the provisions of Article 6(3) of the Habitats Directive, that is to determine that fishing activities are not having an adverse effect on the integrity of the site, to inform a judgement on whether or not appropriate steps are required to avoid the deterioration of natural habitats and the habitats of species as well as disturbances of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of this directive.

The purpose of this site specific assessment document is to assess whether or not in the view of NWIFCA the fishing activities of ‘Pots/creels’ have a likely significant effect on the reefs of the Shell Flat and Lune Deep SAC (within the NWIFCA district) and on the basis of this assessment whether or not it can be concluded that ‘Pots/creels’ will not have an adverse effect on the integrity of this EMS.

Fishing activity / feature interactions that have been classified as “Blue” in the Matrix (i.e. no possibility of interaction) are not considered in this assessment.

1.2 Documents reviewed to inform this assessment

- Natural England’s risk assessment Matrix of fishing activities and European habitat features and protected species¹
- Reference list² (Annex 1)
- Natural England’s consultation advice (Annex 2)
- Site map(s) – sub-feature/feature location and extent (Annex 3)

¹ See Fisheries in EMS matrix:

http://www.marinemanagement.org.uk/protecting/conservation/documents/ems_fisheries/populated_matrix3.xls

² Reference list will include literature cited in the assessment (peer, grey and site specific evidence e.g. research, data on natural disturbance/energy levels etc)

- Fishing activity data (map(s), etc) (Annex 4)

2. Information about the EMS

2.1 Overview and qualifying features

Site description

Shell Flat and Lune Deep SAC (within the NWIFCA district) - Reg 35(3) Advice (July 2012)

Features in the Shell Flat section of the SAC have been excluded as this area crosses the 6nm boundary and thus the MMO is acting lead authority for it.

Lune Deep is a deep water channel located at the entrance to Morecambe Bay with boulder and bedrock reef habitat. “This unique enclosed deep hole provides a contrasting habitat to the surrounding muddy communities of the Eastern Irish Mudbelt. The northern flanks of Lune Deep are composed of exposed bedrock with a rugged seabed physiography. In contrast the southern flank consists of a smooth seabed, which is a sink for muddy sands” (Natural England (NE) conservation advice, 2012).

Qualifying features

- 1170 Reefs

Bedrock reef communities (*Circalittoral rock*)

The majority of the Lune Deep supports mixed faunal and turf communities (CR.HCR.XFa) that provide habitat for fauna associated with hard substrates such as those found in a 1992 diver study: tide-swept fauna including hydroids, bryozoans, anemones and sponges (Emblow 1992).

Stony reef communities (*Subtidal stony reef*)

Stable boulder and cobbles also support communities associated with hard substrates. In the Lune Deep these cobbles (> 64 mm in diameter) support the bryozoans *Flustra foliacea* and *Alcyonidium diaphanum* and the hydroids *Nemertesia antennina* and *Hydrallmania falcata* (NE Reg 35 advice, 2012).

2.2 Conservation Objectives

- Reefs

Subject to natural change, maintain the reefs in favourable condition.

Favourable condition of the reefs will be determined through assessment that the following are maintained in the long term in the site:

1. Extent of the habitat
2. Diversity of the habitat and its component species
3. Community structure of the habitat (e.g. population structure of individual notable species and their contribution to the functioning of the ecosystem)
4. Natural environmental quality (e.g. water quality, suspended sediment levels, etc.)
5. Natural environmental processes (e.g. biological and physical processes that occur naturally in the environment, such as water circulation and sediment deposition)

should not deviate from the baseline at designation).

3. Interest feature(s) of the EMS categorised as ‘Red’ risk and overview of management measure(s) (if applicable)

- **Reefs:**

The Lune Deep SAC reef interest feature and a proportional buffer is protected from all high risk bottom towed fishing gears through a prohibition under [NWIFCA Byelaw 6](#), introduced at the end of May 2014.

4. Information about the fishing activities within the site

Potting

Commercial potting in the area around and within Lune Deep SAC occurs on a small scale, with vessels mainly coming to the area from Fleetwood, Barrow-in-Furness and West Cumbria. Lobsters are one of the main species of economic importance to fisheries in the region and can be caught commercially when a commercial fishing vessel licence has an attached shellfish entitlement. Crabs and whelks may also be caught in pots. In recent years, this activity has only been undertaken by a small number of fishermen in this area, with local IFCA fishery officers reporting six vessels from Fleetwood, one from Barrow and one from West Cumbria (Brown & Dixon, 2014). The sandy area south of Lune Deep has been used for whelk potting in the past but is now unlikely to be used extensively (Final IA, 2011), and one fisherman reported the muddy north-western edge of Lune Deep for whelk potting although he did not pot there himself.

Discussions with eight of the commercial potting fishermen from Fleetwood, Barrow and West Cumbria showed that only two fisherman currently pot in Lune Deep SAC itself. Of the others one fisherman fished there in previous years but has now stopped, and the remainder currently target lobsters located on the rock-armoured narrow Rossall outfall pipe (5.2km long strip) to the south-east of the Lune Deep, ‘North West’ and ‘South West boulders’, the area between Shell Flat and Fleetwood, and in a larger area to the north-west of Lune Deep, with four fishermen stating they never fish in the Lune Deep SAC. Potting area maps annotated by five of the fishermen can be seen in Annex 4 to show the spatial extent of fishing activity in the area. The number of pots used by fishermen on the Rossall pipe area range from 150 pots set by one fisherman, to 30 by another (with around 45ft between pots on the string) and just 10 by another.

NE Conservation Advice (2012) states that “potting for crabs and lobsters [also] occurs around the northern edge of Lune Deep but not on its flanks...”, close to the deep drop off. Reports from IFCA fishery officers and Fleetwood fishermen suggest potting within Lune Deep would be too difficult and dangerous to attempt. There is a risk of loss of gear set on the northern edge reef feature into the deep channel due to the strong tidal currents in the area (*Pers. comm.* Local fishermen, 2014-2015 and IFCA Brown, 2014). Fishermen generally do not set pots on the northern wall itself as it is too steep with increasing depths, or at the bottom of the wall in the channel due to its depth, the risk of loss of gear and the fact the habitat becomes unsuitable for potting (sand). Fishing has occurred in previous years on the shallower northern edge rocky area but suffered a lot of gear loss due to the nearby shipping channel and ferries running over them. These factors meant the fishery was not economically viable and fishing by many vessels ceased around 2009 (IFCA Dixon & local fishermen, *pers. comm.* 2014). It is unlikely this area would be prosecuted by more vessels in the future for these reasons. NE Conservation Advice (2012) states: “The level of potting is low and pots used are understood not to cause much damage to the habitat on which

they sit". The only regular fishing activity known to occur in the SAC area is by one potter from West Cumbria and one from Fleetwood.

A range of pots are used in the area, generally small parlour pots rather than inkwell type (due to vessels being too small to take larger pots) (IFCO Brown, *pers. comm.* 2014, see Annex 5) and set in strings. "The two types of pots used are either very light plastic pots which are semi-buoyant and have plastic around the rope to minimise damage on the sea bed or small, heavier pots that are weighted and sit still on the sea bed and do not roll around" (Final IA, 2011). One of the vessels potting in Lune Deep sets around 300-400 pots in strings of 300 yards, with no anchors but buoys at each end, the other uses 25 to 30 mixed pots. Potting for lobsters is seasonal and occurs from spring to around October, with some fishermen potting for whelks or netting at other times of year.

Although only commercial shellfish entitled vessels are known to pot in this area, commercial fishing vessels that do not hold a shellfish entitlement are allowed to land up to 5 lobsters or crawfish per day (caught with pots or nets), up to 25 crabs per day (caught with pots or nets), or any shellfish excluding green crabs, taken as a permitted bycatch when fishing for other species using towed gear.

Unregistered fishing vessels (non-commercial) are limited in the amount of lobster, crawfish, crab, prawn and whelk they can land per day in this area under NWSFC Byelaw 30. They are permitted and are unable to use more than 5 pots or traps with a maximum daily quantity of 2 lobsters, 1 crawfish, 5 edible/ spider/ velvet crabs in total, 1kg of prawns and 5kg of whelks. Permits are renewed annually at the start of the year- in 2014 there were 62 Byelaw 30 permit holders in the district. Byelaw 30 permit holders were contacted (where possible) in December 2014 (46 recreational potters): of the 16 that replied, none currently or have previously potted in the Lune Deep SAC (4 potted near this area with 3 fishing around Walney island (one potted 2 or 3 times a year, one very rarely and the other around 5 times a year) and 1 fishing near Rossall outfall pipe). One discussed that they were looking to pot in Lune Deep SAC in the future having never potted there before, with a maximum of 4 pots.

5. Test for Likely Significant Effect (LSE)

The Habitats Regulations assessment (HRA) is a step-wise process and is first subject to a coarse test of whether a plan or project will cause a likely significant effect on an EMS³.

5.1 Table 1: Assessment of LSE

1. Is the activity/activities directly connected with or necessary to the management of the site for nature conservation?	No
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³ Managing Natura 2000 sites: http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm

<p>2. What pressures (such as abrasion, disturbance) are potentially exerted by the gear type(s)</p>	<p><u>Physical damage</u> to the substrate and benthic reef communities, including erect bodied long-lived sessile fauna. Potential surface abrasion of bedrock and boulders and movement of stones via contact of pots/creels and associated lines with these features and assemblages. Pots may strike the substrate and organisms during deployment, drag on the benthos during storm events or tidal/ current movement, and drag during hauling.</p> <p><u>Biological disturbance</u>- selective extraction of target species (crabs and lobsters) may lead to reduced numbers of these apex predator species which play a role in community structuring in these habitats; repeated pot deployment may lead to changes in community structure.</p> <p>The Matrix and NE review of fisheries and EMS features has categorised this interaction as “Amber Risk”.</p>
<p>3. Is the feature potentially exposed to the pressure(s)⁴?</p>	<p>Yes, on a small scale- two vessels pot on the northern side of Lune Deep regularly.</p>
<p>4. What are the potential effects/impacts of the pressure(s) on the feature⁵, taking into account the exposure level?</p> <p><i>(reference to conservation objectives)</i></p>	<p>Abrasion of gear on the substrate and movement of smaller stones could lead to damage to the feature and/ or damage or loss of epifauna. The Reg 35 Advice package (2012) states that the reef feature has: “moderate sensitivity to abrasion which can cause damage to a significant proportion of the species found in relatively stable cobble, boulder and bedrock reef communities”. At heavy levels of fishing boulder and cobble communities have been classified as being moderately sensitive to potting, with areas not as intensively fished being less of a concern (EIFCA, 2014). The conservation objective for Lune Deep cSAC Annex I Reefs is “maintain”.</p> <p>Currently there is a low level of exposure to the pressure by the feature and therefore potential effects/ impacts.</p>

⁴ Provide overview of activity levels, including current management measures that reduce/remove the feature's exposure to the activity.

⁵ Consider the sensitivity of the feature to that pressure (where available).

<p>5. Is the potential scale or magnitude of any effect likely to be significant?⁶</p>	<p>Alone</p> <p>Uncertain</p> <p>Comments :</p> <p>Any potting activity in Lune Deep SAC will involve gear coming into contact with the reef feature and potentially the associated impacts discussed above. The levels of potting occurring in that area are currently low, with two vessels potting in the SAC at present.</p> <p>The NWIFCA concludes that potting may have a likely significant effect on the reef features of Lune Deep SAC, therefore an Appropriate Assessment will be carried out.</p>	<p>OR In-combination⁷</p> <p>N/A</p> <p>Comments :</p> <p>These activities also occur at the site:</p> <ul style="list-style-type: none"> • Gill nets/ trammels/ entangling/ drift net (demersal) • Cabling • Bottom towed gear (prohibited under Byelaw 6 except four fishermen with grandfather rights)
<p>6. Have NE been consulted on this LSE test? If yes, what was NE's advice?</p>	<p>Yes</p>	

6. Appropriate Assessment

6.1 Potential risks to features

Introduction

Exposed bedrock makes up the rugged northern flanks of Lune Deep, with heavily silted cobble and boulder slopes on the northern edges along the unique kettle hole feature (NE Reg 35 Advice, 2012). This provides a habitat for erect hydroids, bryozoans and sponges on tide-swept circalittoral mixed substrata (NE Reg 35 Advice, 2012). Strong tidal currents affect the area and

⁶ Yes or uncertain: completion of AA required. If no: LSE required only.

⁷ If conclusion of LSE alone an in-combination assessment is not required.

there is a dense hydroid and bryozoan turf present. Surveys show the epifauna associated with boulder and cobble (stony) and bedrock reef in this area to be mixed faunal and turf communities, bryozoans such as *Flustra foliacea* and *Alcyonidium diaphanum* and the hydroids *Nemertesia antennina* and *Hydrallmania falcate* (NE Reg 35 advice, 2012). A 2011 CMACS drop down video survey photographed these communities at either end of the deep sandy hole next to the reef feature. (Annex 3).

The Regulation 35 advice package for the Shell Flat and Lune Deep cSAC (2012) reports that generally the reef feature has a moderate sensitivity to physical loss or damage through abrasion. This is a precautionary assessment relating to the most vulnerable habitat type found on this feature. However, the vulnerability of reef sub features to physical loss or damage and biological disturbance has been stated in the advice as low due to the feature's low exposure to activities that could result in such an impact. The feature is considered to have a relatively low degree of sensitivity to smothering due to the high degree of natural sediment influence that the communities of Lune Deep experience and their relatively high level of recoverability.

Pots/creels

(details of gear and activity described in section 4).

- **Bedrock reef communities**

(Matrix sub feature: Subtidal bedrock reef)

Potential Pressure

Pots, creels, weights and ground-lines make contact with the bedrock reef and associated epifaunal communities during any potting fishing activity occurring within the Lune Deep SAC area. Target species are removed from the fishery.

Impacts

The Matrix and corresponding evidence review of fisheries and European Marine Site features undertaken by Natural England and reviewed by Cefas have superseded this assessment with the categorisation of the interaction of pots/ creels and reef features (including bedrock and boulder and cobble reef) as an "Amber risk". Overall, contact of the potting gear with the bedrock reef feature could result in abrasion to the substrate and potential damage to or loss of the epifaunal community. The hard bedrock substrate would not be substantially damaged or removed by contact, instead the gear would scrape across the hard surface.

Gear could impact the reef feature in several ways. Pots, groundlines and/or anchor weights could drag across the bottom for some distance, or strike and damage benthic organisms and reef features during deployment, and during retrieval if gear is dragged laterally as it is hauled (Eno *et al.* 2001, Coleman *et al.* 2013, Grieve *et al.* 2014). The rubbing effect of taut ropes between pots may also cause damage to epifauna (Hall *et al.* 2008). However fishers generally avoid this lateral dragging as it increases gear wear and tear and the risk of snagging, with drag mainly occurring due to wind, tide or a navigational hazard preventing a vertical direct lift (Coleman *et al.* 2013). The amount of damage caused will be determined by pot weight and structure, as well as how far and fast it moves before ascending (Grieve *et al.* 2014). In addition, once gear has been deployed, wind, wave and tidal influences causing the pots to move may damage the benthos through dragging and abrasion (Eno *et al.* 2001, Coleman *et al.* 2013). "Snagging of lines and pots (and the increased forces needed to free them) and dragging in bad weather may cause more severe damage than by pots landing on the seabed" (Eno *et al.* 2001). If insufficient line was deployed, strong tides and large swell were observed in a study to cause the lead pot to bounce up and

down on the seabed when normally it would have been static (Eno *et al.* 2001). A study by Lewis *et al.* (2009) indicated that buoyline drag moved the pots and caused disturbance (for example during storms), rather than the pot itself, with a reduction of sessile epifauna cover by 10% in disturbed areas, and a magnified effect in systems where pots are deployed in strings.

Removal of a species from an ecosystem through potting can directly and indirectly impact ecosystem function and stability (Wootton *et al.*, 2015). Fishing activities may lead to a reduction in the number of target species present such as lobsters and crabs, which often occupy a high trophic level as part of a small functional species group (Wootton *et al.*, 2015). They may hold an apex predator role, potentially maintaining the diversity within these habitats (EIFCA, 2014), therefore any removal of these species may affect other lower trophic level species, which may have knock-on effects to the food web structure, as well as ecosystem function and stability (Wootton *et al.* 2015). These effects may also lead to a loss of ecosystem goods and services to fishermen (Wootton *et al.* 2015).

European Lobster (*Hommarus gammarus*) occupy the apex predator role in many ecosystems as a large, aggressive and dominant species preying on a range of species and outcompeting potentially co-existing species such as Brown Crab (Wootton *et al.* 2015). If numbers of European lobster decrease through removal this may “allow its niche competitor, the Brown crab, *C. pagurus*, to extend its ecological niche and occupy habitats vacated by *H. gammarus*” through loss of a previous apex predator with knock-on community structuring effects (Wootton *et al.* 2015). In the case of Lune Deep SAC, both Brown Crab and European Lobster are targeted, although the commercial value of Brown crab is higher. Studies on the Lundy Island No Take Zone have shown a possibility of a trophic cascade and suggested the role of this species in ecosystem function. Fishing is prohibited, therefore European Lobsters are free from predation, allowing their abundance to significantly increase, filling the role of apex consumer there (Wootton *et al.* 2015). They prey upon and physically displace other decapod species from their ecological niche causing the numbers of some species (such as Brown crab and Velvet swimming crab) to decline as a result (Wootton *et al.* 2015). This may then mean that “lower *H. gammarus* populations may be beneficial in increasing community biodiversity and maintaining ecosystem function and stability” (Wootton *et al.* 2015), however further monitoring is required.

Brown Crab (*Cancer pagurus*) exerts top-down control in ecosystems through predation on a range of crustacean and molluscan species, as well as small fish (Wootton *et al.* 2015). However, there are a large number of UK crab species with similar diets and behaviour occupying a large functional group of species, therefore “it is unlikely that removal (or drastic reduction in abundance) of *C. pagurus* would significantly modify the existing top-down control of commercial fish and shellfish stocks, and thus negatively impact ecosystem function and stability” (Wootton *et al.* 2015). Studies have shown that some crabs migrate between subtidal and intertidal areas, again showing it is unlikely their removal would have a large impact on ecosystem structure and function (Wootton *et al.* 2015, Silva *et al.* 2014).

Impacts from fishing gear on rock substrate may include damage and loss of epifauna through snagging or catching of gear. Potting fisheries target complex substrates that provide habitat for crabs and lobsters, as well as habitat for epifaunal taxa (EIFCA, 2014). The epifaunal community structure could change due to intensive or repeated deployment of pots in a particular area, with a potential shift to species more able to tolerate and recover from abrasion and crushing caused by intensive activity, compared to the more sensitive slow growing species (EIFCA, 2014). However, the greatest conservation concerns associated with the potential abrasion impacts of pots are for those vulnerable species found elsewhere in the UK. The epifaunal species found in Lune Deep SAC are far less vulnerable than erect bodied long-lived sessile fauna such as some NE Atlantic species including the pink sea fan (*Eunicella verrucosa*), dead men’s fingers (*Alcyonidium*

digitatum), ross coral (the bryozoan *Pentapora fascialis*) and erect branching sponges (*Axinella* spp., *Raspalia* spp.) (Coleman *et al.* 2013). In contrast, Lune Deep contains a tide swept community and the species that occur within it are robust. After damage the bryozoan *Flustra foliacea* can repair damage to fronds within 5 – 10 days and is likely to survive and grow back if a holdfast remains intact. This species has been classed as having high recoverability after physical abrasion (Tyler-Walters & Ballerstedt, 2007). Studies of similar habitat in Cardigan Bay, Wales have shown that hydroid turf and hydroid species such as *Nemertesia antennina* are high in abundance after stormy periods, indicating that these species recover well after temporary disturbance (Albrecht, 2013). The species listed above reproduce at least perennially if not more often and larvae settle where there is exposed hard substrate.

An evidence review and additional literature search found limited studies that look specifically at the impact of potting on the species found in Lune Deep SAC. Instead the magnitude of impacts must be inferred from studies that have taken place investigating potting effects on more sensitive species in other regions.

Eno *et al.* (1996 and 2001) found little evidence for significant community level damage after employing divers to observe gear as it was deployed in an area that had already been subjected to potting. Instead there appeared to be species specific impacts- there was notable damage to ross coral (*Pentapora foliacea*) after just a single deployment (Sewell & Hiscock, 2005, also stated that pots are known to crush fragile colonies of ross, *Pentapora fascialis*), while *Eunicella* was shown to flex under the weight of pots as they were hauled over it. After the pots passed it returned to an upright position and was able to re-establish even after being uprooted. Fragile species were found to be present in areas considered heavily fished outside of the experimental site. The study concluded that there were insignificant short term impacts of potting other than the individual ross coral damage caused, however it could not be ascertained as to how repeated “hits” would affect more resilient species and communities as a whole in the long term. Heavy levels of potting deploying large numbers of pots in a specific area has been also been shown to affect the sea whip *Halipteris willemosi* through entangling in pots (Troffe *et al.* 2005). Any loss of reef communities would be of concern due to their ecological importance within the reef habitat. Many communities that use the reef habitats are interdependent upon the ecological functioning of others (for example, invertebrate communities and fish) and it is important that this potential indirect effect is considered when the effects of removal are assessed.

Lundy Island provided an opportunity to study the potential impacts of potting on mobile and sessile reef epifauna and their potential recovery, post-designation, by Coleman *et al.* (2013). The potting fishery targeted the bedrock and boulder reef habitats surrounding the island, the potential impacts of which were a concern and were an important reason for its designation. It was thought that once potting was stopped in the area there would be changes in epifaunal communities in the closed areas due to the lack of physical disruption through potting. Species selected for testing included Porifera: *Axinella* spp., *Raspalia ramosa*; Cnidaria: *Alcyonium digitatum*, *Eunicella verrucosa*; Bryozoa: *Pentapora fascialis* and Ascidacea: *Stolonica socialis*, amongst others. Results showed no increase or decrease in epifaunal species abundance within the no-take zone or outside it respectively, suggesting there is a general insensitivity of these species to commercial shellfish potting, and stating: “potting for crustacea on rocky habitats in inshore waters may well be a benign fishery with limited impact on benthic assemblages” (Coleman *et al.* 2013 and Eno *et al.* 2001). Jennings & Kaiser (1998), MacDonald *et al.* (1996) and Sewell & Hiscock (2005) all reported that mobile gears are more detrimental to benthic communities, habitats and species compared to pot and creel fishing. Mobile gears such as dredges and trawls extract non-target organisms and can damage or disturb the seabed, whilst pots and creels are far less damaging with little environmental impact (UK Biodiversity Group, 1999; Kinnear *et al.* 1996; Holt *et al.* 1998; Eno *et al.* 2001; Adey *et al.* 2006; OSPAR commission, 2009). In some areas the use of static

gear has been allowed to continue where other forms of fishing have been prohibited (AFBI, no year).

Exposure

Discussions with eight of the commercial fishing vessels from Fleetwood, Barrow and West Cumbria showed that two vessels pot regularly in the Lune Deep SAC itself; all other potting activity occurs in areas outside of the SAC (see Annex 4). Within the SAC, the shallower rocky northern edge of Lune Deep provides habitat for crabs and lobsters. Reports from some commercial fishermen (pers. comm., 2014 & 2015) state they avoid areas near the deep hole due to the risk of loss of gear. Vessels fishing in previous years on the northern edge suffered a lot of gear loss due to the nearby shipping channel and ferries running over them, and from gear being swept into the deep channel by strong tidal flows. This gear loss meant the fishery was not economically viable and fishing by some vessels ceased in around 2009 (IFCO Dixon & local fisherman *pers. comm.* 2014). However, two vessels are known to currently pot in Lune Deep SAC- one vessel (10m, 104kw) fishes for crab and lobster along the northern edge, using 300-400 pots in strings of around 300 yards without anchors. Another vessel uses 25 to 30 pots in both the SAC and surrounding area. Potting activity on the northern rocky edge of Lune Deep involves exposure of the reef feature to the pressure.

Intensity of fishing activity is based on the number of pots fished in a given area, with consideration given to the level of repeated exposure an area experiences. There may be a risk of cumulative damage to sensitive species if there is intensive use of pots, although there is a lower potential for damage per unit deployment compared to towed gear (Hartnoll, 1998). The maximum area of reef feature that may be in contact with the pots set by the two vessels can be roughly calculated as 161m² [area per pot (50cm x 75cm) x 430 pots] - or 0.0161 hectares. This would be at any time from around April to October each year, weather dependent. It is difficult to accurately and fully quantify the footprint covered by the pots due to drag and movement of the pots once they are set and during hauling, as well as the pots being set in different areas each time. The area of reef that may be vulnerable to contact and damage from fishing gear (limited to the shallow rocky northern edge) is small in comparison to the whole reef area which covers 306.4 Ha; this means there will be remaining epifaunal stock available for repopulation of damaged areas and therefore recoverability can be considered to be high. Potting activity levels are low and the pots used are understood not to cause much damage to the habitat on which they sit (NE Reg 35 conservation advice, 2012). Any increase in fishing activity here in the future is thought to be unlikely given the fishing conditions are not ideal (fast currents, deep drop off), the risk of gear loss and the fact that the six other vessels prosecuting the nearby areas currently fish away from Lune Deep.

The conservation objective for this feature is “maintain”. Initial data for this feature was collected in 2008 and there has not been an increase in potting activity since then. The NWIFCA is not aware of any site specific evidence that the limited low level potting fishery is having an impact upon the condition of the site. This assessment is based on NWIFCA's best available knowledge and the situation will be monitored by IFCOs. Increased use of Vessel Monitoring Systems (VMS) will give the NWIFCA greater capacity to monitor vessel fishing activity in European Marine Sites in the future. If increased activity was to occur here, the NWIFCA would carry out further assessment.

- **Stony reef communities**

(Matrix sub-feature: Subtidal boulder and cobble reef).

Potential Pressure

Pots, creels, weights and ground-lines make contact with the boulders and cobbles (stony reef) and associated epifaunal communities during any potting fishing activity occurring within the Lune Deep SAC area. Target species are removed from the fishery.

Impacts

Contact of the potting gear with the stony reef feature would result in abrasion to the substrate, potentially moving smaller cobbles, although the hard reef substrate would not be substantially damaged or removed by contact. This disturbance may result in the reduction of the stability of the cobble reef feature and also loss of habitat complexity (Engel & Kvitek, 1998; Freese *et al.*, 1999), along with damage and loss of epifauna. Target species including crab and lobster would be removed from the fishery. Impacts would be similar to those detailed above for bedrock reef communities.

Exposure

Exposure to the stony reef would be similar to that detailed above for bedrock reef communities-potting activity will result in exposure of the feature to the pressure; however this interaction is extremely unlikely as potters do not set pots in the deep chasm where the stony reef feature is located. This would only occur if gear is lost into the deep area from the northern edge, something which will be avoided at all costs by fishermen.

Table 2: Summary of Impacts

Feature/ Sub feature(s)	Conservation Objective	Potential pressure ⁸ (such as abrasion, disturbance) exerted by gear type(s) ⁹	Potential ecological impacts of pressure exerted by the activity/activities on the feature ¹⁰ <i>(reference to conservation objectives)</i>	Level of exposure ¹¹ of feature to pressure	Conclusion	Mitigation and Management measures ¹²
Reef -sub-tidal bedrock reef (bedrock reef communities)	Maintain	Contact, abrasion and detachment of species by pots/creels. Pots may strike the substrate and organisms during deployment, drag on the benthos during storm events or tidal/current movement, and drag during hauling. Vulnerability of the reef feature to abrasion is low. Removal of target species.	Damage or loss of epifauna via scraping or movement of stones. Recoverability of epifauna is high. The sensitivity of the reef feature to abrasion is moderate (NE Advice). Changes to ecosystem structure and function through removal of apex predators.	The area is currently prosecuted regularly by two vessels (one using 300-400 pots and one using 25-30 pots). Fishermen don't fish on either the reef wall itself or the bottom of the wall. They avoid the top of the wall due to the risk of gear being swept and lost into the deep chasm. If potting occurs in the SAC it is only on the northern rocky edge where gear is not at risk of loss. One potting vessel does not use anchors, therefore slightly reducing the potential risk	Current fishing activity in Lune Deep SAC is at a low level that is not expected to increase. There is low vulnerability and high recoverability of epifauna to this activity.	None

⁸ Guidance and advice from NE.

⁹ Group gear types where applicable and assess individually if more in depth assessment required.

¹⁰ Document the sensitivity of the feature to that pressure (where available), including a site specific consideration of factors that will influence sensitivity.

¹¹ Evidence based e.g. activity evidenced and footprint quantified if possible, including current management measures that reduce/remove the feature's exposure to the activity.

¹² Detail how this reduces/removes the potential pressure/impact(s) on the feature e.g. spatial/temporal/effort restrictions that would be introduced.

				of damage to the feature. Increased activity is unlikely in the future.		
Reef - sub-tidal boulder and cobble reef (stony reef communities)	Maintain	Contact, abrasion and detachment of species by pots/creels. Pots may strike the substrate and organisms during deployment, drag on the benthos during storm events or tidal/current movement, and drag during hauling. Vulnerability of the reef feature to abrasion is low. Removal of target species.	Damage or loss of epifauna via scraping or movement of stones. Recoverability of epifauna is high. The sensitivity of the reef feature to abrasion is moderate (NE Advice). Changes to ecosystem structure and function through removal of apex predators.	Fishermen do not set pots on the stony reef feature in the deep chasm, any interaction here is unlikely and would only be by lost gear. Increased activity is unlikely in the future.	Current fishing activity in Lune Deep SAC is at a low level that is not expected to increase. There is low vulnerability and high recovery of epifauna to this activity.	None

7. Conclusion¹³

Taking into account the information detailed in the Appropriate Assessment, it can be concluded that fishing using pots/creels, is not having an adverse effect on the integrity of the Shell Flat and Lune Deep SAC reef interest features and sites at low levels, and activity is unlikely to increase. Risk of gear loss and less than ideal fishing conditions mean it is unlikely to be fished with any high intensity levels in the future.

8. In-combination assessment¹³

The Lune Deep SAC Netting assessment (NWIFCA-LD-SAC-003) concluded no adverse effect on the integrity of the site. Bottom towed gear is prohibited in Lune Deep SAC under NWIFCA Byelaw 6, however four fishermen are permitted to continue bottom towed fishing in the area under a grandfather rights clause as their gear makes no contact with the SAC features. The Lune Deep Bottom Towed Gear assessment (NWIFCA-LD-SAC-RED) concluded no adverse effect on the integrity of the site and activity is limited to four vessels. Other plans/projects also occur in the SPA, therefore an in combination assessment is required. This will be assessed in a separate document when all initial TLSEs for a site are completed.

9. Summary of consultation with Natural England

See attached advice from Natural England (Annex 2).

10. Integrity test

It can be concluded that fishing using pots/creels, alone or in combination, is not having an adverse effect on the integrity of the Shell Flat and Lune Deep SAC reef interest features.

¹³ If conclusion of adverse affect alone an in-combination assessment is not required.

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Annex 2: Natural England's consultation advice

Date: 11 December 2015
Our ref: 174084
Your ref: NWIFCA-LD-SAC-002 & NWIFCA-LD-SAC-003



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BY EMAIL ONLY

Dear Sarah

Formal Advice to NWIFCA. Fisheries in EMS Habitats Regulations Assessment for Amber risk Categories in Shell Flat and Lune Deep SCI, including gear types: Pots/creels (NWIFCA-LD-SAC-002), gill nets, trammels, entangling and drift nets (demersal) (NWIFCA-LD-SAC-003).

Thank you for your consultation on the above which was received by Natural England on 08 December 2015.

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

In 2012, the Department for Environment, Food and Rural Affairs (Defra) announced a revised approach to the management of commercial fisheries in EMSs¹. The objective of this revised approach is to ensure that all existing and potential commercial fishing activities are managed in accordance with Article 6 of the Habitats Directive. This document states that for 'green' risk activities a site level assessment will be required if there are 'in combination effects' with other plans or projects. The Department's strong preference is that site level assessments be carried out in a manner that is consistent with the provisions of Article 6(3) of the Habitats Directive. Appropriate management measures should be put in place to ensure that the fishing activity or activities either 1) have no likely significant effect on a site in view of its conservation objectives or 2) following assessment, can be concluded to have no adverse effect on the integrity of the site.

Natural England has considered the two Habitat Regulations Assessments (HRAs) prepared by North Western Inshore Fisheries and Conservation Authority (IFCA) for the purposes of making an assessment consistent with the provisions of Article 6(3). Please accept this letter as Natural England's formal advice on the assessment and the conclusions it makes. The assessments consider the effects of the following fishing activities in the Shell Flat and Lune Deep Site of Community Importance (SCI):

- NWIFCA-LD-SAC-002: Pots/creels;
- NWIFCA-LD-SAC-003: Nets: gill nets, trammels, entangling and drift nets (demersal)

¹ Defra revised approach:

<https://www.gov.uk/government/publications/revised-approach-to-the-management-of-commercial-fisheries-in-european-marine-sites-overarching-policy-and-delivery>

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Natural England is accredited to the Cabinet Office Service Excellence Standard

We are content that the best available and most up to date evidence has been used to carry out the HRAs by North Western IFCA officers to determine whether management of an activity is required to conserve site features, and thus to ensure the protection of the features, from direct and indirect impacts, from the collection of marine fisheries resources.

We note that in combination effects will be assessed in a separate document when all initial Tests of Likely Significant Effects (TLSEs) for a site are completed.

Subject to the outcomes of the in combination assessments, it is Natural England's view that through their two HRAs, North Western IFCA officers appear to have appropriately identified those activities that are likely to have a significant effect in view of the site's conservation objectives, and whether management measures are required in order to ensure that the assessed fishing activity or activities will have no adverse effect on the integrity of the EMS.

It is Natural England's view that any foreseeable risk, or harm to the site has been appropriately assessed, and a robust mechanism for re-assessing that risk is in place. This view is based on our current knowledge of the impacts of these fishing activities on the designated features.

If you require any further comments or have any queries regarding the above please contact me to discuss them further.

Yours sincerely



Emily Hardman
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Annex 3: Site Map

Map showing interest features of Shell Flat & Lune Deep cSAC

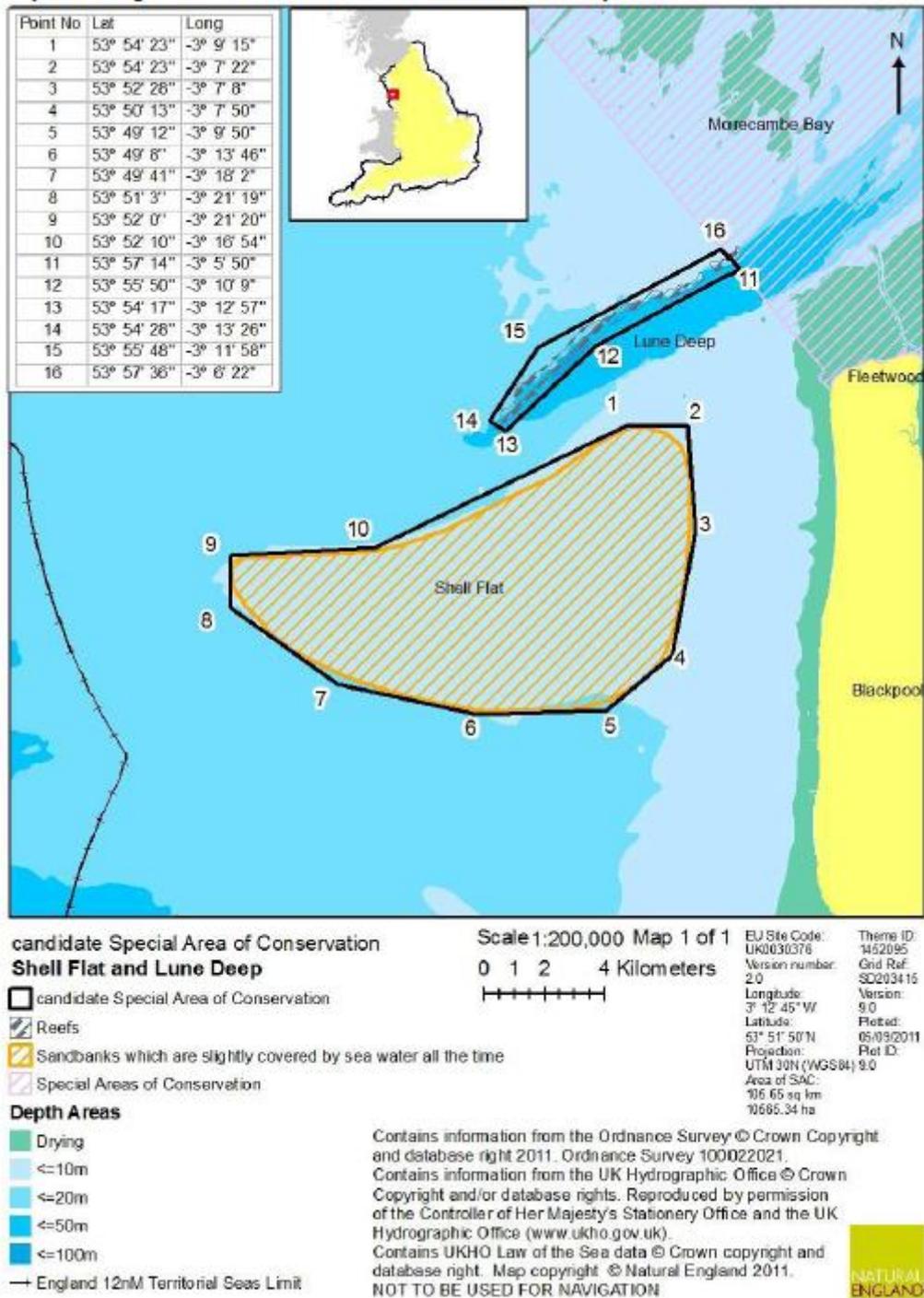


Figure 1. Map of Shell Flat & Lune Deep SAC (map supplied by Natural England).

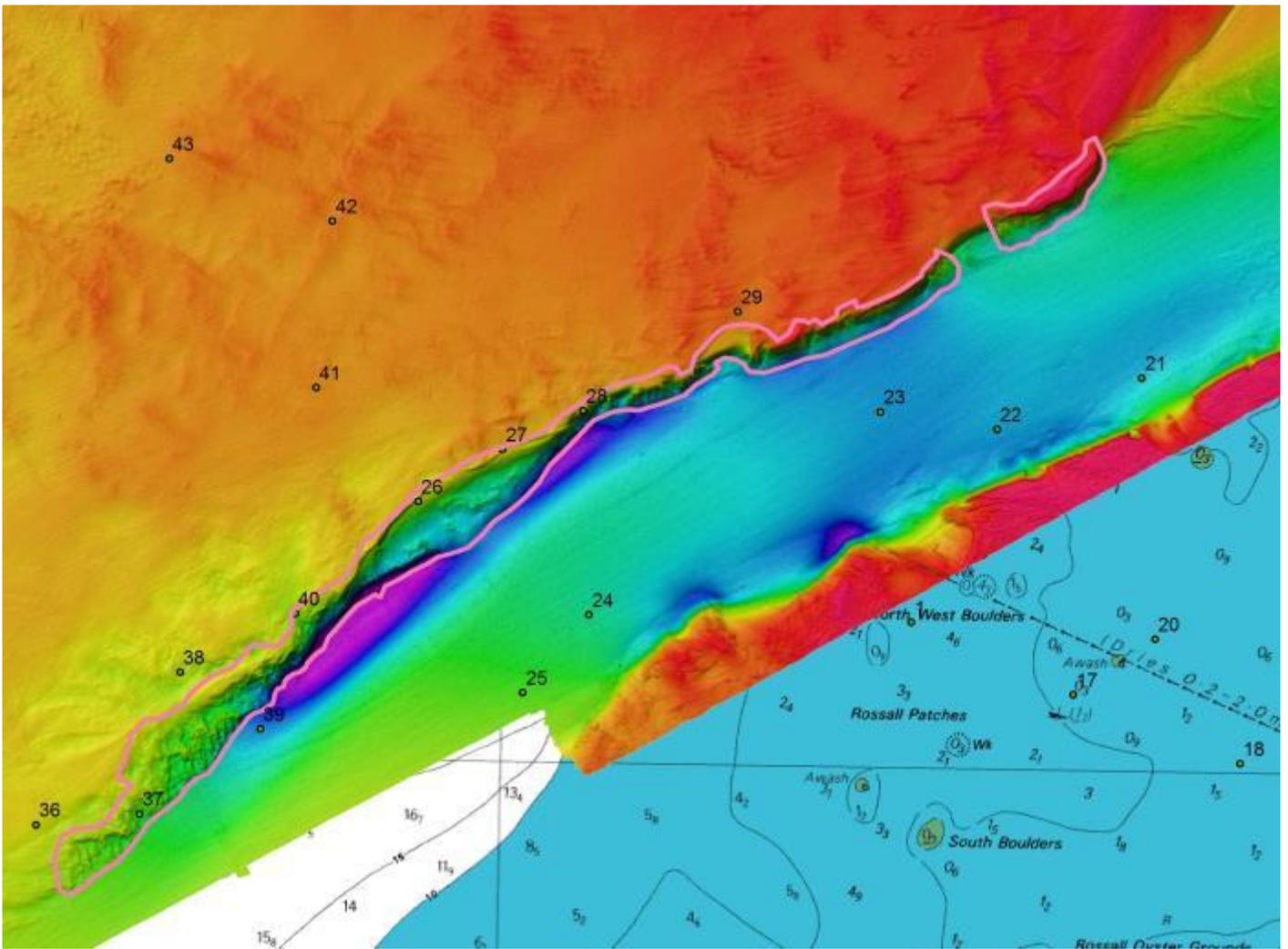


Figure 2. Lune Deep SAC reef feature extent (pink) and bathymetry data (map supplied by Natural England)

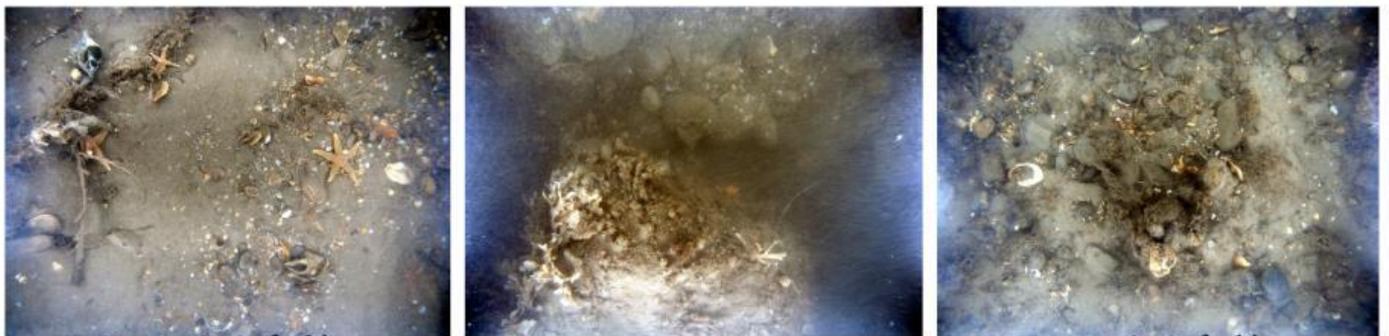


Figure 3. Representative photographs of the stony habitat found on the southern edge of the Lune Deep reef feature. (CMACS, 2011 – supplied by Natural England)

Annex 4: Fishing activity maps

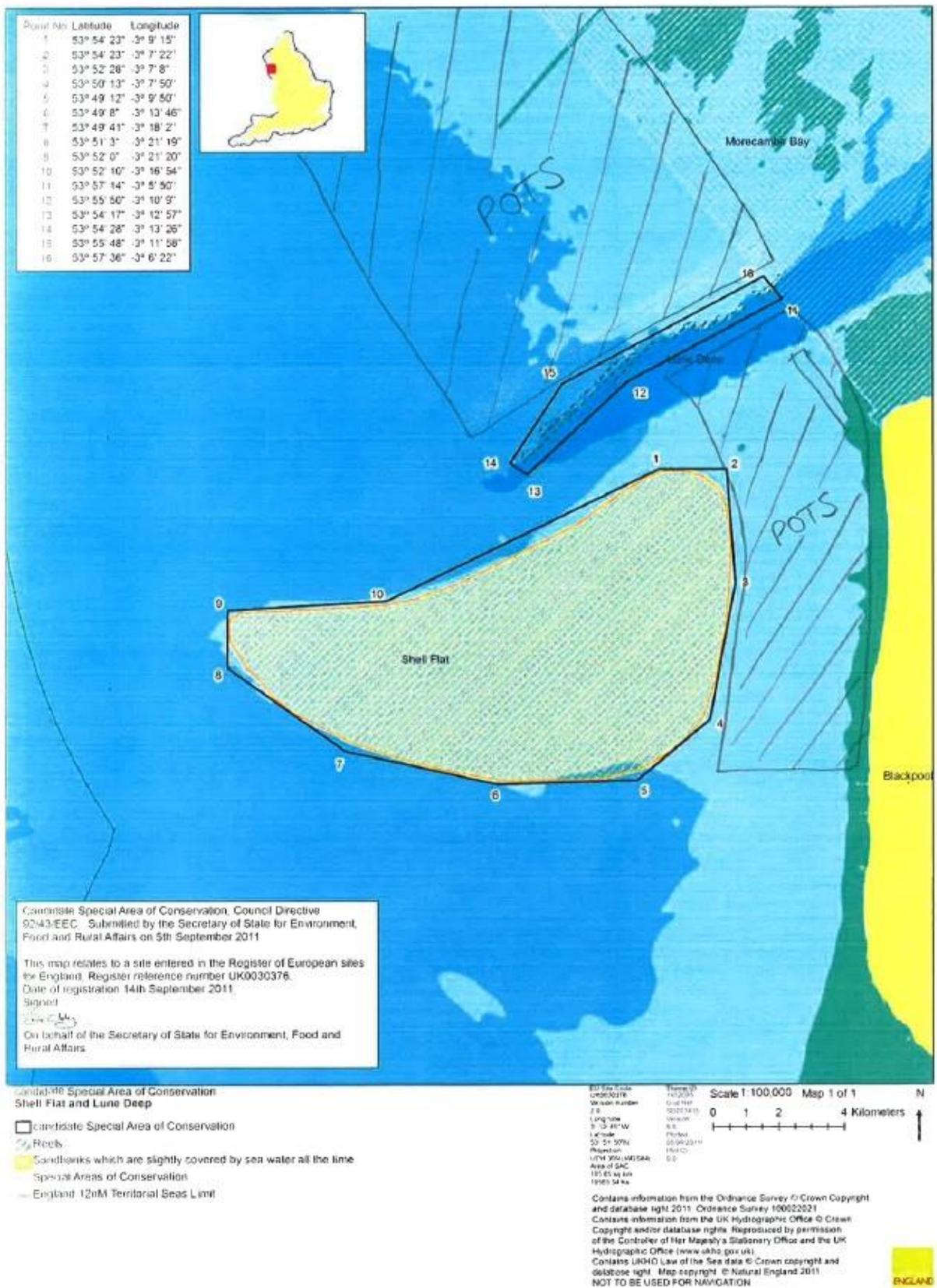


Figure 4. Potting areas annotated by commercial fishermen on individual maps and combined into one

Annex 5: Potting gear and vessels



Figure 5: Four of the commercial potting vessels from Fleetwood



Figure 6: Chamber pots used by potting vessels from Fleetwood



Figure 7: Whelk pots used by potting vessels from Fleetwood