

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

NWIFCA-MB-EMS-COCKLE LEVEN

22nd March 2016

Completed by: Mandy Knott

Site: Morecambe Bay and Duddon Estuary

European Designated Sites: UK0013027 Morecambe Bay Special Area of Conservation (SAC)
UK 9005031 Morecambe Bay Special Protection Area (SPA)
UK11045 Morecambe Bay Ramsar
UK9005031 Duddon Estuary Special Protection Area (SPA)
UK11022 Duddon Estuary Ramsar
Morecambe Bay and Duddon Estuary pSPA

European Marine Site: **Morecambe Bay and Duddon Estuary**

Qualifying Feature(s):

SAC and Ramsar

H1110. Sandbanks which are slightly covered by sea water all the time; Subtidal sandbanks
H1130. Estuaries
H1140. Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats
H1150. Coastal lagoons
H1160. Large shallow inlets and bays
H1170. Reefs
H1220. Perennial vegetation of stony banks; Coastal shingle vegetation outside the reach of waves (NON MARINE)
H1310. *Salicornia* and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand; Pioneer saltmarsh
H1330. Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)
H2110. Embryonic shifting dunes (NON MARINE)
H2120. Shifting dunes along the shoreline with *Ammophila arenaria* ("white dunes"); Shifting dunes with marram (NON MARINE)
H2130. Fixed dunes with herbaceous vegetation ("grey dunes"); Dune grassland (NON MARINE)
H2150. Atlantic decalcified fixed dunes (*Calluno-Ulicetea*); Coastal dune heathland (NON MARINE)
H2170. Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*); Dunes with creeping willow (NON MARINE)
H2190. Humid dune slacks (NON MARINE)
S1166. *Triturus cristatus*; Great crested newt (NON MARINE)
Natterjack Toad (NON MARINE)

SPA and Ramsar

A026 *Egretta garzetta*; Little egret (non-breeding)
A038 *Cygnus Cygnus*; Whooper swan (non-breeding)
A040 *Anser brachyrhynchus*; Pink-footed goose (non-breeding)
A048 *Tadorna tadorna*; Common shelduck (non-breeding)
A050 *Anas Penelope*; Wigeon - (non-breeding – Ramsar only)
A054 *Anas acuta*; Northern pintail (non-breeding)
A063 *Somateria mollissima*; Common eider (non-breeding – Ramsar only)
A067 *Bucephala clangula*; Goldeneye - (non-breeding – Ramsar only)
A069 *Mergus serrator*; Red-breasted merganser - (non-breeding – Ramsar only)
A130 *Haematopus ostralegus*; Eurasian oystercatcher (non-breeding)
A137 *Charadrius hiaticula*; Ringed plover (non-breeding)
A140 *Pluvialis apricaria*; European golden plover (non-breeding)
A141 *Pluvialis squatarola*; Grey plover (non-breeding)
A142 *Vanellus vanellus*; Lapwing - (non-breeding – Ramsar only)
A143 *Calidris canutus*; Red knot (non-breeding)
A144 *Calidris alba*; Sanderling (non-breeding)
A149 *Calidris alpina alpina*; Dunlin (non-breeding)
A151 *Calidris pugnax*; Ruff (non-breeding)
A156 *Limosa limosa*; Black-tailed godwit (non-breeding)
A157 *Limosa lapponica*; Bar-tailed godwit (non-breeding)
A160 *Numenius arquata*; Eurasian curlew (non-breeding)
A162 *Tringa totanus*; Common redshank (non-breeding)
A169 *Arenaria interpres*; Ruddy turnstone (non-breeding)
A176 *Larus melancephalus*; Mediterranean gull (non-breeding)
A183 *Larus fuscus*; Lesser black-backed gull (Breeding, non-breeding)
A184 *Larus argentatus*; Herring gull (Breeding)
A191 *Sterna sandvicensis*; Sandwich tern (Breeding)
A193 *Sterna hirundo*; Common tern (Breeding)
A195 *Sterna albifrons*; Little tern (Breeding)
Phalacrocorax carbo; Cormorant – (non-breeding – Ramsar only)
Podiceps cristatus; Great crested grebe - (non-breeding – Ramsar only)
Seabird assemblage
Waterbird assemblage

Site sub-feature(s)/Notable Communities:

SAC and Ramsar

Sandbanks which are slightly covered by sea water all the time – Subtidal coarse sediment, subtidal mixed sediments, subtidal sand, subtidal mud.

Estuaries - Intertidal mud, intertidal sand and muddy sand, intertidal mixed sediments, intertidal coarse sediment, intertidal rock, intertidal stony reef, intertidal biogenic reef: mussel beds, subtidal coarse sediment, subtidal mixed sediments, subtidal sand, subtidal mud, Salicornia and other annuals colonising mud and sand, Atlantic salt meadows (*Glauco-Puccinellietalia maritima*).

Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats – Intertidal mud, intertidal sand and muddy sand, intertidal mixed sediments, intertidal seagrass beds, intertidal coarse sediment.

Coastal lagoons

Large shallow inlets and bays – Intertidal mud, intertidal sand and muddy sand, intertidal mixed sediments, intertidal seagrass beds, intertidal coarse sediment, intertidal rock, intertidal stony reef, intertidal biogenic reef: mussel beds, intertidal biogenic reef: *Sabellaria* spp., subtidal stony reef, circalittoral rock, subtidal coarse sediment, subtidal mixed sediments, subtidal sand, subtidal mud, Salicornia and other annuals colonising mud and sand, Atlantic salt meadows (*Glauco-Puccinellietalia maritima*).

Reefs – Circalittoral rock, intertidal biogenic reef: mussel beds, intertidal biogenic reef: *Sabellaria* spp., intertidal rock, intertidal stony reef, subtidal stony reef.

Perennial vegetation of stony banks: Coastal shingle vegetation outside the reach of waves

Salicornia and other annuals colonising mud and sand: Glasswort and other annuals colonising mud and sand; Pioneer saltmarsh

Atlantic salt meadows (*Glauco-Puccinellietalia maritima*) (referred to as Saltmarsh)

Embryonic shifting dunes

Shifting dunes along the shoreline with *Ammophila arenaria* (“white dunes”); Shifting dunes with marram

Fixed dunes with herbaceous vegetation (“grey dunes”); Dune grassland

Atlantic decalcified fixed dunes (*Calluno-Ulicetea*); Coastal dune heathland

Dunes with *Salix repens* spp. *Argentea* (*Salicion arenariae*); dunes with creeping willow

Humid dune slacks

Great crested newt (*Triturus cristatus*)

Supporting habitat: Great crested newt (NON MARINE) – coastal sand dunes
Natterjack Toad (NON MARINE)- coastal sand dunes

SPA and Ramsar

Annual vegetation of drift lines, Atlantic salt meadows (*Glauco-puccinellietalia maritima*), coastal lagoons, freshwater and coastal grazing marsh, intertidal biogenic reef: mussel beds, intertidal coarse sediment, intertidal mud, intertidal rock, intertidal sand and muddy sand, intertidal seagrass beds, intertidal stony reef, Salicornia and other annuals colonising mud and sand, water column.

Generic sub-feature(s):

Intertidal mud and sand, Intertidal mud, Seagrass, Saltmarsh spp., Brittlestar beds, Subtidal muddy sand, Intertidal boulder and cobble reef, Subtidal boulder and cobble reef, *Sabellaria* spp. reef, Intertidal boulder and cobble reef, Surface feeding birds, Estuarine birds, Intertidal mud and sand, Intertidal boulder and cobble reef, Saltmarsh spp., Coastal lagoons.

High Level Conservation Objectives:

Morecambe Bay SAC

With regard to the SAC 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 and habitats of qualifying species
- The structure and function (including typical species) of qualifying natural habitats
- The structure and function of the habitats of qualifying species
- The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely
- The populations of qualifying species, and,
- The distribution of qualifying species within the site.

Morecambe Bay SPA

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified and the Ramsar Site and the wetland habitats and/or species for which the site has been listed (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 aims of the Wild Birds Directive and ensure that the site contributes to achieving the wise use of wetlands across the UK, by maintaining or restoring:

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

Duddon Estuary SPA

With regard to the SPA and the individual species and/or assemblage of species for which the site has been classified and the Ramsar Site and the wetland habitats and/or species for which the site has been listed (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 aims of the Wild Birds Directive and ensure that the site contributes to achieving the wise use of wetlands across the UK, by maintaining or restoring:

- The extent and distribution of the habitats of the qualifying features
- The structure and function of the habitats of the qualifying features
- The supporting processes on which the habitats of the qualifying features rely
- The population of each of the qualifying features, and,
- The distribution of the qualifying features within the site.

Fishing activities assessed:

Gear type(s):

Hand-gathering – Cockle (*Cerastoderma edule*)

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.

Some European Sites within the NWIFCA District consist of features that are not fully marine (eg. sand dunes) and therefore fall outwith of the EMS Review process. They have not been included in the original risk matrix. Due to the nature of some of the fisheries in the District, particularly intertidal fisheries, the NWIFCA has adopted the approach of carrying out full HRA on all the features (including non-marine) within European Sites to ensure that any potential risk from fishing activity has been identified and assessed.

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.

If measures are required, the revised approach requires these to be implemented by 2016.

The purpose of this site specific assessment document is to assess whether or not in the view of NWIFCA the fishing activity of a hand-gathering of cockles at Leven Sands has a likely significant effect on the qualifying features of the Morecambe Bay and Duddon Estuary European Site and on the basis of this assessment whether or not it can be concluded that hand-gathering of cockles at Leven Sands will not have an adverse effect on the integrity of this European Site.

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

2. Information about the EMS

(See cover pages).

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

The Morecambe Bay and Duddon European Site interest features, boulder and cobble reef, *Sabellaria alveolata* reef and Seagrass beds are protected from all bottom towed gears, in addition Seagrass beds are protected from bait collecting or working a fishery by hand or using a hand operated implement through a prohibition under [NWIFCA Byelaw 6](#), introduced in May 2014.

4. Information about the fishing activities within the site

In 2007, officers estimated that in a year when cockle recruitment is exceptional (an approximate 1 in 20 year event according to Sea Fisheries Committee records and local fishing knowledge) the maximum area available for fishing in Morecambe Bay could extend to up to 7,000ha for cockles and 1,000ha for mussels. The positions and extent of the beds mapped in 2007 are shown in Annex 4. It should be noted that while there are cockle and mussel resources elsewhere in the NWIFCA district, when stocks are dense Morecambe Bay is the largest and most commercially attractive shellfish gathering area by far.

Hand-gathering of cockles has been a long-standing traditional fishery within Morecambe Bay and the Duddon Estuary. Methods have changed very little over the years, with a jumbo (Annex 6) used to fluidise the soft sediments in which the buried cockles are found resulting in them rising to the sediment surface. They may then be raked into buckets or net bags, put through a hand-held riddle whereby the undersize cockle is returned to the bed, and the size cockle then placed into 20-25kg cockle sacks. Sometimes fishers use a craam (Annex 6) to pick out larger cockles scooping them straight into cockle sacks. Cockles are able to rebury themselves very quickly, so any not removed will soon become invisible under the sand once again.

Fishermen access the beds by ATVs and tractors due to the high risk of getting stuck in soft sediment. Depending on the area to be fished, the time when the bed is uncovered and safe to get on to and return from may be severely restricted. Tides in Morecambe Bay are notoriously dangerous for the inexperienced or risk-prone, with tidal ranges up to 10m. On

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)

the larger spring tides it is common for the incoming tide to race in as fast as a galloping horse and can easily overcome someone on foot (pers. comm. Knott. M. 2016).

The cockle fishery is highly variable in its production and consequently, its prosecution. Past records show this variability in stock levels and associated fishing activity as a long standing feature of the fishery. It is illustrated particularly well by the most recent experience, whereby extensively high stock levels between 2003 – 05 and 2007 - 08 had been preceded by a long period of low fishable stocks in the mid-1990s with effort levels closely corresponding to those fluctuations. In early 2006 the Bay was closed for cockling to protect stocks after two seasons of poor or non-existent recruitment (Cook, 2007. pers.comm.). A widespread spatfall in 2006 with good survival over the winter and excellent on-growth during the spring and summer of 2007 meant the Bay reverted to fishing together with the rest of the district in September 2007.

Since that last spatfall there have been no commercial fisheries in the Bay and indeed all beds have been closed to even the taking of a small amount (5kg per person per day) for personal consumption.

Regulation of Hand-gathering

Cockle hand-gathering in Morecambe Bay has been regulated by permits under various byelaws since 2003. The current byelaw – NWIFCA Byelaw 3 Permit to Fish for Cockles and Mussels (Annex 7) – was introduced in 2012 and succeeded in creating vastly improved management of what was sometimes described as an itinerant and unruly fishing community. Numbers of gatherers under these regulations have been greatly reduced. There are currently 75 permits issued for the whole NWIFCA District (22nd February 2016) with another maximum of 85 entitled to renew until 31st August 2016. Therefore a maximum of 160 people would prosecute this fishery if all renewed and all fished.

The regulation has created a more professional and responsible group of fishers. NWIFCA Byelaw 3 also specifies methods of fishing and only the use of a craam, rake, spade or jumbo (tamp) are permitted for hand-gathering. It also specifies a closed season from 1st May to 31st August to protect spat, and a minimum landing size.

A suite of other byelaws including NWSFC Byelaws 12, 13a, and 16 (Annex 7) provide further management measures for cockle harvesting in the Bay, including a prohibition on dredging and provision to close beds when stocks are low or to protect juvenile stock.

Joint Liaison Group and Morecambe Bay Action Group

With limited staff resources available to NWIFCA, effective control of fishing effort is organised with the assistance of other organisations. Consequently, in administering the fishery, the Authority works closely with other organisations such as the police, local councils, the Maritime and Coastguard Agency (MCA), the Health & Safety Executive (HSE), the Department for Work and Pensions (DWP), Natural England (NE), the Gangmasters Licensing Authority (GLA) and the Environment Agency (EA). This joint working is facilitated at a strategic level through a Joint Liaison Group (JLG) and delivered by the Morecambe Bay Action Group (MBAG). This approach has worked well and has been of undoubted benefit to the management of the fishery.

Shellfish Hygiene

Classification of shellfish harvesting areas is required and implemented directly in England and Wales under European Regulation 954/2004 to ensure shellfish are fit for human consumption. CEFAS undertake a Sanitary Survey prior to hygiene sampling commencing in new areas or re-commencing where classification has lapsed. Samples are taken monthly by local authorities and tested against standards set in terms of concentrations of Coliform bacteria and Salmonella.

Shellfish production areas are then classified from A to C according to the level of treatment they require prior to their sale to the general public. The latest classifications for the beds in Morecambe Bay can be found on the Food Standards Agency website (www.food.gov.uk).

Biosecurity

Morecambe Bay is currently shellfish disease free and the Authority considers it a priority to maintain this status. The non-native species Japweed (*Sargassum muticum*) and Leathery Sea-squirt (*Styela clava*) have previously been recorded within the area. In order to implement effective measures to prevent the introduction and / or spread of diseases or non-natives the Authority has developed and published a Biosecurity Plan, detailing controls and conditions that will be applied to all commercial shellfish activities. The Biosecurity Plan seeks to ensure that consignments and/or the areas from which they come, are regularly and thoroughly checked for invasive non-native species (INNS). The NWIFCA science team will monitor this fishery for any INNS.

Current Status of Stocks and Proposed Fishery

In summer 2015 fishers reported dense stocks of adult size (>20mm) cockle on the Leven Island bed (see Annex 4) in north Morecambe Bay which is accessed by a dedicated track over saltmarsh at West Plain in Flookburgh. NWIFCA Officers observed the stock on the ground with industry and carried out three subsequent surveys. However, the results from these surveys failed to provide data that would allow a fishery to proceed, and Officers believe the lack of stock during surveying was a result of extreme winds and cockles being 'blown' to other unidentified areas. Efforts are being made to understand this effect from weather.

During autumn 2015, a late spatfall was reported all around the NWIFCA District and specifically in Morecambe Bay. All appropriate agencies were notified of the possibility of a fishery developing for September 2016, and surveys are underway to assess the current stock levels around the whole of the Bay to inform future HRAs and cockle management decisions later in the year.

All beds in the District are currently closed under NWSFC Byelaw 13a Management of the Fishery due to stocks of adult (size) cockle being below fishable levels. Fishers have asked the NWIFCA to open the Leven Sands bed for the fishing of the remaining adult cockle there. A survey was carried out over low water on 11th February to determine the current status of the stock there.

Survey results

This survey was the first opportunity of the year for science officers to access the sands in daylight and reasonable weather. The approximate boundaries of an area with stocks on the Leven Sands in north Morecambe Bay were identified.

The survey showed patchy stocks, large enough in places to support a limited fishery of aged adult cockle. The area surveyed is estimated at 3.5 km². The stock found was mixed size with more abundant undersize (5-15mm length) aged less than 1 year from the 2015 recruitment and fewer much larger sized cockles aged 3 years or more.

Figure 1 shows numbers of sized (up to 38; mean 10 per m²) and Figure 2 shows undersized (up to 458; mean 79 per m²) cockles in the surveyed area.

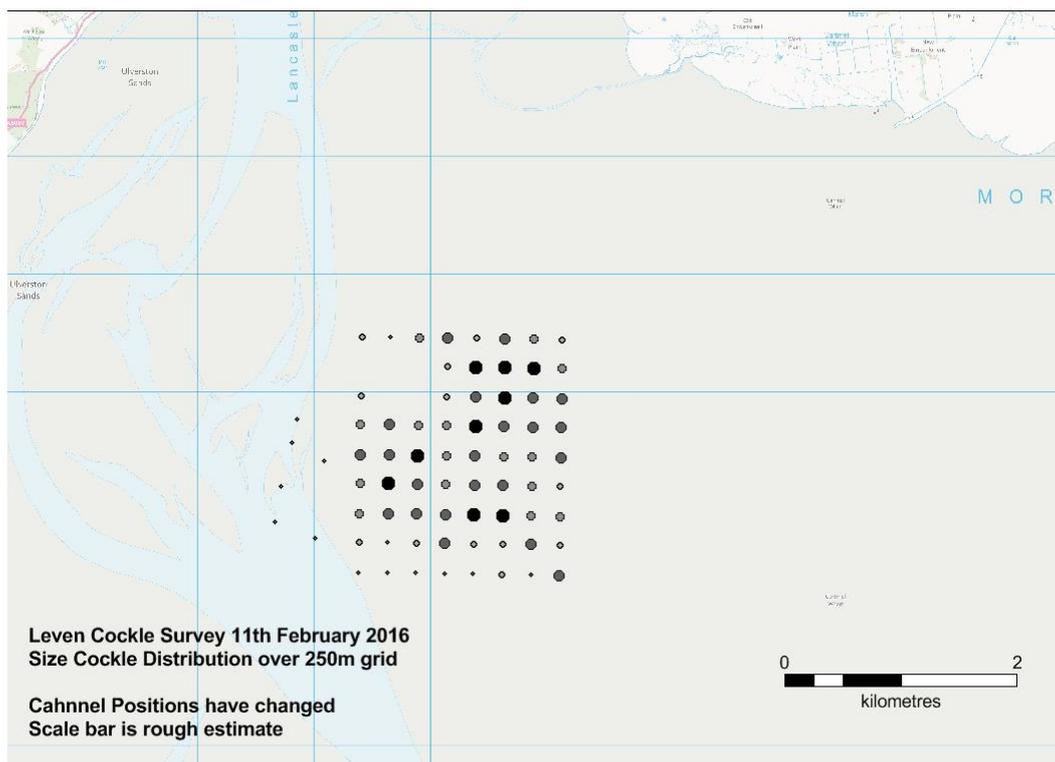


Fig. 1. Leven cockle survey results with density of size cockle per m².

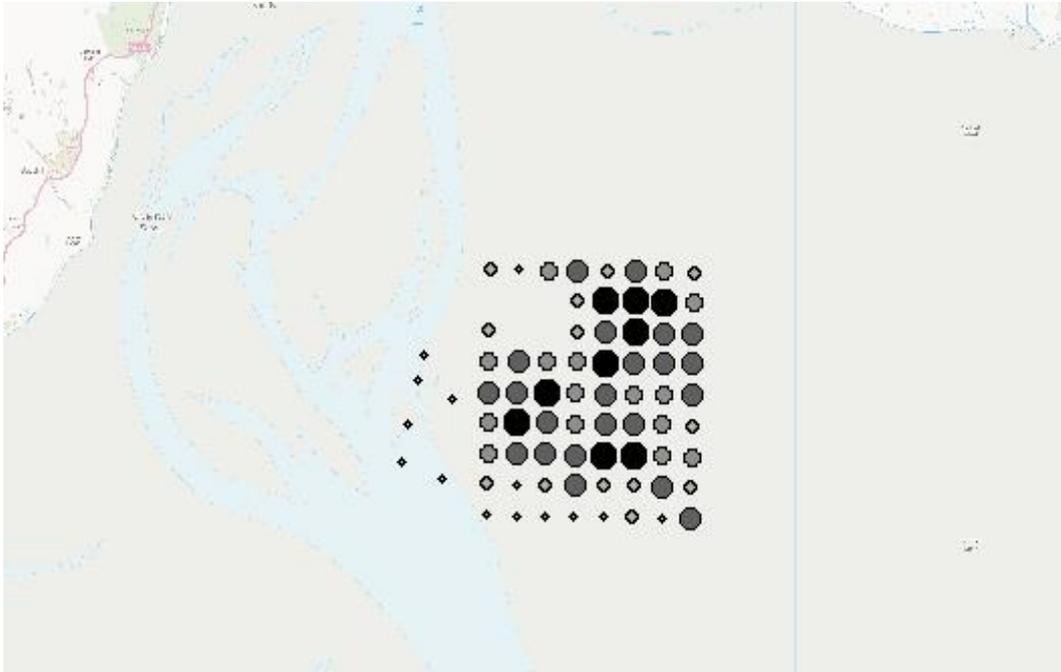


Fig. 2. Leven cockle survey results with density of underside cockle per m².

The Proposal

The proposal is to open a hand-gathered fishery at Leven Sands under derogation from the closure under NWSFC Byelaw 13a.

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.

Is the activity/activities directly connected with or necessary to the management of the site for nature conservation? NO

5.1 Table 1: Assessment of LSE

Features: All qualifying features and sub-features have been screened out other than those in the table below, due to there being no interaction between the fishing activity and the qualifying features and sub-features.

Pressures: All pressures from the Advice on Operations table provided in the Morecambe and Duddon Estuary Conservation Advice package have been screened out, other than the pressures in the following table, due to the nature of the fishing activity.

Qualifying Feature	Sub-feature	Potential pressure(s)	Sensitivity	Potential for Likely Significant Effect?	Justification and evidence
H1130. Estuaries	Intertidal mud	Abrasion/disturbance of the substrate on the surface of the seabed	Sensitive	No	Activity does not occur within the vicinity of intertidal mud
H1140. Mudflats and sandflats not covered by seawater at low tide; Intertidal mudflats and sandflats		Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion	Sensitive	No	
H1160. Large shallow inlets and bays					

³ Managing Natura 2000 sites: http://ec.europa.eu/environment/nature/natura2000/management/guidance_en.htm

	Intertidal sand and muddy sand intertidal mixed sediments, intertidal coarse sediment	Abrasion/disturbance of the substrate on the surface of the seabed Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion Genetic modification & translocation of indigenous species Litter Physical change (to another seabed type) Removal of non-target species Removal of target species	Sensitive Sensitive Insufficient Evidence to assess Sensitive Sensitive Sensitive Sensitive	Yes Yes No Yes No No Yes	Cockles will be removed straight into bags and away to market. Low level of diversity on sands and highly selective fishery will preclude translocation of other species. Hand-gathering with craam unlikely to have any impact in such a highly dynamic site. Highly selective fishery - no by-catch of non-target discards.
H1310 <i>Salicornia</i> and other annuals colonising mud and sand; Glasswort and other annuals colonising mud and sand; Pioneer saltmarsh H1330. Atlantic salt meadows (<i>Glaucopuccinellietalia maritimae</i>) (referred to as Saltmarsh) SPA Supporting Habitats including Freshwater and coastal grazing marsh		Abrasion/disturbance of the substrate on the surface of the seabed Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion Genetic modification & translocation of indigenous species Litter Physical change (to another seabed type)	Sensitive Sensitive Sensitive Sensitive Sensitive	Yes Yes No Yes Yes	Access only on saltmarsh, no fishing. Highly selective fishery will preclude translocation of other species
SPA Features including Ramsar –	Supporting Habitats assessed above				
A048 <i>Tadorna tadorna</i> ; Common shelduck		Removal of target species (cockles)	Some species sensitive, others screened out	Yes	Species sensitive to removal of cockles: Common eider Eurasian oystercatcher Red knot Lesser black-backed gull Herring gull
A050 <i>Anas penelope</i> ; Wigeon					
A054 <i>Anas acuta</i> ; Northern pintail					
A063 <i>Somateria mollissima</i> ; Common eider (Breeding)					
A040 <i>Anser brachyrhynchus</i> ; Pink-footed goose (non-breeding)		Removal of non-target species	Sensitive	No	Highly selective fishery. No by-catch or discards of non-target species.

A130 <i>Haematopus ostralegus</i> ; Eurasian oystercatcher	Visual disturbance	Sensitive	Yes – potential for all species	
A137 <i>Charadrius hiaticula</i> ; Ringed plover				
A140 <i>Pluvialis apricaria</i> ; European golden plover				
A141 <i>Pluvialis squatarola</i> ; Grey plover				
A142 <i>Vanellus vanellus</i> ; Lapwing				
A143 <i>Calidris canutus</i> ; Red knot				
A144 <i>Calidris alba</i> ; Sanderling				
A149 <i>Calidris alpina alpina</i> ; Dunlin				
A156 <i>Limosa limosa</i> ; Black-tailed godwit				
A157 <i>Limosa lapponica</i> ; Bar-tailed godwit				
A160 <i>Numenius arquata</i> ; Eurasian curlew				
A162 <i>Tringa totanus</i> ; Common redshank				
A169 <i>Arenaria interpres</i> ; Ruddy turnstone				
A176 <i>Larus melancephalus</i> ; Mediterranean gull				
<i>Sterna sandvicensis</i> ; Sandwich tern (Breeding)				
A193 <i>Sterna hirundo</i> ; Common tern (Breeding)				
A195 <i>Sterna albifrons</i> ; Little tern (Breeding)				
Seabird assemblage				
Waterbird assemblage				
A183 <i>Larus fuscus</i> ; Lesser black-backed gull (Breeding)				
A184 <i>Larus argentatus</i> ; Herring gull (Breeding)				

<p>Is the potential scale or magnitude of any effect likely to be significant?⁴</p>	<p>Alone</p> <p>Yes</p> <p>Comments :</p>	<p>OR In-combination⁵</p> <p>Yes</p> <p>Comments :</p> <p>These activities also occur at the site:</p> <ul style="list-style-type: none"> • Beam trawl (whitefish) • Beam Trawl (Shrimp) • Pots and Creels • Light otter trawl • Fixed nets (gill, trammel, entangling) • Longlines • Shrimp push-net • Fyke and stakenet • Hand working (mussels) <p>In combination effects for activities other than mussel fishing will be assessed when all initial TLSEs for a site are completed.</p> <p>In combination effect with mussel fishery assessed below.</p>
<p>Have NE been consulted on this LSE test? If yes, what was NE's advice?</p>	<p>Yes – see below</p>	

⁴ Yes or uncertain: completion of AA required. If no: LSE required only.

⁵ If conclusion of LSE alone an in-combination assessment is not required.

6. Appropriate Assessment

Potential risks to features

6.1 SAC Features / sub-features / SPA supporting habitats

- Intertidal sand and muddy sand
- Intertidal mixed sediments, intertidal coarse sediment
- Saltmarsh

6.1.1 Potential Impacts

- Abrasion/disturbance of the substrate on the surface of the seabed
- Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion
- Litter
- Removal of target species
- Physical change (to another seabed type) – saltmarsh only

6.1.2 Exposure

i) and ii) – there is potential for high levels of hand-gathering activity to impact on the sandy sediments of the Leven Sands bed. Constant running over the ground with quad bikes, tractors and trailers could lead to compaction of sediments, and heavy jumbo-ing and hand raking disturbance and abrasion to the composition of the sand. Fuel and oil spills could also pollute the habitat.

iii) – past fisheries have had a poor reputation for large amounts of litter being deposited on the parking and access areas, and being left on the cockle beds themselves. Items have included food and drink receptacles, cockle net bags and sacks. Impacts could include entanglement of fish and birds in the bags and sacks, and swallowing / entanglement of birds and mammals (both marine and terrestrial) of other litter.

iv) – removal of target species could change the invertebrate community composition of the sandbanks.

v) - there is also the potential for high levels of hand-gathering activity to impact on the saltmarsh if vehicles park and drive over this important habitat, leading to rutting, pooling and erosion.

6.2 SPA and Ramsar Features

- SPA and Ramsar birds

6.2.1 Potential Impacts

- Removal of target species (cockles) for Common eider, Eurasian oystercatcher, Red knot, Lesser black-backed gull and Herring gull;

- ii) Visual disturbance to all species within vicinity of fishery, on the saltmarsh access route and over the sandbanks.

6.2.2 Exposure

i) – cockles form part of an important prey resource for eiders, oystercatchers and knot. Gulls are opportunistic scavengers and will utilise any cockle resource brought to the surface and left on the sand. If bird populations are to be maintained in healthy condition, sufficient shellfish to meet their demands must remain for them.

If fisheries remove essential prey and there is a lack of food, the impacts on these species will vary at different times of year. For example, prey resource requirements will be far greater during autumn and at the beginning of winter than at other times of the year, as enough resource needs to be present for all the birds to feed through the cold months, when energy requirements are higher. Over-wintering waders require to put on weight and get into best condition prior to migrations north for the summer, or they will not survive long flight distances and suffer high mortalities. Equally the breeding eider population of Morecambe Bay needs to get into prime condition prior to mating in order to reproduce successfully. This applies to both sexes but in particular to females who once on the nest do not feed again until ducklings have fledged, a period of up to three weeks. There have been concerns raised over the Bay's eider population, its sex ratio skew (3:1 males to females) and the lack of success in breeding.

Oystercatchers mainly eat larger-sized cockles, which are the target of the cockle fisheries. Although the birds can eat alternative prey species when shellfish are scarce, these prey often do not enable birds to survive as well, and in such good body condition, as when shellfish are abundant (Atkinson et al 2003; Goss-Custard et al 2004).

Knot eat smaller bivalves with lower and upper size limits of around 5 and 12.5mm shell length respectively (Bell et al 2001).

Eiders generally feed on a mixed range of sizes of bivalves, although it is understood they will consume high quantities of small mussels when they are available.

ii) - visual disturbance could impact on condition of any of the listed bird species, by causing unnecessary energy expenditure if flushed and taking to flight. For birds feeding on the affected areas it could also reduce feeding times, and increase competition if birds are forced to concentrate into reduced feeding areas. By mid-March some species, such as Redshank, will be establishing breeding territories on the saltmarsh and actively displaying. Disturbance caused by access to the fishery across the saltmarsh may reduce breeding success of this nationally declining species.

6.3 Management and Mitigation to Ensure No Adverse Effect on the Integrity of the European Site:

Due to the potential impacts outlined above, management and mitigation measures are necessary in order to ensure effects are prevented.

6.3.1 NWIFCA management and mitigation in order to open the fishery

Area to be opened

1. The fishery will be on the Leven Sands cockle bed, an area of around 3.5km² shown by the red box in the illustration below.
2. The area is within the Morecambe Bay commercial area defined in Byelaw 3 so the public fishery right of 5kg non-commercial allowance will be suspended for the period of the commercial fishery to assist effective enforcement.
3. Access is by an existing hard-core track across the saltmarsh area used regularly by shrimp fishermen. IFCO patrols will limit access to this track and fishing to the authorised area. Permit holders will be issued with maps showing the authorised box and co-ordinates. There is unlikely to be fishable cockle north of the commercial area within the access route zone due to its height on the shore.
4. As is typical, there is both size and undersize cockle in the area. Cockle distribution is considered to be mostly controlled by sediment character such as grain size and the elevation of the bed so stocks can be very locally variable.

Stock level and sustainability

5. While the February survey results show a mean density of adult (sized) cockle of only 10 per m² the stock is old (3+ years) and likely to die in summer 2016. A 3 year life cycle for cockles is typical in Morecambe Bay. If stock is dying it does not contribute to a sustainable fishery so the removal of this cockle may be considered not to be a relevant factor.
6. Also, this stock may not be counted as a food resource for over-wintering birds as it is expected to be lost by the time birds return in the Autumn. Therefore removal of these large cockles may be considered to have no impact on the over-wintering bird food resource (for the case of eiders and resident oystercatchers see below).
7. A similar policy was agreed at Foulnaze (Ribble) in 2013, when removal of remaining 2010 cockles was authorised.

Estimate of biomass

8. An estimate of adult biomass was made using conversion ratios developed by a previous SFC scientist. Using a bed area of 3.5km², a mean density of size cockle of 10 per m², a mean shell length of 28mm, a wet weight per cockle of 9g, gives 315 tonnes of size cockle.
9. No attempt has been made to estimate weight of undersize as shell lengths were extremely variable and time did not allow proper sampling.

Food resource for eiders

10. Eiders are bivalve eating diving ducks feeding on cockles and mussels. From the SPA citation (1991) Morecambe Bay supported 4,800 eiders when it was designated. BTO annual peak data (Table 1) shows a 5 year peak mean of 5886, with some recent years recording over six thousand.
11. Therefore the number of eiders in Morecambe Bay is above acceptable conservation limits despite the low density of cockles since 2008-9. Therefore cockles should not be assumed to have comprised a major part of the eider diet in the last 7 years. Eiders cannot have been reliant or dependent on cockle for that period.
12. The size of cockles is also relevant. Although eiders will eat all sizes they generally favour smaller cockles. Heavy shells as now found at Leven are not first choice because they are less efficient to digest.

Table 1. BTO eider annual peak data for eiders in Morecambe Bay

Years	Annual Peak
2006/07	3374
2007/08	2138
2008/09	5534
2009/10	4248
2010/11	6151
2011/12	7121
2012/13	5608
2013/14	6303

Disturbance to Birds

13. Disturbance will be mitigated by limiting the access route to the track. This track is habitually used by shrimping tractors, and visitors to the caravan park at West Plain who walk to the sands along this track. Birds are likely to be habituated to a certain level of disturbance.
14. Parking and 'tonning up' on the saltmarsh will not be permitted. Disturbance will be minimised by vehicles only travelling to and from the fishery once each way per tide. Further protection will be offered by limiting the tides to one per day and days that the fishery is open per week.
15. The above arrangements will also prevent damage to saltmarsh / pioneer saltmarsh.
16. Observations on the sands while surveying on 11th February recorded no wading birds or eiders during the 3.5 hours of work. The only birds observed were a group of around ten gulls that followed the survey team scavenging. This is in sharp contrast to large numbers of oystercatcher and some knot and gulls seen on the mussel beds at Foulney, Heysham Flat and Lytham during the latter part of 2015, and during surveys in March 2016. A flock of eiders (estimated number ~ 50) was also seen on the mussel bed at Foulney and a small group on the mussels in the Duddon Estuary in March 2016. These observations suggest that mussels are forming a more substantial part of their diet than cockles.
17. Numbers of fishermen is anticipated to be low and spread out across the bed. Tractors shrimping may also be present. Previous fisheries have shown that when birds are 'put up' they typically settle again rapidly and continue to feed. Birds may benefit from loose cockle on the sand after jumbo-ing. There is therefore no reason to suggest that disturbance to birds would be damaging unless weather was exceptionally severe, but if evidence of high levels of disturbance was observed, the fishery will be closed.

Numbers of fishermen and social impact of a fishery

18. On the first few days of the fishery a high proportion of the 75 Byelaw 3 permit holders might be expected. Another 80 are eligible to apply for 2016-7 permits but have not done so. The Authority requires at least 2 weeks from application to permit issue. Once fishing begins it is believed that numbers of gatherers will quickly diminish when the extent of the stock is known.
19. This size of fishery is manageable with existing resources. A multi-agency committee has been convened as in previous years to manage the fishery and take in the interests of stakeholders. The Committee includes police, GLA, EHOs, and other regulators.

Protection of spat

20. The management measures proposed, including use of a craam, restriction in size of jumbo and prohibition of rakes, will reduce the number of fishermen and minimise the risk to the spat. Few

fishers own or have used a craam which is a traditional Morecambe Bay tool designed to remove large cockle with minimal damage to juveniles or the wider environment. It is in no one's interests to damage undersize cockle. If there is evidence of damage to spat the fishery will be closed.

21. In general despite being 'jumbeod' to the sand surface, cockle re-bury quickly. It is one of the difficulties in surveying as they can be out of sight again within seconds. This ability also provides confidence that the risk of damage is limited.
22. The Leven bed is not expected to be opened for cockle fishing in September. With a mean density of undersize of 79 per m² in February it is most likely that through natural mortality and predation this number will have reduced greatly by September and will not be commercially viable or of a level that a sustainable fishery could be supported.
23. With the craam fishery being opened in April, fishing should be completed prior to any recruitment for 2016 which usually occurs in July (but was late last year due to the cold spring). The fishery will be closed if there is evidence of settlement in order to protect the new recruits.

Allowing the cockles to spawn

24. From where cockles spawn to seed Morecambe Bay is unknown. There is usually a low density of adult cockle present but the reason for occasional population explosions needs further research. Experience in other estuaries, such as the major recruitments at Leasowe (Wirral) in 2009 and Foulnaze (Ribble) in 2010, indicate that recruitment came from outside stock.
25. In a similar case when the Authority was considering allowing fishing of the remaining old 2010 cockle at Foulnaze, Byelaw 3 permit holders were asked for their opinion on whether to allow it to spawn or not. The responses were split 50/50 and the science team recommended that from an ecological and sustainability point of view they should not be fished until the summer to give them a chance to spawn. There was no subsequent known recruitment on the Ribble beds.
26. However, the size of the bed at Leven Sands is minimal in comparison with the rest of the Bay and the wider adult spawning stock. Leven Sands is not a primary part of the Morecambe Bay cockle fishery. Other beds such as Flookburgh, Warton Sands, Pilling and Middleton Sands are likely to hold aggregations from 2015 settlement, and a cohort of older cockle.

6.4 Specific Management Measures within the Authorisation to Fish

In order to ensure no adverse effect on the integrity of the European Site, its conservation features and supporting habitats, management and mitigation measures have been incorporated into the proposal for the fishery. As the fishery will be opened under derogation from NWIFCA Byelaw 3 and NWSFC Byelaw 13a conditions can be attached to the authorisation to fish. These have been approved by the NWIFCA Members and are as follows:

- a) Removal of size cockles is permitted only during the period 4th April to 30th April 2016 on the tides specified below;
- b) That cockle is only gathered from the Leven Island Bed as defined below,.
- c) That cockles are only gathered using a craam as defined below and jumbo no more than 182cm (6 foot) in length and 35cm (14 inches) as measured from its extremities including any extensions;
- d) The use of a rake is prohibited;
- e) Access to and from the fishery will be via the access point at Moor Lane (West Plain) only, and only using ATV/tractor;
- f) No parking of any vehicle or no tonning up is to be conducted on the track, saltmarsh or beach;
- g) Care must be taken while driving to ensure the safety of livestock, pedestrians or other people using the road, track or beach;
- h) The authorisation is only valid for Byelaw 3 permit holders. It does not allow any other person to take or remove cockles;
- i) All Byelaw 3 permit holders must be in possession of a valid permit, which must be carried at all times whilst accessing the fishery. Permits must be shown to warranted NWIFCA Enforcement Officers on request, or any other person acting under the supervision or direction of an Enforcement Officer (MACAA. s.260(2));
- j) All Byelaw 3 permit holders must not obstruct an IFCO pursuant to MACCA s292(4) carrying out a relevant function pursuant to MACCA s287;
- k) All Byelaw 3 permit holders must submit returns to NWIFCA on a weekly basis and no later than the Friday of the following week;
- l) This authorisation does not exonerate the holder from other sea fisheries legislation, nor does it prejudice any other consents the holder may need to obtain, nor does it override or provide permission to go over private land;
- m) The fishery may be closed with immediate effect by the NWIFCA, or appropriate management action taken if in the opinion of NWIFCA Officers or Scientists, there is a failure to comply with these conditions or there is damage to the beds or the saltmarsh through access or over-fishing, or there are high levels of disturbance to the birds and a risk of adverse effect identified to the European Site.
- n) Any damage to conservation features could lead to prosecution by Natural England.

Discussions have also been on-going with other agencies about the provision of litter disposal facilities, and NWIFCA officers and others will be on hand to monitor levels of littering and fuel spills.

Under NWIFCA Byelaw 3 there will be a suspension of the public right to fish on this area to

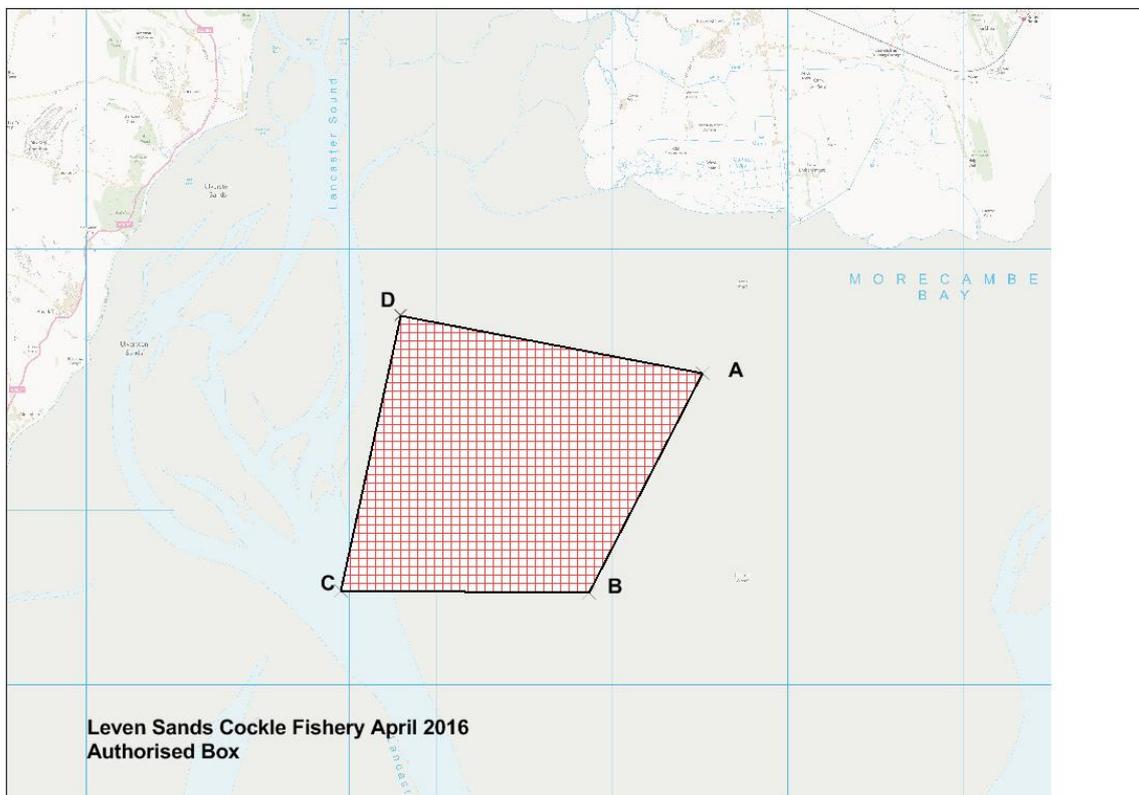
ensure effective enforcement of the permit scheme and these management measures.

It is anticipated that on the first day that the fishery is open the majority of permit holders will attend, and NWIFCA will work closely with other enforcement agencies to ensure full compliance with the conditions. After the first day, once industry realise the fishery is limited, some sectors may chose not to incur the costs of travelling and overnight accommodation for low levels of fishing, and again it is anticipated that effort will reduce to around 40-50 hand-gatherers maximum.

NWIFCA enforcement officers will use intelligence and contacts with fellow enforcement agencies to pursue any suspicions of non-permitted or illegal cockling activity.

The authorisation may be revoked by the NWIFCA at any time and any breach of the terms or conditions of this authorisation shall make it null and void.

Co-ordinates and illustration of the authorised area for fishing:



ID	Lat	Long
A	N 54 08.161	W 2 58.844
B	N 54 06.793	W 3 00.004
C	N 54 06.780	W 3 02.599
D	N 54 08.490	W 3 02.011

Permitted Tides (one per day)

Date	Low Water Open Tide
04/04/2016	p.m.
05/04/2016	p.m.
06/04/2016	p.m.
07/04/2016	p.m.
08/04/2016	a.m.
09/04/2016	a.m.
10/04/2016	a.m.
14/04/2016	a.m.
15/04/2016	p.m.
16/04/2016	p.m.
17/04/2016	p.m.
18/04/2016	p.m.
21/04/2016	a.m.
22/04/2016	a.m.
23/04/2016	a.m.
24/04/2016	a.m.
25/04/2016	a.m.
29/04/2016	p.m.
30/04/2016	p.m.

Definition of a craam:

A short handled three pronged fork, as illustrated:



Table 2: Summary of Impacts

Feature/Sub feature(s)	Conservation Objective	Potential pressure ⁶ (such as abrasion, disturbance) exerted by gear type(s) ⁷	Potential ecological impacts of pressure exerted by the activity/activities on the feature ⁸ (reference to conservation objectives)	Level of exposure ⁹ of feature to pressure	Mitigation measures ¹⁰
<p>Intertidal sand and muddy sand, intertidal mixed sediments, intertidal coarse sediment (Estuaries, Mudflats and sandflats not covered by seawater at low tide, Large shallow inlets and bays, SPA supporting habitats)</p>	<p>Maintain or restore the extent, distribution structure or function of the feature.</p>	<p>Abrasion/disturbance of the substrate on the surface of the seabed</p> <p>Penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion</p> <p>Litter</p> <p>Removal of target species</p>	<p>Potential to change the substrate on the surface of the seabed through sediment compaction, and removal of sediment. Potential damage to communities associated with features.</p> <p>Potential to change the substrate below surface of the seabed through sediment compaction, and removal of sediment. Potential damage to communities associated with features.</p> <p>Littering impacts could include entanglement of fish and birds in the bags and sacks, and swallowing / entanglement of birds and mammals (both marine and terrestrial) of other litter.</p> <p>Removal of target species could change the invertebrate community composition of the sandbanks.</p>	<p>The natural environment in which the fishing activity occurs is a highly dynamic and changeable environment. The sandbanks which are targeted by the fishery are constantly changing and moving geographically.</p> <p>Littering levels will be monitored, and fishers encouraged to act responsibly. The fishery will be closed if littering is a problem.</p> <p>Target species is likely to die off by mid summer and therefore no likelihood of change to community composition occurring than through natural mortality.</p> <p>It is therefore unlikely to have a significant effect on the extent, distribution, structure or function of the features: however confidence will be increased through the management and mitigation measures.</p>	<p>As detailed in 6.4 above.</p>

⁶ Guidance and advice from NE.

⁷ Group gear types where applicable and assess individually if more in depth assessment required.

⁸ Document the sensitivity of the feature to that pressure (where available), including a site specific consideration of factors that will influence sensitivity.

⁹ 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.

¹⁰ Detail how this reduces/removes the potential pressure/impact(s) on the feature e.g. spatial/temporal/effort restrictions that would be introduced.

<p>Saltmarsh</p>	<p>Maintain or restore the extent, distribution structure or function of the feature.</p>	<p>Litter</p> <p>Physical change (to another seabed type)</p>	<p>Littering impacts could include entanglement of fish and birds in the bags and sacks, and swallowing / entanglement of birds and mammals (both marine and terrestrial) of other litter.</p> <p>Potential for high levels of hand-gathering activity to impact on the saltmarsh if parking and vehicles drive over this important habitat, leading to rutting, pooling and erosion.</p>	<p>Management measures required to ensure no risk to the feature.</p>	<p>As detailed in 6.4 above.</p>
<p>Common eider, Eurasian oystercatcher, Red knot, Lesser black-backed gull, Herring gull</p>	<p>Maintain or restore the population of each of the qualifying features, and, the distribution of the qualifying features within the site</p>	<p>Removal of target species (cockles)</p>	<p>Removal of food source / prey items has the potential to affect condition, productivity and survival of species.</p>	<p>The level of exposure depends on time of year of fishery, availability of alternative food resources, stock status and level of effort.</p> <p>Observations provide evidence that oystercatcher, knot and eider are utilising the mussel resources of Heysham Flat, Foulney and the Duddon.</p> <p>There are also large areas of cockle ground within the Bay that hold a further resource of both size and undersize cockles.</p> <p>Appropriate mitigation has been imposed to increase confidence that the extent, distribution, structure or function of the features will not be impacted.</p>	<p>As detailed in 6.4 above.</p>
<p>A026 <i>Egretta garzetta</i>; Little egret (non-breeding) A038 <i>Cygnus Cygnus</i>; Whooper swan (non-breeding) A040 <i>Anser brachyrhynchus</i>; Pink-footed goose (non-breeding) A048 <i>Tadorna tadorna</i>; Common shelduck (non-breeding) A050 <i>Anas Penelope</i>; Wigeon - (non-</p>	<p>Maintain or restore the population of each of the qualifying features, and, the distribution of the qualifying features within the site</p>	<p>Visual disturbance</p>	<p>Potential for tractors and quads and fishermen to disturb bird species that spend a proportion of their time feeding in the intertidal areas of Leven Sands and the West Plain saltmarsh.</p> <p>The disturbance has the potential to force the species of birds to exert extra energy, and or displace them from the preferred feeding ground, breeding or roost site.</p> <p>Visual disturbance has the potential to affect condition, productivity and survival of species.</p>	<p>The level of exposure depends on time of year of fishery and level of effort.</p> <p>Appropriate mitigation has been imposed to increase confidence that the extent, distribution, structure or function of the features will not be impacted.</p>	<p>As detailed in 6.4 above.</p>

<p>breeding – Ramsar only) A054 <i>Anas acuta</i>; Northern pintail (non-breeding) A063 <i>Somateria mollissima</i>; Common eider (non-breeding – Ramsar only) A067 <i>Bucephala clangula</i>; Goldeneye - (non-breeding – Ramsar only) A069 <i>Mergus serrator</i>; Red-breasted merganser - (non-breeding – Ramsar only) A130 <i>Haematopus ostralegus</i>; Eurasian oystercatcher (non-breeding) A137 <i>Charadrius hiaticula</i>; Ringed plover (non-breeding) A140 <i>Pluvialis apricaria</i>; European golden plover (non-breeding) A141 <i>Pluvialis squatarola</i>; Grey plover (non-breeding) A142 <i>Vanellus vanellus</i>; Lapwing - (non-breeding – Ramsar only) A143 <i>Calidris canutus</i>; Red knot (non-breeding) A144 <i>Calidris alba</i>; Sanderling (non-breeding) A149 <i>Calidris alpina alpina</i>; Dunlin (non-breeding) A151 <i>Calidris pugnax</i>; Ruff (non-breeding) A156 <i>Limosa limosa</i>; Black-tailed godwit (non-breeding) A157 <i>Limosa lapponica</i>; Bar-tailed godwit (non-breeding)</p>					
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<p>A160 <i>Numenius arquata</i>; Eurasian curlew (non-breeding)</p> <p>A162 <i>Tringa totanus</i>; Common redshank (non-breeding)</p> <p>A169 <i>Arenaria interpres</i>; Ruddy turnstone (non-breeding)</p> <p>A176 <i>Larus melancephalus</i>; Mediterranean gull (non-breeding)</p> <p>A183 <i>Larus fuscus</i>; Lesser black-backed gull (Breeding, non-breeding)</p> <p>A184 <i>Larus argentatus</i>; Herring gull (Breeding)</p> <p>A191 <i>Sterna sandvicensis</i>; Sandwich tern (Breeding)</p> <p>A193 <i>Sterna hirundo</i>; Common tern (Breeding)</p> <p>A195 <i>Sterna albifrons</i>; Little tern (Breeding)</p> <p><i>Phalacrocorax carbo</i>; Cormorant – (non-breeding – Ramsar only)</p> <p><i>Podiceps cristatus</i>; Great crested grebe - (non-breeding – Ramsar only)</p> <p>Seabird assemblage</p> <p>Waterbird assemblage</p>					
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7. Conclusion¹¹

The management and mitigation measures incorporated into this fishery, and the use of an effective enforcement team of NWIFCA Officers with multi-agency support allows the NWIFCA to conclude that the hand-gathered cockle fishery at Leven Sands in April 2016 will not have an adverse effect on the integrity of the European Site.

8. In-combination assessment¹⁴

8.1 In combination effects of mussel fishing in the site:

8.1.1 Background

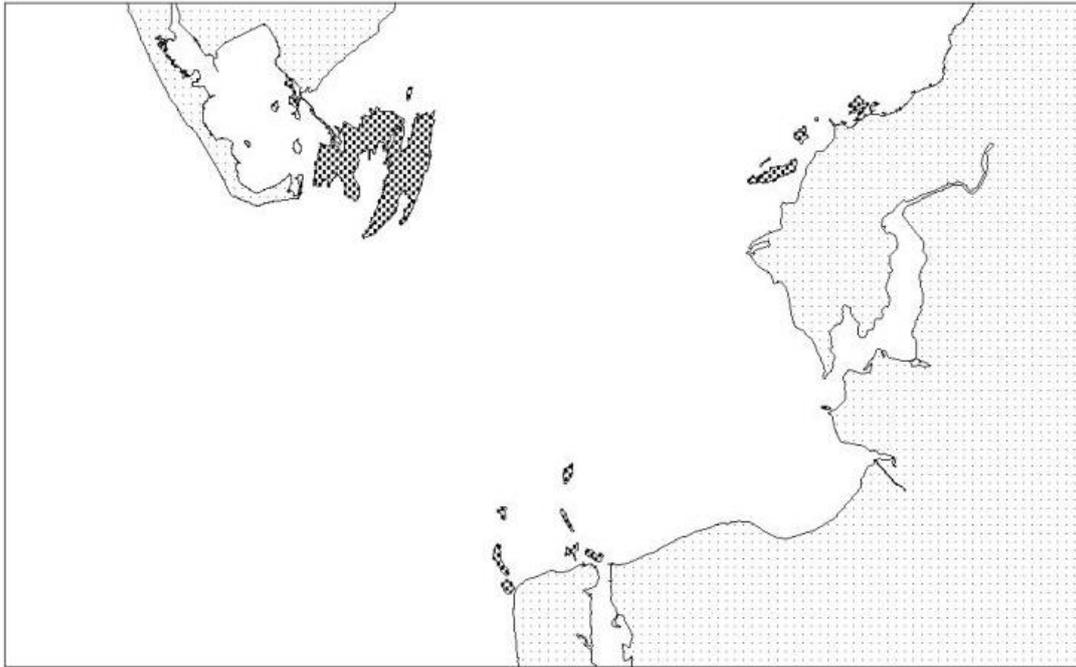
It is important to note that mussel beds in Morecambe Bay are almost exclusively found on hard substrate – post glacial moraine skears – and consequently respond quite differently to fishing pressures than in other fisheries such as the Wash in the UK and the Waddensee in the Netherlands where mussel beds are underlain by soft substrates. There are two distinct mussel resources in Morecambe Bay which can be highly variable in abundance and distribution. These are size mussel (>45mm), and undersize (seed and part-grown) mussel.

A feature of Morecambe Bay is the irregular but frequent occurrence of large and extensive mussel spat settlements. These settlements are usually very dense with little or no embyssment to the underlying substrate and quickly build up large amounts of sediment and pseudo-faeces (mussel mud). Within a very short space of time these populations become unstable and vulnerable to erosion through weather and/or tide. They are referred to as “ephemeral” beds (Dare, 1971 & 1976) and the Authority takes the line that although they are undersized they should be fished as early as possible as they would otherwise be washed out of the fishery and a valuable commercial resource lost. The mussel is fished, either by hand-raking or by specialised mussel dredgers, neither of which impact the cobble and boulder skears due to the deep soft mud layer on which the mussel sits. The harvested mussel is re-deposited in another area to grow on until of a commercially viable size. The number of mussel cultivation sites has grown in areas such as the Wash and the Menai Strait. Consultation via the Bivalve Mollusc Working Group, a multi-sectoral group facilitated by NWIFCA, is carried out with the industry and conservation interests prior to authorisations to fish being issued.

Size mussel beds also develop in areas such as Heysham Flat (lowest skears), the bottom end of Foulney and in the Duddon Estuary (Hardacre). However, fishing effort for this is low with only hand-gathering permitted and generally prosecuted by a maximum of 40 Byelaw 3 permit holders.

A map showing the distribution of these skears around the bay is shown below.

¹¹ If conclusion of adverse effect alone an in-combination assessment is not required.



It is not possible to predict the distribution of these resources as the habitats and conditions that they require are constantly changing. For example, Heysham Flat main skear has been harvested since 2005 as a hand-gathered seed mussel fishery. However in the past two years skears in the lowest stretches of the area have uncovered from sand and mussel that settled on there has persisted through winter when mussel higher up has remained ephemeral and scoured out. Likewise the beds known as South America and Falklands that have historically been fished by dredge due to their position out in the Bay and separated from intertidal access by deep channels, have in the past two years sanded over, the channels filled in and / or shifted and little mussel can be found out there.

An additional factor affecting fishing effort is the fact that many of the mussel beds suffer from parasites affecting the marketability of the stock. Mussel in the Walney Channel is known to pearl once it reaches around 40mm (Wilcox. 2013) and a recent inspection of the size mussel in the Duddon Estuary revealed that around 1 in 3 of the 65 – 70mm mussel was infested with pea crab (Knott. 2016. pers. observation).

The Foulney bed also holds a resource on its upper reaches that is of no value to the fishery – mussel there becomes stunted at around 40-45mm, becomes covered in barnacles and changes shape to more of a ball-shape than ovoid.

All of these ‘afflicted’ mussel remains as a food resource for birds and is also believed to provide a broodstock for mussel spawning.

8.1.2 Current Levels of Stock and Fishing Activity

During March 2016 a very low level of hand-gathering for size mussel was occurring on the bottom skears at Heysham Flat, Low Bottom in north Morecambe Bay and Foulney. Maximum numbers on any tide was ten Byelaw 3 permit holders. A fresh spat settlement was noted which although not yet dense, indicated that spawning had been earlier than in 2015, when it did not appear on the beds until around June. Mussels are known to trickle spawn some years and it is anticipated that recruitment will be continuous in to early summer.

Estimates of biomass have not been possible: however, Hardacre holds a stock of large mussel and oystercatchers and eiders were observed on this bed at low water; Foulney holds a large stock of 2015 mussel on the lower skear where large gatherings of oystercatcher and knot were observed, and stunted mussel on the upper shore where the eiders were noted loafing; and Heysham Flat has remaining 2014 and 2015 mussel on the bottom skears, with again a large gathering of oystercatchers.

8.1.3 In Combination Assessment

Due to the low levels of mussel harvesting effort impacts on habitats and disturbance levels to birds are considered to have No Likely Significant Effect on the conservation features. Removal of the mussel resource is minimal with large reserves remaining as bird prey resource at a time of year when over-wintering birds have departed / are departing to summer breeding grounds, and again the fishery is considered to have No Likely Significant Effect on any conservation features.

Considering both fisheries in the Bay in combination the NWIFCA can conclude no adverse effect on the integrity of the European Site providing the management and mitigation measures of the Leven Sands cockle fishery are implemented and enforced.

8.2 Other fisheries

In combination effects of other fisheries will be assessed in a separate document when all initial TLSEs for a site are completed.

9. Summary of consultation with Natural England

Two informal conversations were carried out with Natural England officers prior to taking the proposal to the NWIFCA Members. Written advice is attached (Annex 2).

10. Integrity test

The NWIFCA concludes no adverse effect on the integrity of the European Site providing the management and mitigation measures of the Leven Sands cockle fishery are implemented and upheld.

Annex 1: Reference list

- Atkinson, PW *et al.* 2003. Changes in commercially fished shellfish stocks and shorebird populations in the Wash, England. *Biol Con*, **114**, 127-141
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Annex 2: Natural England's consultation advice

Date: 29 March 2016
Our ref: 181773
Your ref: NWFCA HRA for a Limited Size Cockle Fishery Leven Island,
Morecambe Bay



North Western Inshore Fisheries and Conservation Authority (NWFCA)
Preston Street
Camforth
Lancashire
LA5 9BY

Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire CW1 6GJ

T 0300 060 3900

BY EMAIL ONLY

Dear Mandy,

**NWFCA Habitats Regulations Assessment for a Limited Size Cockle Fishery Leven Island,
Morecambe Bay**

Thank you for your email dated 22 March 2016 with a Habitats Regulations Assessment (HRA) for the proposed opening for Leven cockle bed for a limited size cockle fishery. We have reviewed the document and the following constitutes Natural England's formal statutory response.

We have provided additional detailed comments at Annex A.

Internationally and nationally designated sites

The application site is within a European designated site (also commonly referred to as Natura 2000 sites), and therefore has the potential to affect its Interest features. European sites are afforded protection under the Conservation of Habitats and Species Regulations 2010, as amended (the 'Habitats Regulations'). The application site is within Morecambe Bay Special Area of Conservation (SAC) and Morecambe Bay Special Protection Area SPA, which are European sites. The area is currently under formal consultation for Morecambe Bay and Duddon Estuary pSPA and is afforded material consideration in a HRA.

The site is also listed as Morecambe Bay Ramsar site¹ and also notified at a national level Morecambe Bay Site of Special Scientific Interest (SSSI).

No objection

Natural England notes that your authority, as competent authority under the provisions of the Habitats Regulations, has undertaken an Appropriate Assessment of the proposal in accordance with Regulation 61 of the Regulations. Natural England is a statutory consultee on the Appropriate Assessment stage of the Habitats Regulations Assessment process.

Your appropriate assessment concludes that your authority is able to ascertain that the proposal will not result in adverse effects on the Integrity (AEI) of any of the sites in question. Having considered the assessment, and the measures proposed to mitigate for all identified adverse effects that could potentially occur as a result of the proposal, **Natural England advises that we concur with the assessment conclusions**, providing that all mitigation measures are appropriately secured in any permission given.

¹ Listed or proposed Wetlands of International Importance under the Ramsar Convention (Ramsar) sites are protected as a matter of Government policy. Paragraph 116 of the National Planning Policy Framework applies the same protection measures as those in place for European sites.

Conditions

Natural England agrees that the conditions set out in section 6.4 of the HRA are sufficient to ensure no adverse effect to site integrity.

We suggest that appropriate maps, signage and/or markers are used to delineate the access route and protect saltmarsh from vehicular or other access.

We request that the following advice (re-worded from 6.4 n)) is attached to permits and relevant maps and signage:

Damage to any Site of Special Scientific Interest (SSSI) features could lead to prosecution by Natural England under the Wildlife & Countryside Act 1981 as substituted by Schedule 9 to the Countryside & Rights of Way Act 2000 and inserted by Section 55 of the Natural Environment & Rural Communities Act 2006.

For any queries relating to the content of this letter please contact me using the details provided below.

Yours sincerely,



Helen Ake
Cumbria Area team
E-mail: Helen.Ake@naturalengland.org.uk
Telephone: 0300 060 0493

Annex A

Natural England provides the following additional comments on the Habitats Regulation Assessment submitted:-

Section 1.1 Need for a HRA

The NW IFCA recognises that the opening of a cockle or other fishery (other than by, for example, reaching the end of a seasonal closure) is a plan or project under Article 6.3 of The Habitats Directive. Therefore it has a duty to undertake a Habitat Regulations Assessment of this plan. We suggest that this duty is irrespective of the 'Review of Fisheries' and that reference to that review is not relevant here.

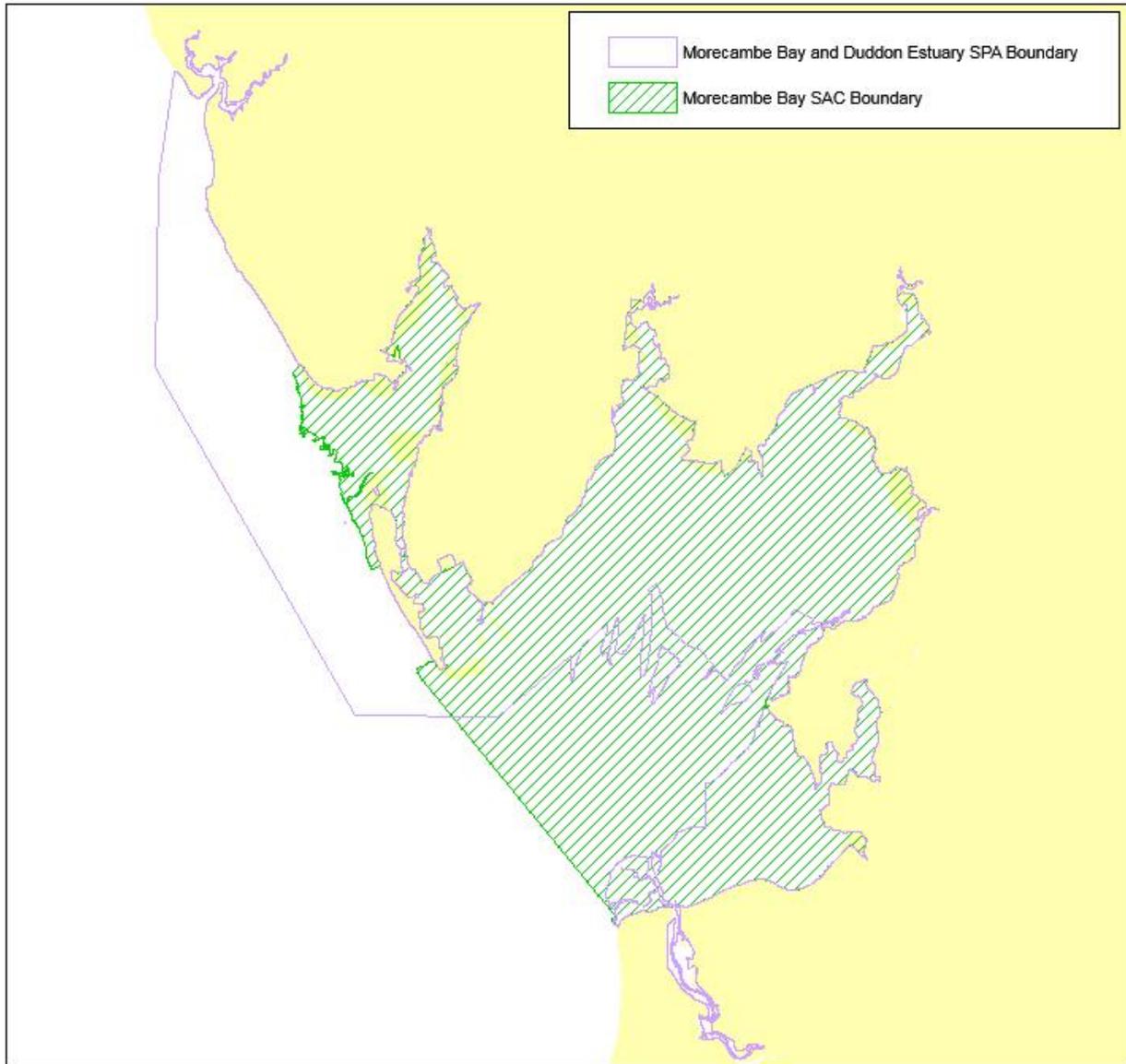
5.1 Table 1: Assessment of LSE

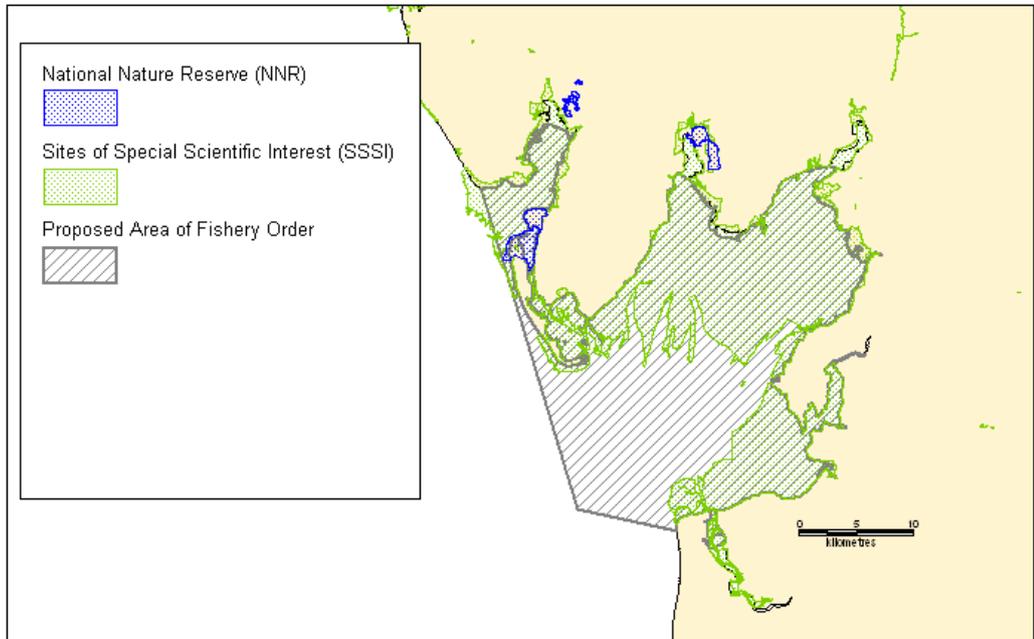
We suggest that it might be appropriate to screen in the pressure **introduction or spread of non-Indigenous species** at the TLSE stage as several of the features/subfeatures present are flagged as being sensitive to it. Quad bikes and other fishing gear coming from other parts of the district to Morecambe Bay present a risk of introducing non-Indigenous species. This risk could then be mitigated by implementing the IFCA's biosecurity plan and encouraging permit holders to 'Check, Clean, Dry' equipment before it is used in Morecambe Bay.

8.1 (& Table 1) In-combination assessment

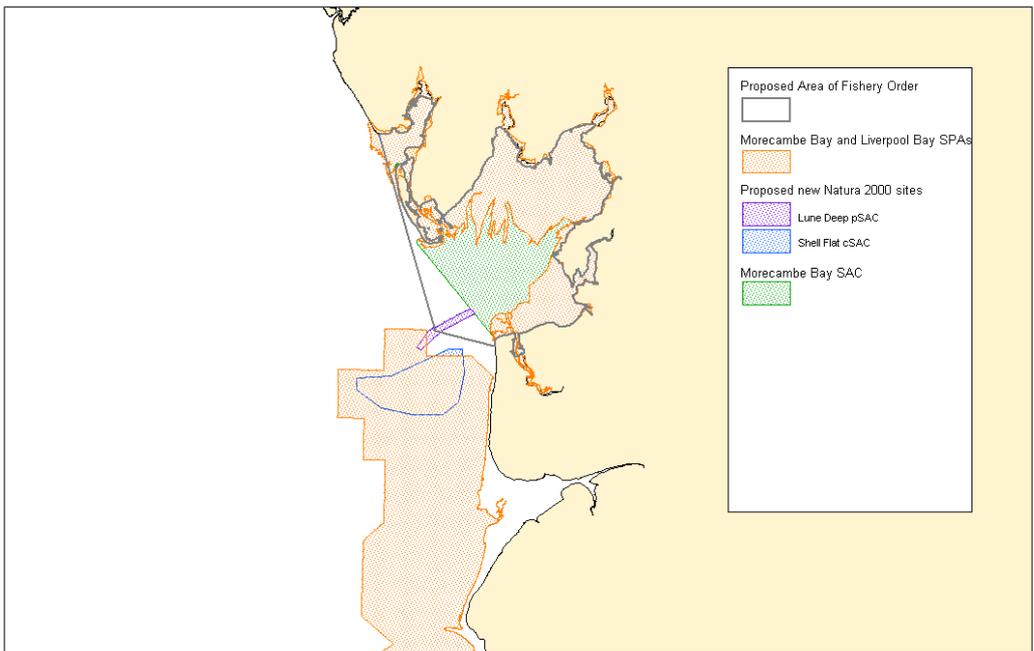
Consistent with our advice at 1.1 above we suggest that the in-combination assessment under this HRA should give consideration to all relevant fisheries, not just the mussel fishery, and other activities. However we agree that the mussel fishery is the most relevant. We are not aware of other activities which, when considered in combination with the proposed cockle fishery, would materially change the conclusion of the in-combination assessment undertaken in this HRA.

Annex 3: Site Map



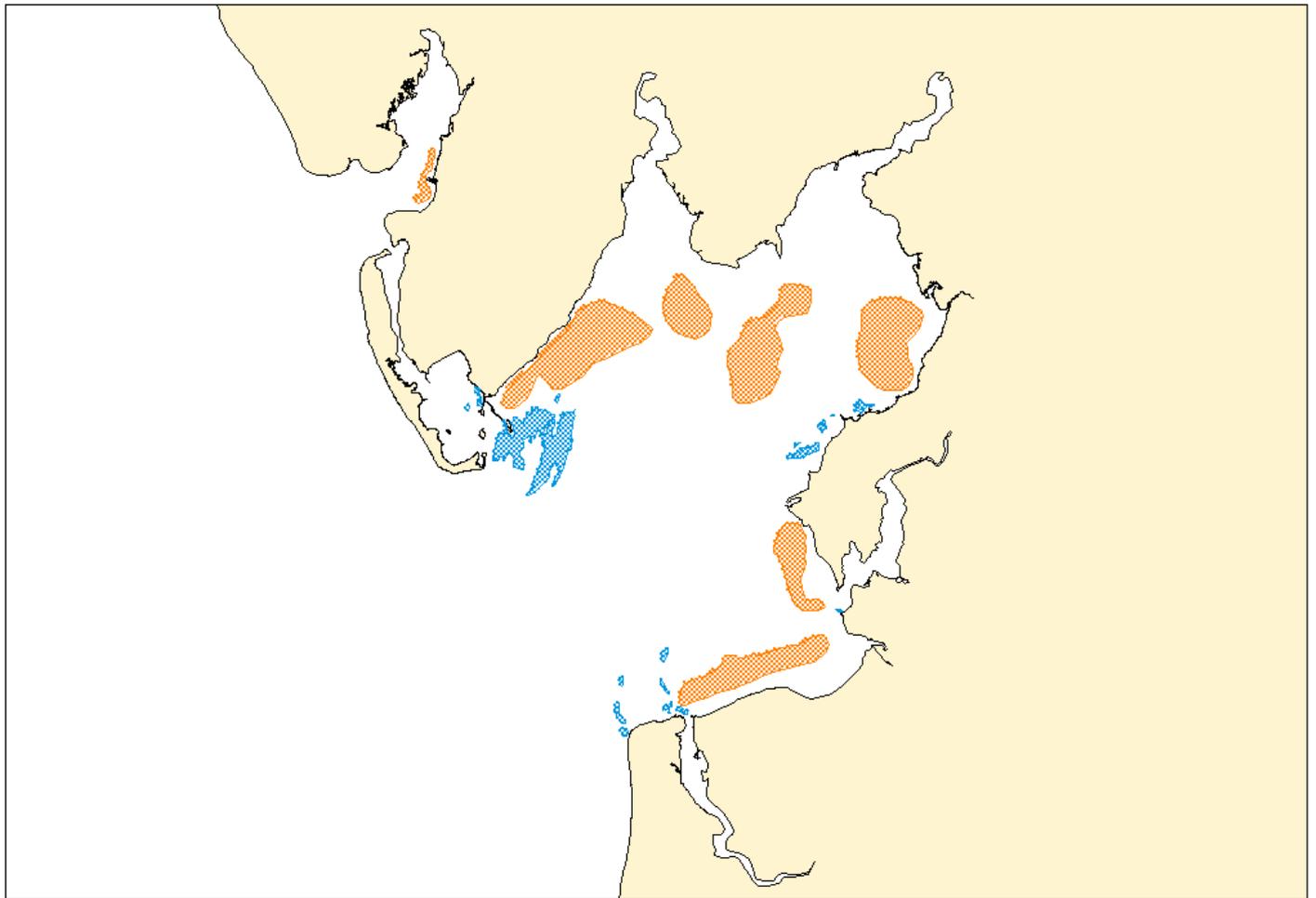


National Nature Reserves and SSSI sites within Morecambe Bay and bordering on the proposed Fishery Order area.

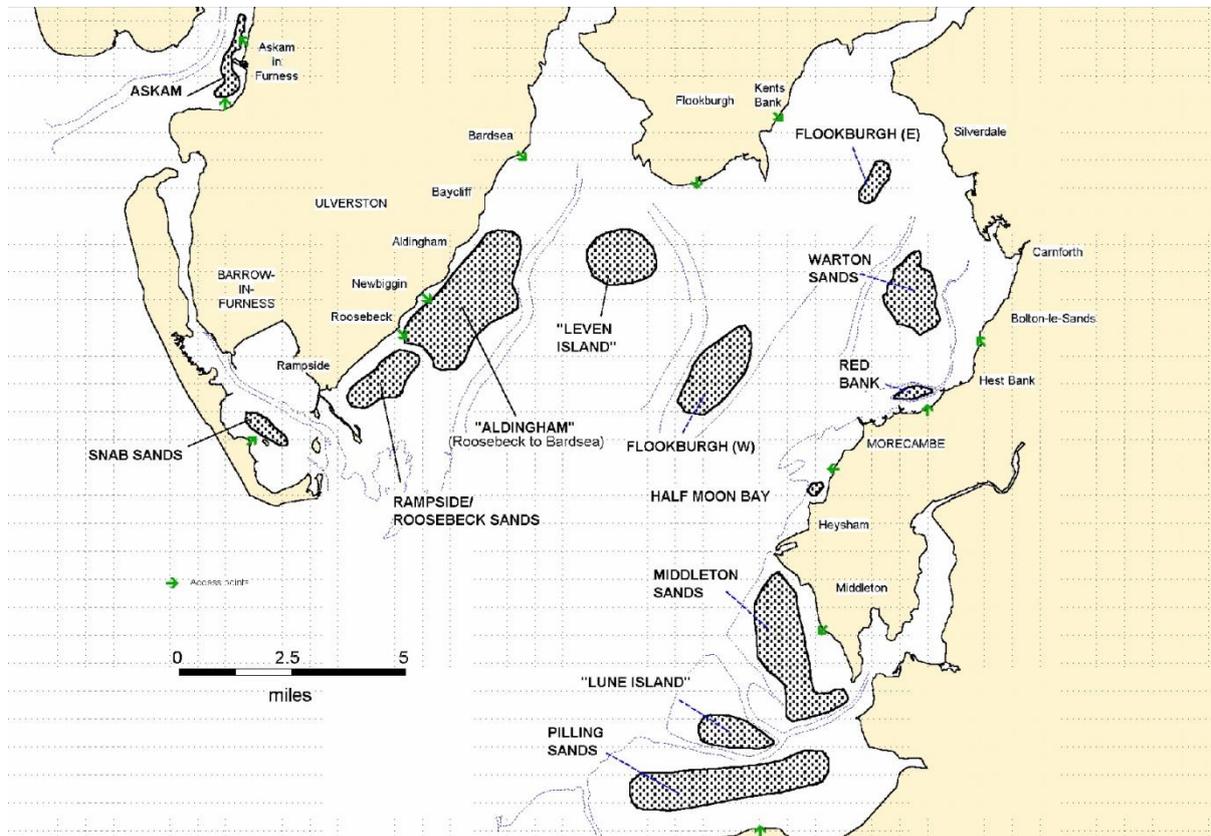


Other Marine Protected Areas adjoining the Morecambe Bay and Duddon Estuary ES.

Annex 4: Fishing activity maps

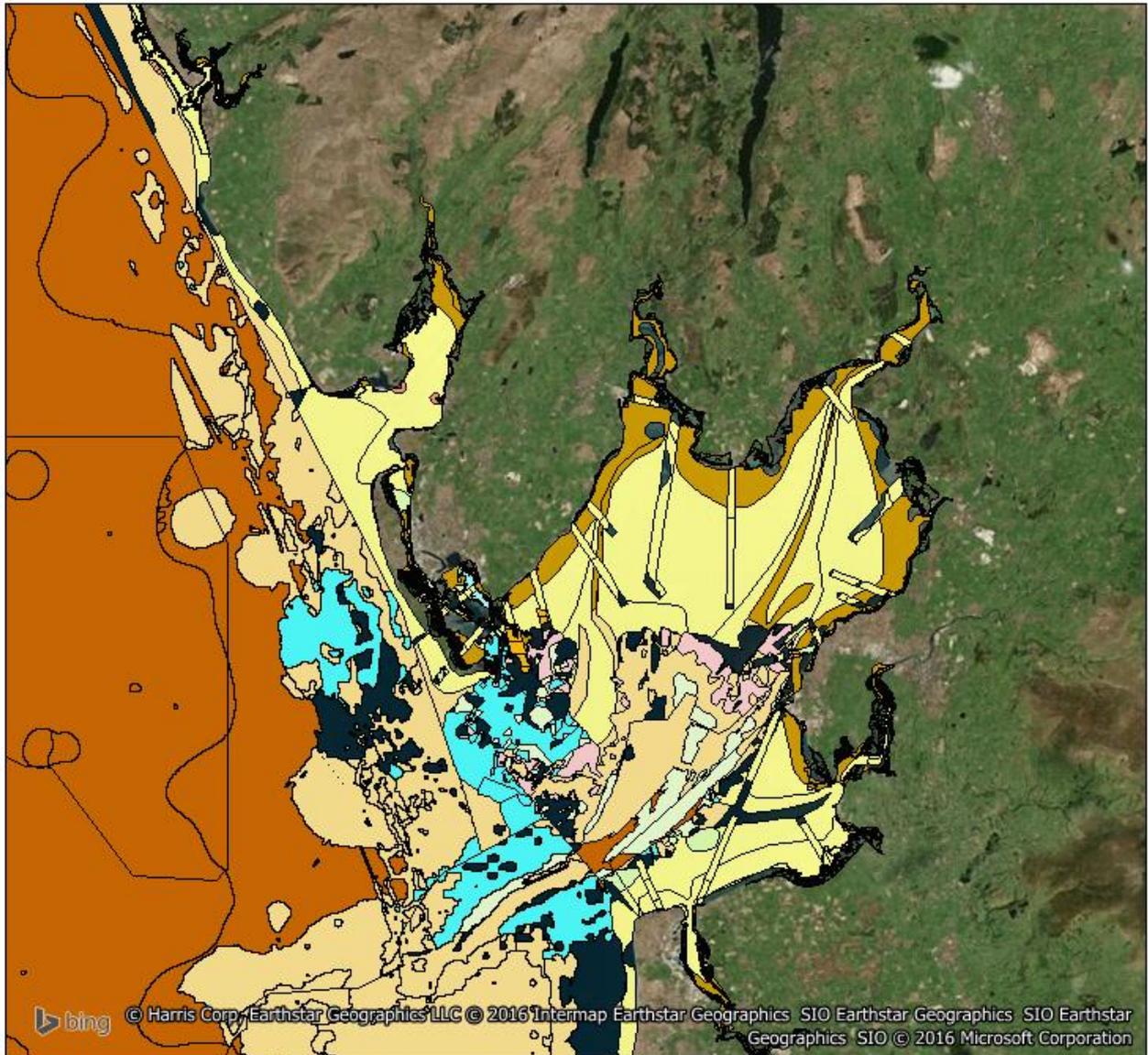


The distribution of cockle and mussel beds (orange and blue respectively) within Morecambe Bay and the Duddon Estuary in 2007.



Distribution of cockle beds around Morecambe Bay and Duddon Estuary by name.

Annex 5: Broad Scale Habitat Map



Broad scale habitat data from Natural England November 2015 release

Broad Scale Habitats

Eunis Code	EMS Subfeature	Common Name
A1	Intertidal rock	
A2.1	Intertidal coarse sediment	
A2.2	Intertidal sand and muddy sand	
A2.3	Intertidal mud	
A2.4	Intertidal mixed sediments	
A2.5	Saltmarsh	
A2.61	Intertidal seagrass beds	
A2.71	Intertidal biogenic reef: Sabellaria spp.	

Eunis Code	EMS Subfeature	Common Name
A3	Infralittoral rock	
A4	Circalittoral rock	
A5.1	Subtidal coarse sediment	
A5.2	Subtidal sand	
A5.3	Subtidal mud	
A5.4	Subtidal mixed sediments	
SF_SH_5	Intertidal biogenic reef: mussel beds	
SF_SH_6	Subtidal biogenic reef: mussel beds	

Annex 6: Fishing activity methods



Illustration of the use of a jumbo, rake and riddle in hand-gathering of cockles
NB. these show jumbos larger than those authorised in the Leven Sands fishery,
where rakes will also be prohibited.



Illustration of the use of a craam and basket in a traditional Morecambe Bay cockle fishery.

Annex 7: Byelaws regulating cockle fishing in Morecambe Bay

NWIFCA BYELAW 3 - PERMIT TO FISH FOR COCKLES (*Cerastoderma edule*) AND MUSSELS (*Mytilus edulis*)

Interpretation

1. In this byelaw:
 - a. “cockles” means the species *Cerastoderma edule*;
 - b. “mussels” means the species *Mytilus edulis*;
 - c. “fishery” means an area of sea, seabed, exposed estuary, seashore, or other marine environment in any part of the District;
 - d. “the NWIFCA” means the North Western Inshore Fisheries and Conservation Authority and is defined in articles 2 and 4 of the North Western Inshore Fisheries and Conservation Order 2010 (S.I. 2010 No. 2200);
 - e. “the District” means North Western Inshore Fisheries and Conservation District and is defined in articles 3 and 4 of the North Western Inshore Fisheries and Conservation Order 2010 (S.I. 2010 No. 2200);
 - f. “full gathering permit” means a permit which authorises a person to gather cockles and mussels and carry out all related activities, such as moving them and transporting them;
 - g. “support worker permit” means a permit which authorises a person to carry out activities related to the gathering of cockles and mussels, such as moving them and transporting them to support a person with a full gathering permit but only after the cockles and mussels have been placed in a receptacle, and in the case of cockles after having been passed through a riddle, by person with the full gathering permit;
 - h. “gathering” includes all activities related to the gathering of cockles and mussels such as moving and transporting them;
 - i. “Commercial Shellfish Fisheries Area” means an area designated by the NWIFCA pursuant to paragraph 13;
 - j. “Morecambe Bay Commercial Fisheries Area” means the area enclosed by straight lines joining the following co-ordinates in order:
 - I. 54° 08.490’N 03° 02.011’W
 - II. 54° 07.686’N 02° 53.497’W
 - III. 54° 03.204’N 02° 56.331’W
 - IV. 54° 04.062’N 03° 03.776’W
 - V. 54° 08.490’N 03° 02.011’W
 - k. “Ribble Estuary Commercial Fisheries Area” means the area enclosed by straight lines joining the following co-ordinates in order:
 - I. 53° 43.008’N 03° 05.177’W
 - II. 53° 43.572’N 02° 59.986’W

III. 53° 40.902'N 03° 00.341'W

IV. 53° 40.860'N 03° 05.122'W

V. 53° 43.008'N 03° 05.177'W

- I. "Gangmaster Licensing Authority licence" means a licence issued under the Gangmasters Licencing) Act 2004;
- m. "Foreshore Gatherers Safety Training Certificate" means a document issued by a Seafish Industry Group Training Association or a trainer approved by the NWIFCA, certifying that the person named on the certificate has completed a safety training course for intertidal shellfishing.

Permit

2. Subject to paragraphs 10, 11, 25 and 26 of this byelaw no person shall gather cockles or mussels within or from a fishery unless he has in his possession a full gathering permit.
3. Subject to paragraphs 10, 11, 25 and 26 of this byelaw, no person shall, in the area of the District below mean high water springs, move or transport cockles or mussels within or from a fishery unless he has either a full gathering permit or a support worker permit.
4. No person shall have in their possession any article for use in the course of or in connection with gathering cockles or mussels within or from a fishery in breach of this byelaw.
5. No person shall have in their possession any cockle or mussel gathered within or from a fishery in breach of this byelaw.

Minimum Sizes

6. No person shall gather within or from a fishery any cockle which will pass through a gauge having a square opening of 20mm measured across each side of the square or any mussel less than 45mm in length.

Fishing Methods

7. No person shall gather cockles or mussels except:
- a) by hand or using hand-held rakes;
 - b) in the case of cockles by using craams, rakes, spades, tamps or jumbos; or
 - c) by using buckets, sacks, net bags, ton bags and other such containers ordinarily used for the storage of cockles and mussels.
8. No person shall place cockles that have just been fished into a container unless they have been passed through a rigid riddle designed to retain cockles which will not pass through a gauge having a square opening of 20mm measured across each side.

Redeposit

9. Any person who removes or possesses shellfish the removal or possession of which is prohibited by or in pursuance of these byelaws or any Act of Parliament shall immediately redeposit the same without injury as nearly as possible in the fishery from which they were taken or under the written authority of the NWIFCA on another suitable fishery and shall spread them thinly and evenly through the fishery.

Written permission

10. This byelaw shall not apply to any person performing an act which would otherwise constitute an offence against this byelaw if that act was carried out in accordance with a written permission issued by the NWIFCA permitting that act for scientific, management, stocking or breeding purposes.

Exception for Personal Consumption to the Requirement for a permit

11. No person shall require a permit under this byelaw to gather less than a total of 5kg of cockles and 5kg of mussels during a calendar day intended for their own personal consumption within or from a fishery which is neither closed pursuant to paragraph 12 of this byelaw or byelaw 13A of the North Western and North Wales Sea Fisheries Committee (cockles and mussels – management of the fishery) or byelaw 18 of the Cumbria Sea Fisheries Committee (shellfishery – temporary closure) nor designated a Commercial Shellfish Fishery Area pursuant to paragraph 13 of this byelaw nor part of the District managed under the Dee Estuary Cockle Fishery Order (2008).

Fisheries Closure

12. No person shall gather any cockle within or from a fishery on or between the 1st day of May and the 31st day of August in the same year or have in their possession any cockle or mussel from a fishery area that has been closed pursuant to byelaw 13A of the North Western and North Wales Sea Fisheries Committee (cockles and mussels – management of the fishery) or byelaw 18 of the Cumbria Sea Fisheries Committee (shellfishery – temporary closure) or from within that part of the District managed under the Dee Estuary Cockle Fishery Order (2008) without a licence to fish issued within the terms of that Order.

Commercial cockle or mussel fisheries

13. The NWIFCA designates the Morecambe Bay Commercial Fisheries Area and the Ribble Estuary Commercial Fisheries Area as Commercial Shellfish Fisheries Areas.

Application for Permits

14. The period of validity of permits shall be from 1st September in any given year to 31st of August the following year unless otherwise stated. Permits shall be annually renewable subject to paragraph 15 of this byelaw. A fee of £500 will be charged each year by the NWIFCA for all Byelaw 3 permits.
15. Holders of a permit to gather cockles or mussels under this byelaw in any given year shall be entitled to renew the permit for the next year up to one year after the permit term has expired.
16. Applications for the renewal of permits pursuant to this byelaw shall be made using the printed forms available from the NWIFCA offices or the NWIFCA website. Renewal forms will be made available 2 calendar months before the date each permit term begins. On renewal, applicants must satisfy the NWIFCA that at some time in the previous 3 years they have derived a substantial part of their income from fishing activities by providing evidence which may include a personal statement detailing fishing activities in the last 3 years and evidence that tax has been paid on fishing income in the last 3 years.
17. Applications for new permits pursuant to this byelaw shall be made using the printed forms available from the NWIFCA offices or the NWIFCA website. Applications for new permits to be issued pursuant to paragraphs 22 and 27 of this byelaw shall be made by first registering an interest with the NWIFCA in writing. If the number of applicants registering an interest exceeds the number of available permits a waiting list will be compiled on a 'first come, first served' basis and an applicant will be invited to complete an application for a new permit in the first year a new permit becomes available. Applications shall meet all the requirements of paragraph 22 in the case of full gathering permits and paragraph 27 in the case of support worker permits.

18. A permit issued pursuant to this byelaw is not transferable.
19. Failure to produce, on the reasonable demand of a properly warranted Officer or a Constable, a valid permit when carrying out any activity for which a permit is required constitutes a breach of this byelaw.
20. Failure to notify the NWIFCA of any change of name or address during the period of the validity of a permit constitutes a breach of this byelaw.

Filing returns

21. The holder of a permit to gather cockles or mussels under this byelaw shall be required to file with the NWIFCA, no later than the 5th day of the month following, such information in regard to catches and fishing effort for the previous month, under the terms of such permit, as the NWIFCA may require. Nil returns may be required at the discretion of the NWIFCA. Permit holders not filing returns may have their permits suspended by the NWIFCA until returns have been filed.

New Permits

22. New full gathering permits shall be issued each year to a maximum of the first 10 applicants on the waiting list who have not held a permit pursuant to this byelaw in the previous year on production of:
 1. evidence of the applicant's identity, containing photograph and signature, such as a valid passport; or a driving licence with photo;
 2. evidence of the applicant's address, such as a utility bill issued in the preceding 4 months of application or a current tenancy agreement;
 3. evidence of the applicant's National Insurance Number;
 4. 2 recent passport style photographs of the applicant signed on the back by the applicant;
 5. the applicant's valid Foreshore Gatherers Safety Training certificate or proof of the successful completion of an equivalent safety training course. Equivalence is determined at the discretion of the NWIFCA; and
 6. payment of the fee set in paragraph 14.

Transitional Arrangements

23. Holders of a permit for 2011/2012 issued under byelaw 5 of the NWIFCA (permit to fish for cockles (*Cerastoderma edule*) and mussels (*Mytilus edulis*)) shall be entitled to renewal of that permit under this byelaw 3 for the year 2012/2013.
24. Permits to fish for cockles and mussels for the year 2012/2013 shall be issued to 40 new applicants under the rules set out in Byelaw 5 of the NWIFCA (permit to fish for cockles (*Cerastoderma edule*) and mussels (*Mytilus edulis*)). No permits to fish for cockles and mussels shall be issued to new applicants under this byelaw 3 for the year 2012/2013.
25. Persons who provide evidence to the satisfaction of the NWIFCA that they have in the past held a permit issued under Cumbria Sea Fisheries Committee byelaw 21 (cockles – permit scheme) or 23 (mussels – permit scheme) and have in the past been engaged in commercial cockle or mussel fishing activities in a specified region or regions within the district formerly administered by the Cumbria Sea Fisheries Committee shall be eligible to apply to the NWIFCA for written authority to continue to fish in any fisheries within that region or regions. The obligations in this byelaw apply to a person fishing under a written authority but no fee is payable for the issue of that authority.
26. Persons who provide evidence to the satisfaction of the NWIFCA that they have in the past been engaged in commercial cockle or mussel fishing activities in a specified region or regions within the Dee Estuary shall be eligible to apply to the NWIFCA for written authority to continue to fish in any

fisheries within that region or regions. The obligations in this byelaw apply to a person fishing under a written authority but no fee is payable for the issue of that authority.

Support worker permit

27. Commercial organisations trading in cockles and mussels may apply to the NWIFCA for permits for specified members of staff who they wish to perform ancillary trading activities within a cockle or mussel fishery which would constitute taking, removing or transporting cockles or mussels within or from a fishery including driving transport vehicles, transporting shellfish, weighing shellfish. The NWIFCA may issue up to a maximum of 6 support worker permits to each commercial organisation upon receipt of complete applications on production of:
- The names, contact details, national insurance numbers and proof of right to work of the members of staff. Proof of identity of those members of staff containing photograph and signature, such as a valid passport; or a driving licence with photo and proof of address of those members of staff, such as a recent utility bill;
 - Proof from the annual account or annual report of the organisation's trade in cockles or mussels;
 - Evidence that the organisation holds a Gangmaster Licensing Authority licence for shellfish operations if required;
 - Statement of the duties members of staff will perform in the shellfish fishery;
 - Two recent passport style photographs of the members of staff signed and dated on the back by the members of staff;
 - Valid Foreshore Gatherers Safety Training certificates for each of the members of staff or proof of the successful completion of an equivalent safety training course. Equivalence is decided at the discretion of the NWIFCA; and
 - Payment of the fee set in paragraph 14.

Use of boats

28. No holder of a permit pursuant to this byelaw shall use a boat to access shellfish beds in order to gather, remove or transport cockles or mussels without having their permit endorsed as a boat user by the NWIFCA. The NWIFCA will endorse permits as boat users on production of evidence that the holder has completed training of an equivalent standard to the courses provided by Seafish in: Sea Survival, First Aid, Fire Fighting and Health and Safety Awareness. Equivalence is decided at the discretion of NWIFCA.
29. No person shall be granted an endorsement as a boat user unless they have in their possession a serviceable life jacket and the boat they will use is equipped with a serviceable means of communication such as a VHF radio or mobile telephone, a serviceable means of navigation such as global positioning equipment and serviceable safety provision including marine distress flares and an adequate anchor with a means of effective deployment.

Revocation of Legacy Byelaws

30. Byelaw 5 (permit to fish for cockles (*Cerastoderma edule*) and mussels (*Mytilus edulis*)) made by the NWIFCA is revoked.
31. The following byelaws made by the North Western and North Wales Sea Fisheries Committee are revoked in so far as they apply within the District:
- (a) byelaw 5 (permit to fish for cockles (*Cerastoderma edule*) and mussels (*Mytilus edulis*));
 - (b) byelaw 13 (cockles – minimum size);
 - (c) byelaw 14 (cockle fishery – seasonal closure);
 - (d) byelaw 15 (mussels – minimum size);
 - (e) byelaw 17 (redeposit of shellfish);

32. The following byelaws made by the Cumbria Sea Fisheries Committee are revoked in so far as they apply within the District:
- (a) byelaw 5 (minimum removal size for mussels);
 - (b) byelaw 6 (minimum removal size for cockles);
 - (c) byelaw 12 (re-depositing of shellfish);
 - (d) byelaw 16 (cockles - seasonal closure).
 - (e) byelaw 21 (cockles - permit scheme)
 - (f) byelaw 22 (cockles - catch restrictions)
 - (g) byelaw 23 (mussels - permit scheme)
 - (h) byelaw 24 (mussels – catch restrictions)

Explanatory Note: (This note does not form part of the byelaw)

1. *The purpose of this byelaw is to control the exploitation of shellfish fisheries of cockles and mussels to ensure catches remain at a sustainable level and are obtained by sustainable fishing methods. As cockle and mussel fishing can be highly lucrative depending on price variations the NWIFCA has concluded a permit scheme is necessary to limit the number of fishermen and consequently the number of cockles gathered, along with the methods they use.*
2. *The byelaw prohibits the gathering of cockles or mussels for sale without a full gathering permit and prohibits the moving and transporting of cockles or mussels for sale below mean high water springs without a support worker permit (paragraphs 2 and 3). The full gathering permit also permits the holder to move and transport cockles or mussels below mean high water springs (definition of 'full gathering permit' in paragraph 1).*
3. *The byelaw prohibits the possession of articles to gather cockles or mussels in breach of the byelaw and specifies the fishing methods that may be used (paragraphs 4, 7 and 8).*
4. *The byelaw prohibits the possession of cockles or mussels gathered in breach of the byelaw (paragraph 5) and provides for their redeposit (paragraph 9).*
5. *The byelaw sets minimum sizes for cockles and mussels (paragraph 6).*
6. *The byelaw provides an exemption for a person who carries out an act which would otherwise constitute an offence if it is in accordance with a written permission issued by the NIFCA permitting that act for scientific, stocking or breeding purposes (paragraph 10).*
7. *The byelaw provides that a person does not need a permit to gather less than 5kg of cockles or mussels for personal consumption from areas that are not closed or in Commercial Shellfish Fisheries Areas (paragraph 11).*
8. *The byelaw provides for the annual closure of cockle fisheries throughout the District for a specified period (paragraph 12).*
9. *The byelaw provides for the designation of certain cockle beds as Commercial Shellfish Fisheries Areas as shown in the indicative maps (paragraph 13).*

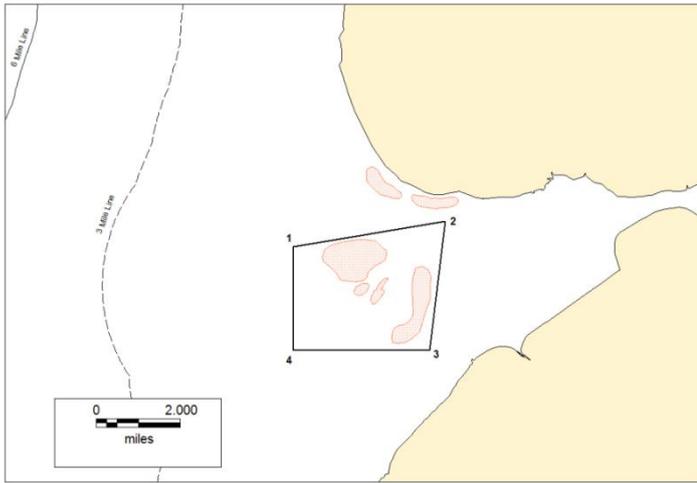


Fig 1. Ribble Commercial Fisheries Area with known historical cockle beds

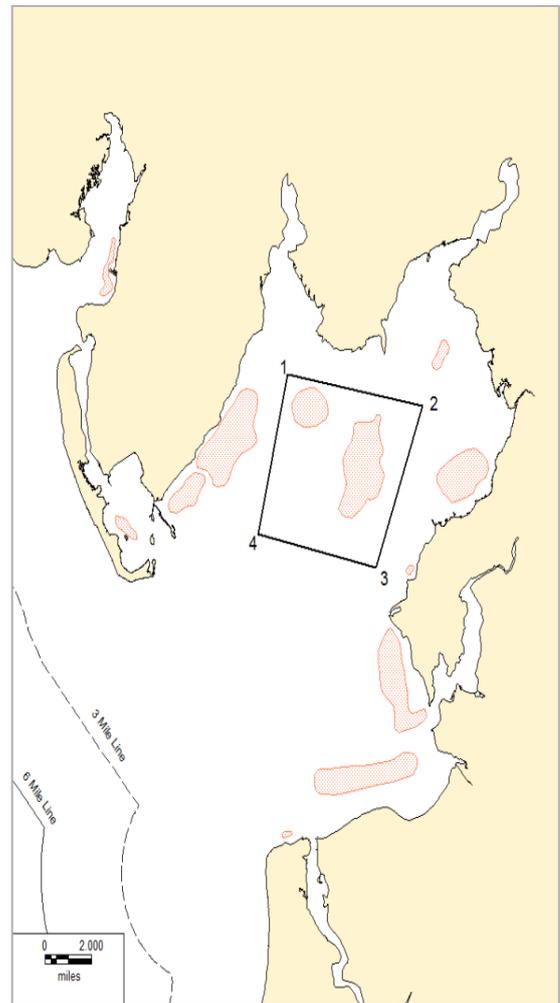


Fig 2. Morecambe Bay Commercial Fisheries Area with known historical cockle beds

10. *The byelaw provides an application procedure for permits (paragraphs 14 to 20).*
11. *The byelaw provides for permit holders to file returns (paragraph 21).*
12. *The byelaw provides for the renewal of permits and the issue of new permits (paragraph 22).*
13. *The byelaw provides transitional arrangements for those with a right to gather shellfish under existing byelaws (paragraphs 23 to 26).*
14. *The byelaw provides for the issue of support worker permits (paragraph 27).*
15. *The byelaw provides that a full gathering permit must be endorsed if the holder uses a boat to access shellfish beds (paragraphs 28 and 29).*
16. *The byelaw provides for the revocation of specified byelaws that previously applied in the District (paragraphs 30, 31, and 32).*

The North Western Inshore Fisheries and Conservation Authority and the North Western Inshore Fisheries and Conservation District are defined in articles 2, 3 and 4 of the North Western Inshore Fisheries and Conservation Order 2012 (S.I. 2010 No. 2200).

NWSFC BYELAW 12 - RESTRICTIONS ON FISHING FOR BIVALVE MOLLUSCAN SHELLFISH

This byelaw applies to that part of the District within a line drawn on the seaward side of the baselines 6 nautical miles from the baselines from which the breadth of the territorial sea adjacent to the United Kingdom is measured. For the purposes of this paragraph "the baselines" means the baselines as they existed at 25th January 1983 in accordance with the Territorial Waters Order in Council 1964 (1965 III p.6452A) as amended by the Territorial Waters (Amendment) Order in Council 1979 (1979 II p.2866).

1. No person shall fish for bivalve molluscan shellfish, except
 - a) by hand; or
 - b) in the case of cockles with a craam, rake, spade or jumbo; or
 - c) in the case of mussels with a rake or in that part of the District which is inshore of a line drawn North true from Penmaen-Bach Point (Latitude 53^o 17.3' North, Longitude 03^o 52.8' West) to the high water mark at Gt. Ormes Head with a rake, provided that the rake is no more than 1 metre in width and that it is only used from a boat when the mussel bed has at least 1 metre of water over it; or (*applies only to Wales*)
 - d) when using a dredge or other appliance where:
 - (i) such dredge or appliance is of a pattern approved in writing by the Committee, the Committee having been advised by scientists who in the opinion of the Committee appear to be suitably qualified to comment on the conservation and environmental implications;
 - (ii) such use is in accordance with a written authorisation issued by the Committee and with any conditions subject to which that authorisation was issued, including prohibitions on use at particular times, or in particular areas and definitions of the fishing instrument. The Committee may also require as a condition that returns be made on the species and quantities of bivalve molluscan shellfish taken.
2. no person shall take or use on any mussel bed, any sledge or other contrivance which in the opinion of the Committee is likely to crush or loosen the mussels or loosen the foundations of the bed, without a written authorisation issued by the Committee.
3. no person shall dig in any mussel bed for any purpose without a written authorisation issued by the Committee.

NWSFC BYELAW 13A - COCKLES AND MUSSELS -MANAGEMENT OF THE FISHERY

1. The Committee, may close any cockle (*Cerastoderma edule*) or mussel (*Mytilis edulis*) bed or part of a bed for the purposes of fishery management or for controlling the rate of exploitation with regard to cockles and mussels.
2. Such closure shall be for a specified period and be undertaken only after the Joint Committee has consulted such persons or bodies appearing to them to represent local cockle or mussel fishermen, and provided the Committee has been advised by fishery scientists who appear to them to be suitably qualified, as to the need for such action.

3. No person shall, without the consent of the Committee, under the written authority in that behalf signed by the Clerk, remove, take or disturb any cockle or mussel from a bed or part of a bed of cockles or mussels which has been closed pursuant to this byelaw.

Byelaw confirmed 29.03.96

NWSFC BYELAW 16 – SHELL FISHERY -TEMPORARY CLOSURE

Where, in the opinion of the Committee, in any fishery, any bed or part of a bed of shellfish is so severely depleted as to require temporary closure in order to ensure recovery, or any bed or part of a bed contains mainly immature shellfish which in the interests of the protection and development of the fishery ought not to be disturbed for the time being, or any bed of transplanted shellfish ought not to be fished until it has become established, and where the bed, or part thereof, has been clearly defined in notices displayed in the vicinity prohibiting the removal or disturbance of the shellfish, no person shall, while the bed or part thereof is so defined, take away or otherwise disturb any shellfish therein.

Provided that no bed or part of a bed may remain closed under this byelaw at any one time for a longer period than one year, without review by the Committee.

Byelaw confirmed 14.09.73