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

NWIFCA-DE-EMS Size Mussel 2017

Date completed: 25/10/2017 Completed by: J.Haines & M Knott

Site: Dee Estuary

European Designated Sites: UK0030131

Dee Estuary/Aber Dyfrdwy Special Area of Conservation (SAC) The Dee Estuary Special Protection Area (SPA) UK9013011 The Dee Estuary Ramsar Site UK11082

(UK9020294 Liverpool Bay/Bae Lerpwl SPA adjoins this site - additional species added to this assessment) (UK9020287 Mersey Narrows and North Wirral Foreshore SPA adjoins this site additional species added to this assessment)

European Marine Site: Dee Estuary

Only features within the English part of the EMS are assessed by NWIFCA.

Qualifying Feature(s): SAC and Ramsar

H1130. Estuaries

- H1140. Mudflats and sandflats not covered by seawater at low tide
- H1210. Annual vegetation of drift lines (NON MARINE)
- H1230. Vegetated sea cliffs of the Atlantic and Baltic coasts (NON MARINE)
- H1310. Salicornia and other annuals colonising mud and sand
- H1330. Atlantic salt meadows (Glauco-Puccinellietalia maritimae)
- H2110. Embryonic shifting dunes (NON MARINE)
- H2120. Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") (NON MARINE)
- H2130. Fixed dunes with herbaceous vegetation ("grey dunes") (NON MARINE)
- H2190. Humid dune slacks (NON MARINE)
- S1095 Petromyzon marinus
- Sea lamprey S1099 Lampetra fluviatilis **River lamprey**
- S1395 Petalophyllum ralfsii Petalwort (NON MARINE)
- Natterjack toad (NON MARINE)

SPA and Ramsar

- A001 Gavia stellata; Red throated diver (non-breeding)¹
- A048 Tadorna tadorna; Common shelduck (Non-breeding)
- A052 Anas crecca; Eurasian teal (Non-breeding)
- A054 Anas acuta; Northern pintail (Non-breeding)
- A065 Melanitta nigra; Common scoter (Non-breeding)¹
- A130 Haematopus ostralegus; Eurasian oystercatcher (Non-breeding)
- A141 Pluvialis squatarola; Grey plover (Non-breeding)
- A143 Calidris canutus; Red knot (Non-breeding)
- A149 Calidris alpina alpina; Dunlin (Non-breeding)
- A156 Limosa limosa islandica; 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)
- A177. Hvdrocoloeus minutus: Little gull (non-breeding)
- A191 Sterna sandvicensis; Sandwich tern (Non-breeding)
- A193 Sterna hirundo; Common tern (Breeding) A195 Sterna albifrons; Little tern (Breeding)
- Waterbird assemblage

¹ Additional species from Liverpool Bay SPA

² Additional species from Mersey Narrows and North Wirral Foreshore SPA

Site sub-feature(s)/Notable Communities: <u>SAC and Ramsar</u>

Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*): Lower saltmarsh, lower-mid saltmarsh, mid-upper saltmarsh, pioneer saltmarsh, transition and driftline saltmarsh, upper saltmarsh.

Estuaries: Intertidal biogenic reef: mussel beds, intertidal biogenic reef: *Sabellaria* spp., intertidal coarse sediment, intertidal mixed sediments, intertidal mud, intertidal rock, intertidal sand and muddy sand, lower saltmarsh, lower-mid saltmarsh, mid-upper saltmarsh, pioneer saltmarsh, subtidal coarse sediment, subtidal sand, transition and driftline saltmarsh, upper saltmarsh.

Mudflats and sandflats not covered by seawater at low tide: intertidal coarse sediment, intertidal mixed sediment, intertidal mud, intertidal sand and muddy sand.

Annual vegetation of drift lines (NON MARINE) Vegetated sea cliffs of the Atlantic and Baltic coasts (NON MARINE) Salicornia and other annuals colonising mud and sand Embryonic shifting dunes (NON MARINE) Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") Fixed dunes with herbaceous vegetation ("grey dunes") Humid dune slacks (NON MARINE) Petromyzon marinus Sea lamprey Lampetra fluviatilis River lamprey Petalophyllum ralfsii Petalwort (NON MARINE) Supporting habitat: Natteriack toad – coastal sand dunes

SPA and Ramsar

Annual vegetation of drift lines, Coastal lagoons, Coastal reed beds, Freshwater and coastal grazing marsh, Intertidal biogenic reef - mussel beds, Intertidal mixed sediments, Intertidal mud, Intertidal rock, Intertidal sand and muddy sand, Intertidal stony reef, Water column, Saltmarsh; Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*), Salicornia and other annuals colonising mud and sand, Spartina swards (*Spartinion maritimae*).

Generic sub-feature(s):

Intertidal gravel and sand; Intertidal mud; Saltmarsh spp.; Intertidal mud and sand; annual vegetation of drift lines; river lamprey; sea lamprey; Sabellaria sp. reef, Estuarine fish community; Intertidal bedrock reef; Intertidal boulder and cobble reef; Estuarine birds; Surface feeding birds; Benthic feeding seabirds.

High Level Conservation Objectives: Dee Estuary 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.

Dee 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:

- $\hfill\square$ The extent and distribution of the habitats of the qualifying features
- □ The structure and function of the habitats of the qualifying features
- $\hfill\square$ 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.

Gear type(s):

Hand-gathered – Size Mussel (*Mytilus edulis*)

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.

The purpose of this site specific assessment document is to assess whether or not in the view of NWIFCA the fishing activities of hand-gathering of size mussels at Thurstaston and West Kirby has a likely significant effect on the qualifying features (listed above) of the Dee Estuary EMS (within the NWIFCA district), and on the basis of this assessment whether or not it can be concluded that hand-gathering for size mussel will not have an adverse effect on the integrity of this EMS.

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 •
- Natural England's consultation advice •
- Site map
- Broad scale habitat map: sub-feature/feature location and extent
- Fishing activity map •

2. Information about the EMS

(See cover pages)

The Dee Estuary European Marine Site is a cross boundary site between England and Wales, this assessment only covers the English/NWIFCA area (Annex 3).

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

Reefs: All bottom towed gear prohibited around area of Sabellaria alevolata reef, Hilbre Island by NWIFCA Byelaw 6 – Protection for European Marine Site Features.

4. Information about the fishing activities within the site

There are five areas containing mussel situated off of West Kirby and Thurstaston on the English side of the Dee Estuary. The mussel beds were inspected by NWIFCA science officers on foot on 7th September 2017. Due to the soft nature of the ground, it was not possible to track round the whole of the mussel bed perimeter. Maps were produced from partial tracking and waypoints taken on the bed and what was seen by officers, giving a best estimate area of the beds. An estimate of percentage cover was recorded. However as this only estimates density in a two dimensional aspect it is likely to give an under estimate of the total abundance of mussel, as it was observed that in patches where the mussel looked to have washed out and bare mud was visible, closer inspection revealed live mussel buried in the mud.

NWIFCA officers have been unable to get to one of the beds at Thurstaston to date, but have seen the area from drone footage and it is visible as a mussel bed from the top of the Thurstaston slipway as a black area consistent with the other mussel beds.

¹ See Fisheries in EMS matrix:

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

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)



NWIFCA have produced an estimate of biomass from best available evidence for the three beds that were inspected at Thurstaston and the bed at West Kirby. This was produced using a mussel weight conversion table drawn up by NWSFC Senior Scientist Bill Cook, who had 32 years' experience of working in this field. Data of the estimated bed areas and percentage cover from a survey on 7th September have been used. This provides a total of 3303 tonnes (not including an estimate for the fourth bed at Thurstaston) which correlates to industry estimates of between 3-4000 tonnes of mussels for all the beds.

As a precautionary approach NWIFCA will adopt a biomass estimate of 3000 tonnes to allow for any over estimates used to calculate the figure.

			Percentage		
		Estimated	Cover used for		Estimated Lower
	Estimated Area	Percentage	Biomass	Equivalent	Limit Biomass of
	(ha)1	Cover (%) ²	Calculations (%) ³	Weight (kg m ⁻²) ⁴	Bed (tonnes) ⁵
Thurstaston Bed 1	6.3	75-80	70	19.1	1203
Thurstaston Bed 2	7.4	60	60	15.7	1162
Thurstaston Bed 3	3.0	50	50	12.8	384
West Kirby Bed	11.3	20-40	20	4.9	554
Total	28	n/a	n/a	n/a	3303

¹ Bed estimates from inspection by NWIFCA officers, full perimeter of the bed not mapped due to very soft nature of the beds. Maps produced from GPS waypoints on the bed and using officers' judgement as to the extent of the bed.

²Percentage cover from inspection carried out by officers.

³Lower estimates of percentage cover used as precautionary approach taken.

⁴The Figures are taken from conversion table below.

⁵Lower estimates of biomass used as precautionary approach taken

Percentage Cover (%)	0	10	20	30	40	50	60	70	80	90	100
Equivalent Weight (kg/m ²)	0	3.0	4.9	7.4	10.0	12.8	15.7	19.1	22.3	26.5	31.5

Table used for percentage cover to equivalent weight per metre squared conversion. Conversion table produced by NWIFCA from work carried out by Bill Cook (NWSFC Senior Scientific Officer for 32 years). A similar conversion table has been used in the past to give a biomass calculation on West Kirby in 2003.

On the West Kirby bed there is a mixture of size classes (Figure 1). There are areas on West Kirby that contain mussel which is heavily fouled with barnacles, and mussel in this condition is not likely to be targeted because there is little or no market value. Consequently these areas will not be fished and this will leave areas with predominately undersize mussel as a bird resource. Industry report a dense area of size mussel next to the channel (near the mid-point of the Estuary) that they will target. NWIFCA Officers were unable to access this patch due to the thick mud and it has therefore not been included in the estimates.

On the Thurstaston beds the majority of the mussel is between 35-47mm in length (Figure 2). The majority of this size class is likely to make size and potentially be fished. The size mussel will be fished first, thinning the mussel out and leaving the smaller mussel (just under 45mm) to grow on.



Figure 1 - West Kirby percentage of size frequency of shell length from mussel samples collected on 07-09-2017



Figure 2 - Thurstaston percentage of size frequency of shell length from mussel samples collected on 07-09-2017

Access to the fishery will be entirely by boat due to regulation in the Dee Estuary (Byelaw 13 of the National Rivers Authority Byelaw – Annex 6), which prohibits vehicular access. The closest access point which is already established for the Dee Cockle Fishery is the slipway at Thurstaston where most of the boats are expected to launch and recover from, with the possibility of a small number of boats coming from Greenfield on the Welsh side. Due to the location of the bed it is expected that fishing will occur for 6 hours (3hour either side of low water). The boats will dry out on the bed as the tide ebbs, the mussels will then be fished and loaded into the boats, with the boats being re-floated on the incoming tide and the catch landed to a slipway.

There are currently 107 NWIFCA Byelaw 3 permit holders (with a maximum capacity of 120 permit holders) who can fish for cockle and mussel within the NWIFCA District. Due to the location of the fishery there are conditions set out in the byelaw which allows non-byelaw permit holders to apply for a Dee transitional permit to fish the Dee Estuary for mussels if they can show that they have fished it in the past. Currently the NWIFCA has issued three Dee Transitional Permits with two further applications received. The maximum number of Dee Transitional Permits issued by the NWIFCA since Byelaw 3 was made is seventeen. This gives a total of 137 potential permit holders who could prosecute the fishery (information correct on 02-10-17).

However there are other active mussel and cockle fisheries within the District at the present time, with cockles fetching a more lucrative return on fishing, and one of which (Leasowe) is in a nearby locality. As the Dee mussel fishery will be a boat fishery and it is in the furthest southern reaches of the District (meaning it is a long way to travel for some gatherers) it is **extremely unlikely** that this level of fishing activity would take place.

Past experience of micro management of other fisheries within the District and reports from industry, results in an expectation of *a maximum of 15 boats and 30 permit holders* (one to two permit holders fishing from one vessel). The fishery will be closely monitored and if significantly more permit holders are witnessed by officers the HRA will be reassessed.

Regulation of Hand-gathering

NWIFCA Byelaw 3 - Permit to Fish for Cockles and Mussels (Annex 6) was introduced in 2012 and succeeded in creating vastly improved management of the fishery. The regulation has created a more professional and responsible group of fishers. NWIFCA Byelaw 3 also specifies methods of fishing and only fishing by hand or using hand-held rakes is permitted for harvesting mussels. It also specifies a minimum landing size.

Other byelaws in place to manage shell fisheries specifically in the Dee Estuary made by the National Rivers Authority, now the Environment Agency, and inherited by the IFCA in April 2011 when the Sea Fisheries Committee became an IFCA are:

Byelaw 6	Shellfishery Temporary Closure	(Annex 6)
Byelaw 11	Protection of Shellfish Beds	(Annex 6)
Byelaw 13	Mechanically Propelled Vehicles	(Annex 6)

Joint Working

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 Gangmaster and Labour Abuse Authority (GLAA), the Environment Agency (EA) and Natural Resources Wales (NRW).

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 Dee Estuary can be found on the Food Standards Agency website (<u>www.food.gov.uk</u>).

Biosecurity

The Dee Estuary is currently shellfish disease free and the Authority considers it a priority to maintain this status. 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 invasive species (INNS).

There have been records of a Chinese Mitten Crab population having become established in the Dee Estuary, particularly in the upper reaches along the muddy banks. Seventy crabs from the mussel samples from West Kirby and Thurstaston crabs were collected and identified. All crabs from the samples were identified as shore crab (*Carcinus maenas*). The crabs ranged in size approximately 5mm to 10mm in shell

width. Further samples will be taken and the crabs present will be identified with the specific purpose of looking for Chinese Mitten Crab. NWIFCA officers will monitor this fishery for any INNS.

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 fishery 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: The following habitats have been screened out:

- All sand dune and saltmarsh features and sub-features have been screened out due to fishing activity happening from a boat. It is not considered that any of the fishing activities will have an effect on the coastal processes which saltmarsh and sand dune features and sub-features require.
- All reef features have been screened out due to the protection under NWIFCA Byelaw 6 for Sabellaria alveolata reef, the fishing activity not occurring on any reef feature and or in the vicinity of any reef features.
- River and sea lamprey have been screened out as there is not likely to be any interaction with the fishing activity.
- All habitats where fishing activity does not occur have been screened out.

All features and sub-features that the fishing activity interacts with have been screen in to the table below. The NWIFCA overlaid fishing activity mapping (Annex 4) on to mapping of the features and sub-features of the SAC and the supporting habitats of the SPA (Annex 5). This has not been reproduced within the document as the detail gets lost in a reproduction. From this exercise and from inspections carried out by officers on the 7th September 2017, the following habitats have been screened into the assessment:-

• Intertidal sand and muddy sand and intertidal mud.

All SPA features (bird species). Additional features from adjoining sites (Liverpool Bay SPA and Mersey Narrows and North Wirral Foreshore SPA) have been screened in to the document for the completeness of the assessment - red throated diver, common scoter and little gull.

Pressures: All pressures from the Advice on Operations table provided in the Dee Estuary Conservation Advice package have been screened out, other than the pressures in the following table due to:

- the nature of the fishing activity (hand-gathered fishery with access from a boat)
- the areas where the activity occurs
- the vessels used are small (typical vessel size used in the Dee cockle fishery 4-7m vessels)
- the number of vessels prosecuting the fishery

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

Qualifying Feature	Sub- feature	Potential pressure(s)	Sensitivity	Potential for Likely Significant Effect?	Justification and evidence
H1130. Estuaries H1140. Mudflats and sandflats not covered by seawater at low tide SPA supporting habitats	Intertidal sand and muddy sand Intertidal mud	Abrasion/disturbance of the substrate on the surface of the seabed and penetration and/or disturbance of the substrate below the surface of the seabed, including abrasion	Sensitive	No	The majority of the mussel sits on a thick layer of mussel mud. Hand- raking skims the mussel from its underlying layers of mussel mud ensuring no contact with substrate. Where the mussel has not produced a layer of mussel mud and it is on the surface of the intertidal sand and muddy sand and mud habitat, hand raking only removes the mussel on the surface and therefore there will only be minimal contact with the substrate. Access to the fishery is by boats which dry out on the bed and will have minimal footprint and effect on the substrate.
		Genetic modification & translocation of non-indigenous species	Sensitive	Yes	Although the area is shellfish disease free. The Dee Estuary is known to contain Chinese Mitten Crab.
		Litter	Sensitive	Yes	Potential for littering
		Physical change (to another seabed type) Removal of non-target species Removal of target species	Sensitive Sensitive Sensitive	No Yes	The majority of the mussel sits on a thick layer of mussel mud. Hand- raking skims the mussel from its underlying layers of mussel mud ensuring no contact with substrate. Where the mussel has not produced a layer of mussel mud and it is on the surface of the intertidal sand and muddy sand and mud habitat, hand raking only removes the mussel on the surface and therefore there will only be minimal contact with the substrate. Access to the fishery is by boats which dry out on the bed and will have minimal footprint and effect on the substrate. Therefore it is unlikely that fishing will have any effect on another type of seabed. There is little or no by-catch in this highly selective fishery. The proposal is to remove mussel that has settled on dead cockle shell. Mussel would typically not be a characteristic of intertidal sand, mud and muddy sand sub-features but is a typical species of the Estuaries complex feature and therefore taken
A001 Gavia stellata:	Supporting	Collision above water with static	Sensitive	No	through to AA. Any collision above water extremely
Red throated diver A048 Tadorna tadorna; Common shelduck	Habitats Assessed Above.	or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)			unlikely due to the size of vessels used and the type of fishing.
A052 Anas crecca; Eurasian teal A054 Anas acuta; Northern pintail	•	Collision below water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures)	Sensitive	No	Any collision above water extremely unlikely due to the size of vessels used and the type of fishing.
A065 Melanitta nigra; Common scoter		Removal of non-target species (Non-retained Bycatch)	Sensitive	No	There is little or no by-catch in this highly selective fishery.
ostralegus; Eurasian oystercatcher		Removal of target species	Sensitive	Yes	Only species which use mussel as a

A141 Pluvialis	(Catch)			prey resource taken through to AA.
plover				- Oystercatcher
A143 Calidris				- Knot
canutus; Red knot	Visual disturbance	Sensitive	Yes	All species have been taken through
A149 Calidris alpina				to AA.
<i>alpina</i> ; Dunlin				
A156 Limosa limosa				
islandica; Black-				
tailed godwit				
A157 Limosa				
lapponica; Bar-tailed				
godwit				
A160 Numenius				
<i>arquata</i> ; Eurasian				
curlew				
A162 Tringa totanus;				
Common redshank				
A177. Hydrocoloeus				
minutus; Little gull				
A191 Sterna				
sandvicensis;				
Sandwich tern				
A193 Sterna hirundo;				
Common tern				
A195 Sterna				
albifrons; Little tern				
Waterbird assemblage				
- Calidris alba;				
Sanderling				
- Phalacrocorax carbo;				
Mallard				
- Vanellus vanellus:				
Lapwing				

Is the potential scale or magnitude	Alone	OR In-combination [°]
significant? ⁴	Uncertain	N/A
	Comments :	Comments :
		 These activities may also occur at the site: Drift netting Static netting Beam and light otter trawl Hand-gathering cockles
		In combination effects of hand- gathering of cockles has been assessed in this HRA (section 8). In combination effects of all other fishing activities will be assessed when all initial TLSEs for a site are completed.

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 Potential risks to SAC and SPA supporting habitat features

- Intertidal sand and muddy sand
- Intertidal mud

6.1.1 Pressures and Potential Impacts

i. Genetic modification and translocation of indigenous species

There are records of Chinese Mitten Crab within the Dee Estuary. There is potential for these to be translocated.

ii. <u>Litter</u>

Hand-gathered fisheries have in the past had a poor reputation for large amounts of litter being deposited on the parking and access areas, and being left on the beds. Items have included food and drink receptacles, net bags and sacks. Potential 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.

iii. <u>Removal of target species</u>

Potential to effect the presence and spatial distribution of feature communities, the presence and abundance of typical species and the species composition of component communities.

6.1.2 Exposure

i. <u>Genetic modification and translocation of indigenous species</u>

NWIFCA have consulted with CEFAS and Natural England over the issue of Chinese Mitten Crab (CMC) and are working with other agencies to ensure that the risk of spread is low. NWIFCA has its own Biosecurity Plan, detailing controls and conditions recommended for all commercial shellfish activities. NWIFCA officers sampled for CMC with 70 small crabs taken from the mussel samples and identified them all as shore crab. NWIFCA will continue to inspect the mussels for CMC on an ad hoc basis whenever possible and continue to work with other organisations and fishermen to ensure that the risk of spread is low. Below is a seasonality table of CMC produced by CCW for the removal of mussel seed from the Salisbury Bank in the Dee Estuary. NWIFCA will use the table to focus inspections for CMC around the times when the presence of adult CMC are at the highest.

Life stages	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Larval	Х	Х	L	Н	H	H	H	L	Х	Х	Х	Х
Juvenile	L	L	L	Н	H	Н	Η	Н	М	L	L	L
Adult	М	М	М	L	Х	х	х	Х	L	М	Н	Н

H = High risk, M = medium risk, L = Low risk, X = no risk

Table taken from - Consideration of risks involved with the removal of mussel seed from the Salisbury Bank, Dee Estuary, that may contain the non-native Chinese Mitten Crab Eriocheir sinensis. Countryside Council for Wales.

ii. <u>Litter</u>

The NWIFCA has a Code of Conduct for Intertidal Shellfisheries (Annex 7) which sets out good practices for Intertidal shellfisheries and includes litter. Permit holders are encouraged to act responsibly in every fishery. There are no known littering issues to have occurred in the recent Heysham Flat seed mussel fishery and the Flookburgh and Leven cockle fishery. There have been some cases of littering at the current Leasowe cockle fishery which have been addressed through communication between officers and industry, resulting in litter (cockle bags) being cleaned up by industry as soon as the issue was highlighted by officers.

It is anticipated that the majority of gatherers prosecuting this fishery will be Dee Cockle Order Licence holders and there are no known issues with litter in that fishery.

The NWIFCA is confident that littering will be minimal and controlled with monitoring in place to identify and deal with any problems. *Therefore the NWIFCA can conclude that litter will have no risk of adverse effect on the integrity or conservation status of the designated features within the site.*

iii. Removal of target species

Within the Estuary, mussels occur on hard substrates, especially the 'artificial' rocky shores around the Port of Mostyn, and the rocky shore of Hilbre Island (Regulation 33 Advice). When they occur on the intertidal mudflats and sandflats off West Kirby and Thurstaston they have settled on dead cockle shell. Mussel on rock will be more stable and provides a longer lasting substrate which is likely to support a wider range of organisms than mussel on dead cockle shell. This is a result of opportunistic settlement reliant on dead cockle shell providing a hard substrate in a soft muddy intertidal area. It is less stable due to its own mussel mud and the existing soft sediment and will scour and wash out.

The following has been considered when assessing the potential effect of the removal of target species as a typical species found in the Estuary.

- The mussel is on dead cockle shell rather than permanent hard substrate making it less stable and less diverse than the stable mussel beds found elsewhere in the Dee Estuary.
- Not all of the mussel will be removed by fishing due to:
 - undersize mussel not being removed;
 - the nature of mussel fishing by hand is not 100% efficient;
 - barnacled mussel is unlikely to be fished (inner edge of West Kirby bed);
 - areas where mussel is sparse will not be targeted;
 - permit holders are limited to how much mussel can be loaded on to a small vessel/boat.
- The relative low level of effort predicted due to other cockle and mussel fisheries being open in the Dee Estuary and the NWIFCA District.

As with all bivalve fisheries within the District the exploitation rate of the mussel and the fishing effort will be monitored through reports from NWIFCA inspections and the requirement for all permit holders (Byelaw 3 permits and the Dee transitional permits) to supply monthly returns.

Observation of mussel settlement by science officers over the last seven years within the NWIFCA district would suggest that the abundance of mussel on a mussel bed is much more dependent on the presence of a hard substrate for attaching to, rather than the biomass abundance of adult mussel on the bed as a spawning stock. As a trigger when the landings of mussel reaches 1000 tonnes, NWIFCA will reassess the mussel bed to ensure that as predicted there is a significant biomass of mussel left on the bed. If there are concerns that the biomass of mussel on the bed is getting low then the bed will be closed under Byelaw 6 - Shellfishery Temporary Closure, National Rivers Authority byelaw, now the Environment Agency and inherited by the IFCA in April 2011 when the Sea Fisheries Committee became an IFCA.

Therefore NWIFCA is confident that there is no need to set a total allowable catch (TAC) on the mussel fishery and that *the removal of target species (mussel) from the Dee Estuary will have no risk of adverse effect on the integrity or conservation status of the features of the SAC.*

6.2 SPA and Ramsar Features

• SPA and Ramsar birds

6.2.1 Potential Impacts

i) <u>Removal of target species (mussels)</u> for common scoter, oystercatcher and knot;

Although common scoter are not a designated feature of the Dee Estuary SPA there is a potential for the populations of the Liverpool Bay SPA to use the mussel in the Dee estuary as a food source so have been included in the assessment. Mussels form part of an important prey resource for common scoter, oystercatchers and knot. 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 arriving after long migrations and to feed through the cold months, when energy requirements are higher. Over-wintering waders then need to put on weight to get into best condition prior to migrations for the summer, or they will not survive long flight distances and suffer high mortalities. The over wintering period for birds species that use the Dee estuary is between October and March inclusive.

As intertidal feeders Oystercatchers mainly eat larger-sized mussel, which are targeted in mussel fisheries. Although the birds can eat alternative prey species such as earthworms 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 from the intertidal zone with the lower and upper size limits of around 5 and 24mm in shell length respectively. Common scoter are diving ducks and feed on a mixed range of sizes of bivalves.

ii) <u>Visual disturbance</u> - All SPA species within vicinity of fishery and on any access routes to the beds.

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.

6.2.2 Exposure

i) <u>Removal of target species (mussels)</u> for Common scoter, Eurasian oystercatcher, Red knot;

Nearly all of the mussels are larger than the prey size range for knot and any undersized mussel will be left on the bed due to the minimum landing size being enforced through NWIFCA Byelaw 3.

Although the fishery is outside of the Liverpool Bay SPA, Common Scoter have been considered. The size of the mussel is within the preferred size range for common scoter; however it is unlikely they would use this area as a food resource due to it being intertidal, and in shallow water when covered at high tide. The Dee Estuary is not known to be an important feeding area for Common Scoter.

The mussel targeted by permit holders will be the size range utilised by Oystercatchers. However the following facts have been considered:

- Not all of the mussel will be removed by fishing due to:
 - undersize mussel not being removed;
 - the nature of mussel fishing by hand is not 100% efficient;
 - the barnacled mussel are is unlikely to be fished (inner edge of West Kirby bed);
 - areas where mussel is sparse will not being targeted;
 - permit holders are limited to how much mussel can be loaded on to a small vessel/boat.
- The relative low level of effort predicted due to other cockle and mussel fisheries being open in the Dee Estuary and the NWIFCA District;
- The bird food requirements have been met for Oystercatcher through the HRA and management of the Dee Cockle Regulating Order for 2017 which has set a TAC that leaves a stock of 5600 tonnes of cockles in the Dee Estuary at the end of December 2017. In the view of the SNCB for Wales, Natural Resources Wales (NRW), who manage that fishery, this leaves a sufficient food resource for the number of birds which rely on bivalves over the winter period. It is understood that no mussel biomass was taken into account in the calculations of requirements (Jones, R) although a mussel resource was considered as supplementary food resource (pers. comm. Sharpe, R);
- A further resource of cockles will be present just outside the Dee Estuary on the North Wirral Foreshore due to the precautionary TAC set by NWIFCA for the Leasowe cockle fishery. It is likely that some birds within the Dee Estuary feed outside the SPA boundary. The TAC leaves an estimated 891 tonnes of size cockle and 293 tonnes of undersize cockle on the bed.

As with all bivalve fisheries within the District the exploitation rate of the mussel and the fishing effort will be monitored through reports from NWIFCA inspections and the requirement for all permit holders (Byelaw 3 permits and the Dee transitional permits) to supply monthly returns.

As a trigger when the landings of mussel reaches 1000 tonnes, NWIFCA will reassess the mussel bed to ensure that as predicted there is a significant biomass of mussel as a food resource for the SPA features which feed directly on mussel. If there are concerns that the biomass of mussel on the bed is getting low then the bed will be closed under Byelaw 6 - Shellfishery Temporary Closure, National Rivers Authority byelaw, now the Environment Agency and inherited by the IFCA in April 2011 when the Sea Fisheries Committee became an IFCA.

Therefore NWIFCA is confident that there is no need to set a total allowable catch (TAC) on the mussel fishery and that *the removal of target species (mussel) from the Dee Estuary will have no risk of adverse effect on the integrity or conservation status of the features of the SPA.*

ii) <u>Visual disturbance</u> - All SPA species within vicinity of fishery and on any access routes to the beds

The fishery will be prosecuted throughout the winter months. The Dee Estuary is a vital over wintering area for waders and wildfowl.

There is a very low risk to the tern species as the fishery will be prosecuted through the winter months when the majority of the terns have already migrated.

Annex 8 contains maps of the important feeding and roosting areas for designated waders and waterfowl species. When comparing the maps to the location of the fishing activity. There is no overlap between fishing and the following:

- high water wader roost (including access);
- key areas used by qualifying wildfowl (Teal, Pintail and Shelduck);
- key areas used by non-qualifying wildfowl (assemblage).

There is overlap between the areas fished and the known wader feeding sites. The wader feeding site map (Annex 8) indicates that the species of birds likely to be feeding in the area of the fishing activity are grey plover, redshank, dunlin, oystercatcher, curlew, knot, lapwing and black-tailed godwit. There is potential for disturbance to wildfowl from the vessels when travelling to the fishery. There may be some disturbance to these birds when permit holders access and fish the bed. However any disturbance event is likely to minimal and short lived for the following reasons:

- the area of all the mussel beds is 28 hectares; the Dee SPA covers an area of 14,291.56 hectares meaning the target area of fishing equates to 0.2% of the total SPA;
- only be a small number of vessels are expected to prosecute the fishery, a maximum of 15 vessels;
- vessels used are small, less than 10 meters, typically between 4 to 7 metres;
- there will be tides which are not fished due to other fisheries and due to the length of time needed to fish the bed it is expected that permit holders will only fish one tide per day;
- fishing effort is expected to be low while the Dee and Leasowe cockle fisheries are open; when the Dee cockle fishery closes at the end of December and the Leasowe cockle fishery slows due to the reduction in cockle biomass it is expected that effort on the mussel fishery will increase to the predicted maximum level;
- once on the bed permit holders will only work in the vicinity of the vessel dried out on the mussel bed – spatial extent of activity at any one time is limited;
- gatherers work singly or in small groups a man and a rake causes minimal disturbance, and observations on other fisheries have shown that some birds will continue feeding very close to this activity;
- there will be areas of cockle bed that remain undisturbed, particularly once the Dee cockle fishery closes in December;

• the majority of the vessels are expected to be launched from Thurstaston slip which is in close proximity to the mussel beds keeping time and distance travelled on the water to a minimum.

As an added precaution and good practice the fisheries will be temporarily closed if local temperatures (as recorded by nearest Met Office data) are below 0°C for 5 consecutive days and remain so until temperatures reach above 0°C. This year has been particularly dominated by periods of high winds / storm conditions, when storm conditions are combined with low temperature condition NWIFCA will look for advice from NE as to whether the extreme weather is a risk to birds and manage the fishery as appropriate from the advice.

If there is evidence of high levels of disturbance and a risk of adverse effect identified to the European Site then the fishery will be closed.

Therefore NWIFCA is confident that visual disturbance to SPA bird species will have no risk of adverse effect on the integrity or conservation status of the features of the SPA.

Table 2: Summar	y of Impacts
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Feature/Sub feature(s)	Conservation Objective	Potential pressure ⁶ (such as abrasion, disturbance) exerted by gear type	Potential ecological impacts of pressure exerted by the activity/activities on the feature ⁷ (reference to conservation objectives)	Level of exposure ⁸ of feature to pressure	Mitigation measures ⁹
Intertidal sand and muddy sand (Estuaries, mudflats and sandflats not covered by seawater at low water, SPA supporting habitats) Intertidal mud (Estuaries, mudflats	Maintain or restore the extent, distribution structure or function of the Intertidal sand and muddy sand.	Genetic modification & translocation of non-indigenous species	Non-native species may displace and disrupt native organisms and have the potential of changing species composition of sediment.	NWIFCA have consulted with CEFAS and Natural England and are working with other agencies to ensure that the risk of spread is low. NWIFCA has its own Biosecurity Plan. With management as described, translocation of non-indigenous species is unlikely to have an adverse effect on the integrity of the European Site	NWIFCA will continue to inspect the mussels for Chinese Mitten crab and continue to work with other organisations and fishermen to ensure that the risk of spread is low.
and sandflats not covered by seawater at low water, SPA supporting habitats)		Litter	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.	Littering levels will be monitored, and fishers encouraged to act responsibly through Code Of Conduct for Intertidal Shellfisheries. NWIFCA will liaise closely with local authority and NE, for early detection of any problems. With management as described, littering is unlikely to have an adverse effect on the integrity of the European Site	None - current management measures sufficient with monitoring of the fishery
		Removal of target species (Mussel)	Potential to affect the:- - Presence and abundance of typical species - Species composition of component communities	The practise of fishing will not remove all of the mussels from the beds. Other mussel within the Dee estuary as spawning stock biomass and because of the hard substrate likely to be of greater stability and diversity and therefore more important Trigger of a1000 tonnes from landings to	None - current management measures sufficient with monitoring of the fishery

 ⁶ Guidance and advice from NE.
 ⁷ Document the sensitivity of the feature to that pressure (where available), including a site specific consideration of factors that will influence sensitivity.
 ⁸ 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.

⁹ Detail how this reduces/removes the potential pressure/impact(s) on the feature e.g. spatial/temporal/effort restrictions that would be introduced.

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					look a condition of the beds. With option of closing bed if needed.	
					It is therefore unlikely that removal of target species will have an adverse effect on the integrity of the SAC features of the European Site.	
-	Melanitta nigra; Common scoter Haematopus ostralegus; Eurasian oystercatcher	Maintain or restore the population of each of the qualifying features, and, the distribution of the qualifying features within the site	Removal of target species (Mussel)	Potential to affect the:- - Food availability - Condition and survival of SPA species - Abundance of SPA species	Majority of mussel larger than prey size for knot, and mussel within prey size preference will not be removed due to MLS. Not identified as important feeding area for common scoter.	None - current management measures sufficient with monitoring of the fishery
-	<i>Calidris canutus</i> ; Red knot				Oystercatcher will utilise the mussel on the bed. Fishing will not remove all the mussel, areas of unwanted mussel (barnacled). Relatively low fishing effort and limited by the amount a boat can carry.	
					Other fisheries for cockle have set a TAC to allow for bird feeding requirements within the Dee Estuary.	
					Trigger of a1000 tonnes from landings to look a condition of the beds. With option of closing bed if needed.	
					It is therefore unlikely that removal of target species will have an adverse effect on the integrity of the SPA features of the European Site.	
-	Gavia stellata; Red throated diver Tadorna tadorna;	Maintain or restore the population of each of the qualifying features, and,	Visual disturbance	Potential to affect the:- - Condition and survival of SPA species - Abundance of SPA species	Low risk to tern species as they will have already migrated.	None - current management measures sufficient with monitoring of the fishery
-	Common shelduck Anas crecca; Eurasian teal Anas acuta; Northern pintail Melanitta nigra; Common scoter	the distribution of the qualifying features within the site		 Extent and distribution of supporting habitat available whilst fishing activity is occurring 	Potential for disturbance to wildfowl from vessels travelling to the fishery - any disturbance minimal due to close proximity of main launch site at Thurstaston slipway.	
-	Haematopus ostralegus; Eurasian oystercatcher Pluvialis squatarola; Grey plover Calidris canutus; Red knot				Potential for disturbance to waders but due to the size of the area fished, other cockle fisheries in the area affecting effort levels, effort levels being low and areas of unfished cockle (particularly after December and closure of Dee	

- Calidris alpina	cockle	e fishery), and minimal disturbance
alpina; Dunlin	of indiv	lividuals or small groups working
- Limosa limosa	with a	a small rake in a spatially limited
islandica; Black-	area (a	(around the boat), disturbance is
tailed godwit	likely to	to be minimal and short lived
- Limosa lapponica;		
Bar-tailed godwit		
- Numenius arquata;	lt is	therefore unlikely that visual
Eurasian curlew	disturba	bance will have an adverse effect
- Tringa totanus;	on the	e integrity of the SPA features of
Common redshank	the Eur	uropean Site.
- Hydrocoloeus		
minutus; Little gull		
- Sterna		
sandvicensis;		
Sandwich tern		
- Sterna hirundo;		
Common tern		
- Sterna albifrons;		
Little tern		
- vvaterbird		
assemblage		

7. Conclusion¹⁰

Taking into account the information detailed in the Appropriate Assessment, it can be concluded that the hand gathering of size mussel from the mussel beds at West Kirby and Thurstaston, has no adverse effect on the integrity of the Dee Estuary European Site interest features.

8. In-combination assessment¹³

An in-combination assessment with the cockle hand gathering in the Dee Estuary and in the Mersey Narrows and North Wirral Foreshore for the removal of target species as a food resource for knot and oystercatcher, and for visual disturbance for SPA species has been carried out below.

Removal of Target Species

When assessing the Dee Estuary European Site and bird food requirements for bird species reliant on bivalve species, NWIFCA can conclude that fishing for size mussel is unlikely to affect SPA birds reliant on bivalves and that there is sufficient bivalve biomass within the Estuary over autumn and winter for the following reasons:

- not all of the mussel will be removed from the fishery leaving a mussel food resource for bird species that rely on bivalves as a prey source. As a precautionary measure NWIFCA has built in a trigger point that when landings reach 1000 tonnes the fishery will be re-inspected;
- the bird food requirements have been met for Oystercatcher through the HRA and management of the Dee Cockle Regulating Order for 2017 which has set a TAC that leaves a stock of 5600 tonnes in the Dee Estuary at the end of December 2017, which in the view of Natural Resources Wales (NRW), the managers of that fishery, is a sufficient food source for the number of birds which prey on bivalves over the winter period. In the view of the SNCB for Wales, Natural Resources Wales (NRW), who manage that fishery, this leaves a sufficient food resource for the number of birds which rely on bivalves over the winter period. It is understood that no mussel biomass was taken into account in the calculations of requirements (Jones, R) although a mussel resource was considered as supplementary food resource (pers. comm. Sharpe, R);
- A further resource of cockles will be present on the adjacent North Wirral Foreshore due to the precautionary TAC set by NWIFCA for the Leasowe cockle fishery. It is likely that some birds within the Dee Estuary feed outside the SPA boundary. The TAC leaves an estimated 891 tonnes of size cockle and 293 tonnes of undersize cockle on the bed.

Visual Disturbance

When assessing the Dee Estuary European Site and visual disturbance for qualifying bird species, NWIFCA can conclude that there is very little increase in bird disturbance over a spatially small area and therefore the extra visual disturbance from this fishery is unlikely to have an adverse effect on the integrity of the site for the following reasons:

¹⁰ If conclusion of adverse effect alone an in-combination assessment is not required.

- the area of the mussel beds is 28 hectares, while the Dee SPA covers an area of 13076 hectares meaning the target area of fishing equates to 0.21% of the total SPA. The Dee cockle HRA states 'Less than 1% of the total area of the mudflats and sandflats within the SAC will be accessed by the cockle fishermen'. When combining these figures the total area only equates to a very small maximum proportion of the European Site being potentially disturbed, although it is likely to be a higher proportion of the site which contains bivalves.;
- it is predicted that only a small number of vessels will prosecute the fishery, with a maximum of 15 vessels. The majority of vessels are likely to be the same vessels which fish the Dee cockle fishery so effort on the mussel fishery before the end of December is likely to reduce the effort on the cockle fishery, thus minimising potential for distrubance;
- after December the Dee cockle fishery closes reducing the overall potential for visual disturbance in the Dee Estuary.

9. Summary of consultation with Natural England

See attached advice from Natural England (Annex 2).

10. Integrity test

The NWIFCA can conclude that hand gathering of size mussel from the mussel beds at West Kirby and Thurstaston has no adverse effect on the integrity of the Dee Estuary European Site interest features.

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

CCW (2011). Consideration of risks involved with the removal of mussel seed from the Salisbury Bank, Dee Estuary, that may contain the non-native Chinese Mitten Crab Eriocheir sinensis. Countryside Council for Wales. Maes y Ffynnon. Ffordd Penrhos. Bangor. Gwynedd. LL57 2DW.

EC Directive 79/409 on the Conservation of Wild Birds: Citation for Special Protection Area (SPA) – The Dee Estuary.

Goss-Custard JD *et al.* 2004. When enough is not enough: shorebirds and shellfishing. *Proc R Soc Lond B* **271**, 233-237

Natural England Marine Interim Conservation Advice for Special Protection Area (UK9013011), UK9013011_SPA_The Dee Estuary_Advice on Operations_Sept15 UK9013011_The Dee Estuary_Advice on Operations_Sept15

Natural England Marine Interim Conservation Advice for Special Area of Conservation (UK0030131), UK0030131_Dee_Estuary_Aber_Dyfrdwy_SAC_Advice_on_Operations UK0030131_Dee_Estuary_Aber_Dyfrdwy_SAC _Generic_SAT_Habitats UK0030131_Dee_Estuary_Aber_Dyfrdwy_SAC _Generic_SAT_Species

Natural Resources Wales, 10-05-2017, Dee Estuary cockle fishery opening 2017 HRA v2.0.

NWIFCA-MNNWF-DE-LB-COCKLE, 06-09-2017 HRA Leasowe cockle fishery.

Sharpe, R. (Sept – Oct. 2017). NRW. Pers. comms.

Stock Assessment and Bird Food Requirement Review for Cockle Fisheries in Wales. Rhys Jones. Natural Resources Wales. (date unknown but post 2015)

The Dee Estuary European Marine Site comprising: Dee Estuary / Aber Dyfrdwy Special Area of Conservation, The Dee Estuary Special Protection Area, The Dee Estuary Ramsar Site, Natural England & the Countryside Council for Wales' advice given under Regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994. January 2010.

Annex 2: Natural England's consultation advice

Date: 20 October 2017 Our ref: 229060 Your ref: NWIFCA-DE-EMS Size Mussel 2017

FAO: John Haines/Mandy Knott NWIFCA



Natural England Hombeam House Crewe Business Park Electra Way Crewe Cheshire CW1 8GJ

BY EMAIL ONLY

Dear John/Mandy,

Re: NWIFCA Dee Estuary Mussel Fishery 2017, Draft HRA

Thank you for your consultation dated 18 October 2017 and received by Natural England on the same date.

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

Having reviewed the Draft Habitats Regulations Assessment for the proposed mussel fishery in the Dee Estuary/Aber Dyfrdwy, we advise the following additions, amendments or clarifications:

Section 5 – Test of Likely Significant Effect

This table refers to activity and potential impacts from seed mussel removal in the "Justification and Evidence" column. As this hand-gathered fishery is for size mussel, the word "seed" could be removed with appropriate wording changes to reflect a handgathered fishery.

"Physical Change" There should also be acknowledgement of the potential for different types of sediment composition where the mussel may need to be removed from e.g. is it all mussel mud, or could it be mud, muddy sand, sandy mud – and therefore different habitat types impacted (as with the "removal of target species" assessment detail).

"Removal of target species" it should be acknowledged that mussel is a typical species of the "Estuaries" feature and therefore should be assessed. We advise that this section should be reworded and make direct reference to this for clarity.

With reference to visual disturbance on page 11 ("potential pressures") it should be acknowledged in this table that disturbance is more than just visual, there could be motive and proximal disturbance where movement and closeness of many individual gatherers could have a compounding disturbance effect on different species. The impacts of the disturbance also could be greater in cold weather conditions where the mussel fishery may still be in operation throughout the winter months thus affecting condition.

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Section 6.1.2 It would be useful to acknowledge when Chinese mitten crabs are known to be in the estuary. This may inform when beds are surveyed for invasive non-native species and potentially bed closure in the event that such species are found.

Section 6.2.1 i) For clarity, it is advised that while common scoter are not a designated feature of the Dee Estuary SPA there is potential for the Liverpool Bay SPA populations to make use of the food resource within the Dee Estuary and this should be acknowledged here (as referred to in 5.1)

As referred to earlier in the assessment, the full extent of the over-wintering period (1st October to 31st March) should be noted, as bird food requirements as more important for those species that remain on the site throughout the wintering period.

Section 6.2.1 ii) Disturbance is more than just visual and this should be included here to ensure that an assessment of all types of disturbance is acknowledged. In late winter or in prolonged spells of cold, harsh conditions the impacts of disturbance events may be greater.

Page 16, second list, first point; the total area of the Dee Estuary/Aber Dyfrdwy SPA is 14, 291.56 ha according to the citation, the Regulation 33 package and the Standard Data form. It is unclear where the figure of 13,076 ha has come from.

Page 16, third paragraph – Reference to sub-zero temperatures should include extreme wind/ storm conditions, which could also prevent birds from accessing the beds. Inclusion of this would be appropriate for winter months when extreme weather conditions are likely and may combine with freezing conditions.

Page 17, Table 2, the column heading "Potential pressure exerted by gear types" implies that more than one gear type may be used in the fishery, this is not clear from the table itself. The associated footnote 7 also implies that gear types may be grouped together for the purposes of the assessment and then assessed individually if a more in depth assessment is required. This may be a legacy from another assessment but is perhaps misleading in this instance. In addition, the test of LSE and any appropriate assessment should be an indepth assessment on all of the gear types used in the fishery alone and in combination (if applicable). This table could be reworded to tailor the assessment to the this specific fishery in this specific site and be a little clearer and that Habitats Regulations compliance is also clear.

If you require any further details please do not hesitate to contact the undersigned.

Yours sincerely,

Jed Nicholson Coast and Marine Cheshire, Greater Manchester, Merseyside and Lancashire Area Team Jerrard.nicholson@naturalengland.org.uk Tel: 0208 225 6688 Mob: 07771 980217

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Annex 3: Dee estuary SAC and SPA Site Map



Annex 4: Broad scale habitat map: sub-feature/feature location and extent

Annex 5: Fishing activity map



Annex 6: Byelaws regulating cockle fishing in the Dee Estuary

<u>NWIFCA BYELAW 3</u> - 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).

Byelaw confirmed 23.08.12

National River Authority Byelaws – Regulating Fishing for Shellfish in the River Dee and its Estuary

BYELAW 6 - SHELL FISHERY - TEMPORARY CLOSURE

Where, in the opinion of the Authority, in the River Dee Sea Fisheries District, any bed or part of a bed of shellfish requires temporary closure in the best interests of the management of the River Dee Sea Fisheries District and where the bed or part thereof has been clearly defined in the notices displayed in the vicinity prohibiting the fishing for and the removal or disturbance of the shellfish, no person shall while the bed or part thereof is so defined, fish for, remove, take away of otherwise disturb any shellfish therein PROVIDED THAT no bed or part of a bed may remain closed under the Byelaw at any one time for a period in excess of one year without a review by the Authority.

BYELAW 11 – PROTECTION OF SHELLFISH BEDS

No person shall engage in any activity which disturbs or damages the shellfish or the sea bed within the River Dee Sea Fisheries District except by written authority of the Authority and in accordance with the conditions set out in that Authority.

BYELAW 13 – MECHANICALLY PROPELLED VEHICLES

No person shall cause or permit any mechanically propelled vehicle to stand on or pass over any part of the River Dee Sea Fisheries District without the prior written authority of the Authority.

Annex 7 – Code of Conduct for Intertidal Shellfisheries



North Western Inshore Fisheries and Conservation Authority

Code of Conduct for Intertidal Shellfisheries

Fishing for cockles and mussels on the shore is a long-established activity. In recent years the level of activity has increased, and there has been increasing public concern about it.

By observing this simple code of conduct you can help to reduce complaints and protect your own long-term interests.

1. Treat the foreshore with respect

Much of the foreshore is privately owned. Many landowners tolerate access to and from shellfisheries. This does not include the storage of fishing equipment or catches on private land. To protect your own interests:

- Don't damage gates, fences or signposts;
- Don't block access routes; and
- Get the landowner's agreement before storing any fishing equipment, vehicles or catches on private land.

2. Use vehicles on the shore carefully

Many landowners and coastal residents are concerned about the use of tractors, ATVs / Quad Bikes, and other vehicles on the shore. Try to minimise complaints by:

- Ensuring all vehicles are in good repair and have exhaust silencers;
- Keep noise to a minimum especially early in the morning and at weekends;
- Avoid churning up mud at the top of the shore;
- Don't abandon vehicles on the shore.

3. Leave the shore as you find it

Frequent complaints are made about litter being left by fishermen. This includes food wrappers, cups, sacks used to transport shellfish, and shellfish dropped or discarded on the shore.

- Clear up any litter left at the end of the day;
- Don't leave unwanted shellfish or sacks lying around; and
- If storing gear or shellfish on the shore, make sure it doesn't impede access.

4. Have regard for wildlife

Much of the seashore is protected by wildlife designations. It is a criminal offence to harm protected wildlife. To avoid possible prosecution:

- Don't disturb bird nests or eggs;
- Avoid nature reserves;
- Don't take vehicles across areas of saltmarsh or seagrass; and
- Contact the NWIFCA office for advice if in any doubt.

5. Fish sustainably

IFCA byelaws protect the long-term future of shellfish stocks, and must be complied with at all times. Complying with byelaws protects your own future livelihood. You can help further by:

- Scattering riddled shellfish evenly back on the bed they were removed from - don't leave them in a heap;
- Avoid harming or gathering juvenile shellfish - they are the future of the fishery; and
- Ensure that vehicles used on the shore don't harm the shellfish beds.

6. Observe other guidance & advice

Other authorities may provide guidance relating to your activities. You should ensure that you are aware of:

- Guidance issued by local authorities and landowners concerning access and other issues;
- Guidance issued by the Health & Safety Executive and the Coastguard.

For further information, contact the NWIFCA at our Carnforth offices or visit www.nw-ifca.gov.uk

Annex 8 – SPA Feature Feeding and Roosting Sites







