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

NWIFCA-DE-EMS-005
Date completed: 07/11/2016
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Site: Dee Estuary

European Designated Sites: UK0030131 Dee Estuary/Aber Dyfrdwy Special Area of Conservation (SAC)
UK9013011 The Dee Estuary Special Protection Area (SPA)
UK11082 The Dee Estuary Ramsar Site
(UK9020294 Liverpool Bay/Bae Lerpwl SPA adjoins this site – assessed separately in NWIFCA-LB-SPA-004)
(UK9020287 Mersey Narrows and North Wirral Foreshore SPA adjoins this site- assessed separately in NWIFCA-MN-SPA-003)

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

A048 *Tadorna tadorna*; Common shelduck (Non-breeding)
A052 *Anas crecca*; Eurasian teal (Non-breeding)
A054 *Anas acuta*; Northern pintail (Non-breeding)
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)
A191 *Sterna sandvicensis*; Sandwich tern (Non-breeding)
A193 *Sterna hirundo*; Common tern (Breeding)
A195 *Sterna albifrons*; Little tern (Breeding)
Waterbird assemblage

Site sub-feature(s)/Notable Communities:

SAC and Ramsar

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: *Natterjack 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:

- 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):

Static fixed nets

- **Staked gill nets (shore based activity)**
- **Gill / entangling nets**
- **Trammel nets**

Drift nets

- **Demersal drift nets**

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 the end of 2016.

The purpose of this site specific assessment document is to assess whether or not in the view of NWIFCA the fishing activities of ‘Gill nets, Trammels, Entangling and Drift nets (demersal/pelagic)’ have 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 ‘Gill nets, Trammels, Entangling and Drift nets (demersal/ pelagic)’ 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 species[1]
- Reference list[2] (Annex 1)
- Natural England's consultation advice (Annex 2)
- Site map (Annex 3)
- Broad scale habitat map: sub-feature/feature location and extent (Annex 4)
- Fishing activity map (Annex 5)

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.

4. Information about the fishing activities within the site

4.1 Multi-purpose nets and the versatile fishing fleet

In the Dee estuary EMS there are 4 applications of gill nets. Three are static/fixed; gill netting, trammel netting and entanglement netting and the forth is mobile; drift netting (demersal). All of these applications are undertaken from fishing vessels by all of the members of the fleet (described below) and in addition staked/anchored gill netting is undertaken from the shore. Fishers who engage in fishing from a vessel do not fish from the shore or visa versa. It is common for boat fishers to use the same net and apply it in different ways depending upon target species, season, weather, tide, sea conditions and personal preference. The multi-purpose / generic net is monofilament or multi-strand monofilament (composed of 3 to 12 strands of monofilament twine loosely twisted together), with a diamond mesh (mesh size >100mm), 6 to 8 feet in height and 80 - 150m in length. The footrope of the net is made from lead line so it sinks and the head line has small floats attached making it neutrally buoyant, thus during fishing the net occupies the water column from the seabed up to 2m above the seabed. The net is held in position using anchoring weights (or stakes if set on the foreshore) and marked on the surface by buoys or dhan flags.

All local fishing activity information has been collated from two local Inshore Fisheries and Conservation Officers whom have 6 years' and 29 years' experience as a local Fisheries Officer in this area.

[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)

4.2 Staked gill nets (shore based activity)
This activity only occurs along the North Wirral coast (see Annex 5). The North Wirral coast is part of the Dee estuary SAC but not part of the Dee estuary SPA (Annex 3), instead it is part of the Mersey Narrows and North Wirral Foreshore SPA, thus, the impact of this activity on the SPA features is assessed in a separate document for Mersey Narrows and North Wirral Foreshore SPA (NWIFCA-MN-SPA-003).

There are 6 fishers who engage in this activity, however, the amount of commercial verses recreational activity by these fishers is unknown. Two of the fishers use ATVs (quad bikes) and access the foreshore via one of two concrete slipways along North Parade, Birkenhead. Tractors are not used. This fishery only occurs from April to October on the sand, muddy sand habitat of the intertidal zone (Annex 5). Nets are attached to metal stakes (which protrude approx. 6 inches above the sand) and buoyed. When fishing is undesirable, fishers either roll the nets up (preventing fishing) and leave in situ, or remove. Fishers set an average of 2 and a maximum of 4 multi-purpose nets (see 4.1) each, and visit their nets after every tide when fishing is desirable to remove the catch. The height of water above the net varies from 0 to 15 feet with tidal movement and tidal height. The target species are bass, plaice, Dover sole, flounder, dab, turbot, and brill. No river lamprey or sea lamprey are known to have ever been caught in this activity.

4.3 Gill / entanglement nets
In this fishery gill netting and entanglement netting utilise the same multi-purpose / generic net as described in 4.1, the difference being how taut the net is set. Gill netting involves setting the net relatively tight, thus a net of 150m in length will be stretched across a similar distance, conversely in entanglement netting the net is set looser and may cover a distance as little as 75m. This floppiness in the net results in the captured fish becoming more entangled in the net, hence the name entanglement netting, as opposed to simply being caught by their gills as in gill netting (MCS report and Local IFCO, 2015). Which practice is employed is down to fishers personal preference.

There are approximately 25 small (vessel lengths 15 to 30 feet) commercial fishing vessels who engage in this activity with an average of 2 (1 to 3) fishers on board. This activity occurs within the main channel of the estuary in both intertidal and subtidal areas (see Annex 5). Approximately 20 of these vessels travel into the English side of the Dee estuary EMS from Welsh ports. Four are based out of Thurstaston and one is based out of New Brighton, all of these operators utilise established boat slip-ways and moorings. The operators participating in this activity are the same operators who participate in drift netting and in cockle hand gathering. During the cockle season (July to December) fishers predominantly gather cockles and will go netting on average 1 day per month. From January to June fishers will go netting for 4 hours per day (over low water) on an average of 10 days per month.

This activity occurs mostly during daylight hours. A fishing vessel operator will typically only set 1 multi-purpose net (see 4.1) at any one time and may haul by hand or use a small mechanical net hauler. The net will be set approximately 2 hours before and retrieved 2 hours after low water (time of net setting and retrieval is tidal height dependant). Thus, in shallow subtidal and intertidal areas the net may be partially or completely exposed at the time of low water with the degree of net submersion varying with the tidal cycle and according to tidal height. Therefore there may be different impacts on the designated features at different tidal times. Operators commonly engage in drift netting (see below) whilst their set net is ‘fishing’ i.e. over low water in between setting and retrieval of the set net. Due to the small size of vessels operating in this fishery weather is a limiting factor; in particular wind speed, wind direction and the influence of wind over tide, typically fishing will only occur in winds less than gale force 5.

The target species in this fishery are plaice, Dover sole, flounder, dab, turbot, and brill. In addition in the summer months bass (outside of the bass nursery area – see Annex 5) and in the winter months codling and whiting, are also targeted. No river lamprey, sea lamprey or birds are known to have ever been caught in this activity.

4.4 Trammel nets

Trammel nets consist of (usually) three netting layers; one loose, inner, fine mesh central net surrounded by two larger mesh outer layers of net, anchored at the base and floating at the headline (MCS report & Grieve *et al.* 2014). Fish are tangled in the looser internal panel of the net after passing through the outer layer (Local IFCO, 2015). Trammel nets are made with multi-stranded nylon twine (this is thicker than monofilament). The inner layer is typically 100mm diamond mesh and the outer layers 150-300mm diamond mesh. A trammel net is usually 100m long and 1m high. The footrope of the net is made from lead line so it sinks and the head line has small floats attached making it neutrally buoyant, thus during fishing the net occupies the water column from the seabed up to 1m above the seabed. Trammel nets are not multi-purpose and are not used from the shore or for drifting in the Dee estuary EMS.

There are 2 commercial fishing vessels, operated by solo fishers, who engage in this activity. These vessels are open boats i.e. no wheelhouse or superstructure, are less length 5m in length and travel into the English side of the Dee estuary EMS from Welsh ports. This activity occurs in the middle of the estuary in both intertidal and subtidal areas (see Annex 5). The operators participating in this activity are the same operators who participate in drift netting and in cockle hand gathering. During the cockle season (July to December) fishers predominantly gather cockles and will go netting on average 1 day per month. From January to June fishers will go netting for 4 hours per day (over low water) on an average of 10 days per month.

This activity occurs mostly during daylight hours. A fishing vessel operator will typically only set 1 trammel net at any one time and may haul by hand or use a small mechanical net hauler. The net will be set approximately 2 hours before and retrieved 2 hours after low water (time of net setting and retrieval is tidal height dependant). Thus, in shallow subtidal and intertidal areas the net may be partially or completely exposed at the time of low water with the degree of net submersion varying with the tidal cycle and according to tidal height. Therefore there may be different impacts on the designated features at different tidal times. Operators commonly engage in drift netting (see below) whilst their trammel net is ‘fishing’ i.e. over low water in between setting and retrieval of the set net. Due to the small size of vessels operating in this fishery weather is a limiting factor; in particular wind speed, wind direction and the influence of wind over tide, typically fishing will only occur in winds less than gale force 5.

The target species in this fishery are the flatfish; plaice, Dover sole, flounder, dab, turbot, brill and the occasional mullet may also be caught. No river lamprey, sea lamprey or birds are known to have ever been caught in this activity.

4.5 Demersal drift nets

Drift nets are mobile and drift with prevailing currents catching fish by entangling them (Seafish, 2005 and MCS report). In this fishery demersal drift netting is conducted with two types of net i) the multi-purpose / generic net as described in 4.1 and ii) dedicated drift nets which are approx. twice as high at 13ft (all other aspects of the net being the same as described in 4.1). The buoyancy of the net (lead lined foot rope verses float line head rope) is counter balanced to make the net travel close to, but avoid contact with, the seabed. Contact with the seabed (known as ‘snagging’) is undesirable because it would cause damage to, or complete loss of the net,

therefore demersal drift netting would only interact with the seabed if nets are set incorrectly. When set correctly, and depending upon the tidal height and net height, demersal drift nets can attain almost complete coverage of the water column.

There are approximately 25 small (vessel lengths 15 to 30 feet) commercial fishing vessels who engage in this activity with an average of 2 (1 to 3) fishers on board. This activity occurs within the main channel of the estuary in both intertidal and subtidal areas (see Annex 5). Approximately 20 of these vessels travel into the English side of the Dee estuary EMS from Welsh ports. Four are based out of Thurstaston and one is based out of New Brighton, all of these operators utilise established boat slip-ways and moorings. The operators participating in this activity are the same operators who participate in gill / entanglement netting and in cockle hand gathering. During the cockle season (July to December) fishers predominantly gather cockles and will go netting on average 1 day per month. From January to June fishers will go netting for 4 hours per day (over low water) on an average of 10 days per month.

This activity occurs mostly during daylight hours. A fishing vessel operator will typically set a gill net / entanglement net approx. 2 hours before low water, then drift net until retrieving the set net approximately 2 hours after low water. Only one drift net will be fished by an operator at any one time, one end of the net remains attached the boat and both the net and the boat drift with the current. Time in between hauls is dependent upon the length of the subtidal channel the activity is taking place in, typically between 30 minutes and 2 hours. Due to the small size of vessels operating in this fishery weather is a limiting factor; in particular wind speed, wind direction and the influence of wind over tide, typically fishing will only occur in winds less than gale force 5.

The main target species in this fishery is seasonal. From April to October bass (outside of the bass nursery area – see Annex 5) and mackerel (more so in the outer region of the estuary) are targeted. From October to April cod and whiting are targeted. In addition, mullet are targeted all year round in the muddier sections of the estuary. No river lamprey, sea lamprey or birds are known to have ever been caught in this activity.

Netting Regulations

Netting within the European Site is regulated by:
Council Regulations (EC) No. 850/98 – Technical Measures
Council Regulations (EU) 2016/72 – Bass Fishing Restrictions
Statutory Instrument 1999 No. 75 – Sea Fisheries. The Bass (Specified Areas) (Prohibition of Fishing) (Variation) Order 1999.
NWSFC Byelaw 10 – Set and drift nets
NWSFC Byelaw 11 – Marking of fishing gear and keep pots
NWIFCA inherited from the Environment Agency (EA)(Wales) National Rivers Authority Byelaw 5- Use of Instruments
Environment Agency Sea Fisheries Byelaw – Restriction on Fishing

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 EMS[3].

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

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

5.1 Table 1: Assessment of LSE

What pressures (such as abrasion, disturbance) are potentially exerted by the gear type(s) to features? (taken from NE Advice on Operations- 'Anchored nets/lines' and 'Pelagic fishing (or fishing activities that do not interact with seabed)'. Additional pressures relating to seabed impacts of lines (AoO- anchored nets and lines) have also been included in the event that a drift net footrope catches on the seabed in an area of shallow water.

Features: There is no interaction with many of the SAC and Ramsar qualifying features, these being; 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, Atlantic salt meadows (Glauco-Puccinellietalia maritimae), Embryonic shifting dunes (NON MARINE), Shifting dunes along the shoreline with Ammophila arenaria ("white dunes") (NON MARINE), Fixed dunes with herbaceous vegetation ("grey dunes") (NON MARINE), Humid dune slacks (NON MARINE), Petalophyllum ralfsi Petalwort (NON MARINE), Natterjack toad (NON MARINE) thus these have been screened out. This is due to the activity not occurring in the vicinity of these features; access to these fisheries is either by foot/ATV quad bike via one of two concrete slipways directly onto the sand, muddy sand habitat of the intertidal zone or by boats moored or launched via established access routes. The only SAC and Ramsar qualifying features with which there are interactions are Estuaries, Mudflats and sandflats not covered by seawater at low tide, Petromyzon marinus Sea lamprey and *Lampetra fluviatilis* River lamprey, these will be assessed in this document.
In Estuaries the only Site sub-feature(s)/Notable Communities with which there are interactions are 'intertidal sand and muddy sand', 'subtidal coarse sediment' and 'subtidal sand' (see Annex 4 and 5). Akin to this in Mudflats and sandflats not covered by seawater at low tide the only Site sub-feature(s)/Notable Communities with which there are interactions are intertidal sand and muddy sand.

All of the SPA and Ramsar qualifying features (bird species and assemblages) will be assessed in this document. Note that the boundary of the Dee Estuary SAC and Dee Estuary SPA are different. Staked gill netting only occurs along the North Wirral coast (see Annex 5). The North Wirral coast is part of the Dee estuary SAC but not part of the Dee estuary SPA (Annex 3), instead it is part of the Mersey Narrows and North Wirral Foreshore SPA, thus, the impact of this activity on the SPA features is assessed in a separate document for Mersey Narrows and North Wirral Foreshore SPA (NWIFCA-MN-SPA-003).
The SPA supporting habitats with which there are interactions are the same as those described above for the SAC; 'intertidal sand and muddy sand', 'subtidal coarse sediment' and 'subtidal sand' (Annex 4). There is no interaction with the remaining supporting habitats due to the activity not occurring in the vicinity of these features;

Pressures: Many of the pressures from the Advice on Operations table provided in the Dee Estuary SAC and Dee Estuary SPA Conservation Advice package have been screened out due to the nature of these fishing activities The following pressures will be assessed:

- Abrasion/disturbance of the substrate on the surface of the seabed
- Penetration and/or disturbance on the substrate below the surface of the seabed including abrasion
- Collision above water with static or moving objects not naturally found in the marine environment
- Collision below water with static or moving objects not naturally found in the marine environment
- Visual disturbance
- Removal of non-target species

Qualifying Feature	Sub-feature	Gear type and potential pressures	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 Subtidal sand Subtidal coarse sediment	***Static fixed nets:*** *-Staked gill nets (shore based activity), gill / entangling nets and trammel nets* ***Drift nets:*** *-Demersal drift nets* Abrasion/disturbance of the substrate on the surface of the seabed Penetration and/or disturbance on the substrate below the surface of the seabed including abrasion *(e.g. through abrasion and movement of substrate via contact of nets as well as penetration from anchoring/ stakes)*	Sensitive Sensitive	No No	Abrasion, penetration and disturbance could be caused by nets, weighted lines and anchors during fishing activity. However, nets are set on sandy/muddy substrate and the area is naturally highly dynamic with strong currents, and a large tidal range, therefore any impacts caused by abrasion, penetration or disturbance would be quickly dissipated. Access to the staked gill net fishery is by foot (4 persons) or ATV quad bike (2 persons) via one of two concrete slipways directly onto the sand, muddy sand habitat of the intertidal zone. Activity only occurs Apr-Oct. No increase in disturbance on existing background levels. Access to the gill / entangling nets, trammel nets and demersal drift net fishery is by boats moored or launched via established access routes. No increase in disturbance on existing background levels. The scale and medium to low intensity of the netting activity is unlikely to have a significant effect on the extent, distribution, structure or function of the habitats of the qualifying features.

A048 *Tadorna tadorna*; Common shelduck (Non-breeding) A052 *Anas crecca*; Eurasian teal (Non-breeding) A054 *Anas acuta*; Northern pintail (Non-breeding) Waterbird assemblage *Including - Wigeon and Mallard not assessed in their own right*	*Supporting habitats assessed separately*	***Static fixed nets:*** *-Gill / entangling nets and trammel nets* ***Drift nets:*** *-Demersal drift nets*			**Dabbling ducks**
		Collision above water with static or moving objects not naturally found in the marine environment	Sensitive	No	Static fishing gear is visible to the birds at low water when out of the water lying on the seabed in the intertidal area. This, and the limited scale and intensity of netting activity means collision with gear above/out of water is highly unlikely. Drift nets are fished below the water surface therefore there would be no interaction with bird features above water. No wading birds are known to have ever been caught in this activity (Brownrigg and Capper *pers. comms*., 2016; IFCOs with 6 years' and 29 years' local experience).
		Collision below water with static or moving objects not naturally found in the marine environment	Sensitive	**Yes**	Birds forage on shore, wade in shallow water and dabble in the upper few centimetres of the water surface. Static nets may be very close to the water surface during tidal flood and ebb periods. There is a risk of interaction (such as collision below water) between bird feature and static fishing gear at this time. Demersal drift nets maybe close to the water surface depending upon the water depth and at certain times during fishing i.e. hauling, however, the boats stay with the demersal drift nets thus birds are likely to avoid the vicinity of

					drift nets. Bird species do not go below the water surface which means collision below water is highly unlikely when the static and drift nets are fully submerged. No dabbling ducks are known to have ever been caught in this activity (Brownrigg and Capper *pers. comms*., 2016; IFCOs with 6 years' and 29 years' local experience).
		Visual disturbance	Sensitive	No	The scale (small vessels) and low to medium intensity of the netting activity will result in very limited increase in visual disturbance on existing background levels.
		Removal of non-target species such as… -Accidental bycatch of fish (bird prey)	Sensitive	No	Dabbling ducks prey upon small benthic invertebrates which are not removed by static and demersal drift netting activity. It is therefore likely that there will be no impact on the bird feature food resource.
		-Accidental bycatch of birds	Sensitive	**Yes**	Birds forage on shore, wade in shallow water and dabble in the upper few centimetres of the water surface. Static nets may be very close to the water surface during tidal flood and ebb periods. There is a risk of interaction (such as collision below water) between bird feature and static fishing gear at this time. Demersal drift nets maybe close to the water surface depending upon the water depth and at certain times during

					fishing i.e. hauling, however, the boats stay with the demersal drift nets thus birds are likely to avoid the vicinity of drift nets. Bird species do not go below the water surface and limited activity means accidental removal of birds is highly unlikely when the static and drift nets are fully submerged. No dabbling ducks are known to have ever been caught in this activity (Brownrigg and Capper *pers. comms*., 2016; IFCOs with 6 years' and 29 years' local experience).
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-	*Supporting habitats assessed separately*	***Static fixed nets:*** *-Gill / entangling nets and trammel nets* ***Drift nets:*** *-Demersal drift nets* Collision above water with static or moving objects not naturally found in the marine environment Collision below water with static or moving objects not naturally	Sensitive Sensitive	No **Yes**	**<u>Wading birds</u>** Static fishing gear is visible to the birds at low water when out of the water lying on the seabed in the intertidal area. This, and the limited scale and intensity of netting activity means collision with gear above/out of water is highly unlikely. Drift nets are fished below the water surface therefore there would be no interaction with bird features above water. No wading birds are known to have ever been caught in this activity (Brownrigg and Capper *pers. comms*., 2016; IFCOs with 6 years' and 29 years' local experience). Birds forage on shore, wade in

breeding) A162 *Tringa totanus*; Common redshank (Non-breeding) Waterbird assemblage *Including- sanderling and lapwing - not assessed in their own right*		found in the marine environment			shallow water and dabble in the upper few centimetres of the water surface. Static nets may be very close to the water surface during tidal flood and ebb periods. There is a risk of interaction (such as collision below water) between bird feature and static fishing gear at this time. Demersal drift nets maybe close to the water surface depending upon the water depth and at certain times during fishing i.e. hauling, however, the boats stay with the demersal drift nets thus birds are likely to avoid the vicinity of drift nets. Bird species do not go below the water surface and which means collision below water is highly unlikely when the static and drift nets are fully submerged. No wading birds are known to have ever been caught in this activity (Brownrigg and Capper *pers. comms*., 2016; IFCOs with 6 years' and 29 years' local experience).
		Visual disturbance	Sensitive	No	The scale (small vessels) and low to medium intensity of the netting activity will result in very limited increase in visual disturbance on existing background levels.
		Removal of non-target species such as… -Accidental bycatch of fish (bird prey)	Sensitive	No	Waders prey upon small benthic invertebrates which are not removed by static and demersal drift netting activity. It is therefore likely that there will be no

					impact on the bird feature food resource.
		-Accidental bycatch of birds	Sensitive	**Yes**	Birds forage on shore, wade in shallow water and dabble in the upper few centimetres of the water surface. Static nets may be very close to the water surface during tidal flood and ebb periods. There is a risk of interaction (such as collision below water) between bird feature and static fishing gear at this time. Demersal drift nets maybe close to the water surface depending upon the water depth and at certain times during fishing i.e. hauling, however, the boats stay with the demersal drift nets thus birds are likely to avoid the vicinity of drift nets. Bird species do not go below the water surface and limited activity means accidental removal of birds is highly unlikely when the static and drift nets are fully submerged. No wading birds are known to have ever been caught in this activity (Brownrigg and Capper *pers. comms*., 2016; IFCOs with 6 years' and 29 years' local experience).
A191 *Sterna sandvicensis;* Sandwich tern (Non-breeding) A193 *Sterna hirundo*; Common tern (breeding)	*Supporting habitats assessed separately*	***Static fixed nets:*** *-Gill / entangling nets and trammel nets* ***Drift nets:*** *-Demersal drift nets* Collision above water with static or moving objects not naturally found in the marine environment	Sensitive	No	**<u>Surface feeding seabirds</u>** Static fishing gear is visible to the birds at low water when out of the water lying on the

A195 *Sterna albifrons*; Little tern (breeding)					seabed in the intertidal area. This, and the limited scale and intensity of netting activity means collision with gear above/out of water is highly unlikely. Drift nets are fished below the water surface therefore there would be no interaction with bird features above water. In addition, no surface feeding birds are known to have ever been caught in this activity (Brownrigg and Capper *pers. comms*., 2016; IFCOs with 6 years' and 29 years' local experience).
		Collision below water with static or moving objects not naturally found in the marine environment	Sensitive	**Yes**	Surface feeding birds forage in the upper few centimetres of the water and do not go much below the water surface. Static nets may be very close to the water surface during tidal flood and ebb periods. There is a risk of interaction (such as collision below water) between bird feature and static fishing gear at this time. Demersal drift nets maybe close to the water surface depending upon the water depth and at certain times during fishing i.e. hauling, however, the boats stay with the demersal drift nets thus birds are likely to avoid the vicinity of drift nets. Bird species do not go much below the water surface which means collision below water is highly unlikely when the static and drift nets are fully submerged.
		Visual disturbance	Sensitive	No	The scale (small

					vessels) and low to medium intensity of the netting activity will result in very limited increase in visual disturbance on existing background levels. Thus fishing activity is unlikely to have an effect on the population or distribution of the qualifying features.
		Removal of non-target species such as… -Accidental bycatch of fish (bird prey)	Sensitive	No	These surface feeding birds eat juvenile shoaling pelagic fish, sprat, herring and sandeels. Due to the mesh size these species are not caught in static and demersal drift netting. It is therefore likely that there will be no impact on the bird feature food resource and there will be no effect on the population or distribution of the qualifying features.
		-Accidental bycatch of birds	Sensitive	**Yes**	Surface feeding birds forage in the upper few centimetres of the water and do not go much below the water surface. Static nets may be very close to the water surface during tidal flood and ebb periods. There is a risk of interaction (such as collision below water) between bird feature and static fishing gear at this time. Demersal drift nets maybe close to the water surface depending upon the water depth and at certain times during fishing i.e. hauling, however, the boats stay with the demersal drift nets thus birds are likely to avoid the vicinity of drift nets. Bird species do not go much below the

					water surface and limited activity means accidental removal of birds is highly unlikely when the static and drift nets are fully submerged. No surface feeding birds are known to have ever been caught in this activity (Brownrigg and Capper *pers. comms*., 2016; IFCOs with 6 years' and 29 years' local experience).
Waterbird assemblage *Including - cormorant - not assessed in its own right*		***Static fixed nets:*** *-Gill / entangling nets and trammel nets* ***Drift nets:*** *-Demersal drift nets* Collision above water with static or moving objects not naturally found in the marine environment	Sensitive	No	**<u>Diving Birds</u>** Static fishing gear is visible to the birds at low water when out of the water lying on the seabed in the intertidal area. This, and the limited scale and intensity of netting activity means collision with gear above/out of water is highly unlikely. Drift nets are fished below the water surface therefore there would be no interaction with bird features above water. In addition, no diving birds are known to have ever been caught in this activity (Brownrigg and Capper *pers. comms*., 2016; IFCOs with 6 years' and 29 years' local experience).
		Collision below water with static or moving objects not naturally found in the marine environment	Sensitive	**Yes**	Cormorants dive deep into the water column. Risk of interaction (such as collision below water) with static nets during tidal flood and ebb period when nets may be very close to the water surface and when the static nets

					are fully submerged as they are within the diving depth range of cormorants. Demersal drift nets maybe close to the water surface depending upon the water depth and at certain times during fishing i.e. hauling, and are in cormorants diving depth range when fully submerged in the act of fishing. However, the boats stay with the demersal drift nets thus birds are likely to avoid the vicinity of drift nets.
		Visual disturbance	Sensitive	No	The scale (small vessels) and low to medium intensity of the netting activity will result in very limited increase in visual disturbance on existing background levels. Thus fishing activity is unlikely to have an effect on the population or distribution of the qualifying features
		Removal of non-target species such as… -Accidental bycatch of fish (bird prey)	Sensitive	No	Some of the fish species caught in these fisheries are also cormorant prey species. However cormorants predate upon smaller individuals (<25cm) than those caught in the mesh sizes of the static and demersal drift nets. In addition, this area is not cormorant prime feeding ground and the scale and intensity of the netting activity is limited resulting in limited pressure from removal of non-target species and impact on bird feature food resource is minimal.
		-Accidental bycatch of birds	Sensitive	**Yes**	Cormorants dive deep into the water

					column. Risk of interaction (such as collision below water) with static nets during tidal flood and ebb period when nets may be very close to the water surface and when the static nets are fully submerged as they are within the diving depth range of cormorants. Demersal drift nets maybe close to the water surface depending upon the water depth and at certain times during fishing i.e. hauling, and are in cormorants diving depth range when fully submerged in the act of fishing. However, the boats stay with the demersal drift nets thus birds are likely to avoid the vicinity of drift nets.
S1095 *Petromyzon marinus* Sea lamprey S1099 *Lampetra fluviatilis* River lamprey		Removal of non-target species	Sensitive	No	Evidence suggests that the majority of fishing related bycatch of lamprey occurs in eel traps and salmon traps, not in static or demersal drift nets (Sewell & Hiscock. 2005). Due to; the low level of fishing activity, mesh size, the shape and size of Lamprey, nil records of lamprey bycatch in gill nets (in the Dee Estuary European site) and that lamprey spend a proportion of their lifecycle in freshwater it is unlikely that these nets are going to have a significant effect on their population and distribution.

Is the potential scale or magnitude of any effect likely to be significant?[4]	**Alone** Uncertain **Comments :** Static and drift netting activity in the Dee Estuary European Site has the potential for gear interaction with the bird features through collision and entanglement below the water surface. The NWIFCA concludes that netting may have a likely significant effect on the SAC and SPA features of the Dee Estuary European Site, therefore an Appropriate Assessment will be carried out.	**OR In-combination[5]** N/A **Comments :** These activities may also occur at the site: • Beam trawl (shrimp) • Light otter trawls • Handworking (access from land and vessel) In combination effects will be assessed when all initial TLSEs for a site are completed.
Have NE been consulted on this LSE test? If yes, what was NE's advice?	Yes	

6. Appropriate Assessment

Note: this is only to be undertaken if the Test for LSE (section 5) concluded 'Yes' or 'Uncertain' for LSE, either alone or in-combination.

6.1 Potential risks to features

Static fixed nets; Gill / entangling nets and trammel nets
(details of gear and activity described in section 4).

- **All SPA Bird Features**

Potential pressures: Due to the nature of the fishing activity all pressures from the Advice on Operations other than the following have been screened out:

- Collision / interaction BELOW water with static or moving objects not naturally found in the marine environment (e.g., boats, machinery, and structures) and entrapment
- Removal of non-target species (eg accidental bycatch of birds)

[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.

Impacts

There may be indirect and direct impacts of fisheries on birds, such as gear entrapment/bycatch (CCW, 2012) and collision above or below the water surface. Birds may be drowned when caught in gear, leading to incidental mortality (Tasker *et al.* 2000, Furness, 2003). Set nets in particular can be a potential hazard to all diving seabirds and are thought to have caused declines to seabird populations around the world through bycatch (Gubbay & Knapman, 1999, Žydelis *et al.* 2009). The risk of entanglement of diving species is increased when nets are made from synthetic materials such as mono-filament nylon which makes nets difficult for birds to see whilst swimming underwater (Furness, 2003, Sonntag *et al.* 2012).

In a study by Sonntag *et al.* (2012), it was assumed that horizontal diving foraging birds were more vulnerable to net mortality than vertical diving species, as were birds that aggregate in large flocks (rather than small groups), and species with lower biogeographic population sizes. A study carried out in Newfoundland by Davoren (2007) found the majority of gillnet bird bycatch comprised of diving birds including auks, with some incidental catches of other species including common tern (a surface feeding bird). Various studies carried out in Scotland, England and Ireland have reported that particular species at risk of being caught in nets as bycatch are guillemots and razorbills- diving auk species (Žydelis *et al.* 2009; Smiddy, 2001; Bourne, 1989; Robins, 1991; RSPB 2010). Žydelis *et al*. (2009) reported that every year in the UK, thousands of guillemots and hundreds of razorbills were caught as bycatch, with annual mortality from gillnets in the north-east of Scotland alone estimated at 10,000-15,000. A study in 1992 also found that the main seabird species caught and killed in salmon bag nets in northeast Scotland were razorbills and guillemots (species particularly vulnerable to entanglement in nets), although losses were small in relation to the total number of the species in the area (Murray *et al.* 1994). A review into the impacts of fisheries on marine birds in Welsh waters found relatively few reported interactions, with those found relating mostly to bycatch in set nets and disturbance/ prey abundance effects from shellfish harvesting (CCW, 2012).

Fishing effort, bird species and diving habits, abundance and distribution will determine the overall threat and numbers of birds killed within the fishery area and will differ between locations, with increased effects seen closer to breeding colonies where inexperienced young birds may be most susceptible to trapping (Ainley *et al.* 1981; Harrison & Robins, 1992; Tasker *et al.* 2000; Sewell *et al.* 2007; Murray *et al.* 1994; Furness, 2003; Gubbay & Knapman, 1999; Sewell & Hiscock, 2005). A CCW review (2012) stated that impacts varied spatially and temporally, with different effects to bird populations in different locations and at different times of year.

Unintentional bycatch of birds can occur when nets (or any other types of fishing gear) are set within the feeding range of seabirds (Tasker *et al.* 2000). In areas located around diving seabird colonies, or where high densities of birds gather on the water surface, there may be high incidental gill net fishery bycatches (Gubbay & Knapman, 1999; Sewell & Hiscock, 2005). A report by Robins (1991) reported localised seabird bycatch impacts in Britain and Ireland, with bass gillnets set in winter in St Ives Bay (Cornwall) accidentally catching up to 1000 razorbills and guillemots. Other studies in Wales and Scotland found specific impacts were seen in areas of nets set beside colonies but with no evidence of widespread impact (Thomas, 1992; Murray, 1993; Murray *et al*., 1994; Tasker *et al.* 2000). Sewell *et al.* (2007) reported a study in Cardigan Bay where beach-set gillnets set near wintering areas for red throated divers were inspected over 2 years. It was thought that low bird population densities and low fishing intensity led to low levels of fishery bird bycatch as although birds were observed feeding nearby, no evidence of mortality of the birds was identified (Sewell *et al.* 2007).

Gear loss can lead to “ghost fishing” where nets continue to fish after being lost (through bad weather or following damage by mobile gears) or discarded, potentially leading to entanglement of seabirds also (Furness, 2003; Kaiser *et al.* 1996; Sewell & Hiscock, 2005). A study by Kaiser *et al*. (1996) examined ghost fishing catches in gill and trammel nets over 9 months following gear being cut free, which reported fish being the main catch first, then increased crustacea catches over the 9 months. Three shags (diving bird species) were also found caught in the gill net- wave and tidal action may cause lost nets to be brought closer inshore and could lead to bird bycatch which may vary seasonally (Kaiser *et al.* 1996).

Competition for prey species
“Furness (2003) summarised that fisheries exploiting prey fish may deplete stocks and reduce their availability to seabirds” (CCW, 2012). Sandeels are an important source of accessible high energy food to seabird species including terns (CCW, 2012). “Furness (2003) and Furness & Tasker (2000) also note that smaller surface feeding species may be more sensitive to changes in prey abundance and Daunt et al. (2008) adds that deep-divers have a greater ability to target different prey sources as they have access to a larger portion of the water column” (CCW, 2012).

Cormorant are the only diving bird species protected in the Dee Estuary SPA, with surface feeding seabirds including Common tern, Little tern and Sandwich tern.

Exposure

The static and demersal drift net fishery in the Dee Estuary European Site is small scale compared to the fisheries discussed in the above reports, with a maximum of 25 commercial fishermen.

<u>Dabbling Ducks and Wading birds</u>
Dabbling duck species (Shelduck, Teal, Pintail, Wigeon and Mallard) are unlikely to collide with or become entangled (caught as non-target bycatch) in static nets present under the water surface which are set to target demersal fish species. This is due to the net being weighted and present further down into the water column towards the seabed, deeper than these birds would feed (in the surface layer). It is unlikely the birds would interact with the nets at low water when the nets are visible on the shore.

Wading bird species (Oystercatcher, Grey Plover, Red knot, Dunlin, Black-tailed Godwit, Bar-tailed Godwit, Curlew, Redshank, Sanderling and Lapwing) feed in the intertidal area on the shore and wade in shallow water. Due to this the birds would not interact with the static nets when they are fully submerged and are unlikely to interact with the static nets at low water when they are visible on the shore.

During flood and ebb tidal periods however, there will be a time where the set nets are partly/ fully submerged but may be only just covered by water. At this time they may pose a risk of entrapment to dabbling ducks and wading birds because a net would not be as visible as it would be at low water and the net will be occupying the same section of the water column (top 50cm) that these bird species occupy.

Giving the static nets an approximate width of 2m (0.002km) when set on the seabed (to take into account movement of the net in water currents), and a maximum combined total length being used of 3.75km (25 commercial vessels with one static fixed net each, of 150m in length), would give an approximation of 0.0075km^2 footprint of static nets being used in the Dee Estuary European Site (the total SPA site covers 130.76 km^2, or 13076.29 hectares). This is 0.005735% of the site overall area (spread across the whole site- Annex 4) and in the event that all the nets were being fished at the same time. Static netting activity only occurs on average for 4 hours, on 10 days per month

during January to June and 1 day per month July to December. The birds would also need to be in this area at the same time as fishing is occurring for there to be an interaction between the gear and the features. It would also only be during the hours of the tidal ebb and flood period when nets are set but not fully submerged that a potential risk of interaction is faced by the wader and dabbling duck species. No dabbling ducks or wading birds are known to have ever been caught in this activity (Brownrigg and Capper pers. comms., 2016; IFCOs with 6 years' and 29 years' local experience).

Surface feeding birds

Surface feeding birds (Common tern, Sandwich tern and Little tern) forage in the upper part of the water column but do not go any deeper into the water than this. Surface feeding birds, which forage only at or a few centimetres below the water surface, are less affected (Sonntag *et al.* 2012), and it is therefore unlikely these birds would collide with or become entangled (caught as non-target bycatch) in static nets when they are set fully under the water surface, deeper than the birds feed. It is also unlikely the birds would interact with the nets at low water when they are visible on the shore (out of the water). There may be a risk of interaction during tidal flood and ebb periods, when the static net is submerged but not fully set or weighted to the bottom, and may be very close to the water surface. Common tern are present at the site in significant numbers from May to September, Sandwich tern are present in significant numbers from April to September (with a peak in number of Sandwich Tern in July- Natural England Dee Estuary EMS Conservation Advice Package, January 2010) and Little tern are present at the site in significant numbers from May to August (Dee Estuary SPA Seasonality Table- Natural England Interim Advice, October 2015). These fisheries mostly occur between January and June, therefore there are 2 to 3 months where the fisheries are occurring while significant populations of terns are present at the site. As the approximate static net fishing footprint is 0.005735% of the overall site (if all nets are set at the same time), and the overlap for interaction is only at times of low water ebb and flood tide for 10 days a month during these 2 to 3 months, it is highly unlikely there would be an impact from the gear on the feature. No surface feeding birds are known to have ever been caught in this activity (Brownrigg and Capper pers. comms., 2016; IFCOs with 6 years' and 29 years' local experience).

Diving birds

The only diving bird species present in the area is the Cormorant which is included in the "Waterbird assemblage". Cormorants occur at the site throughout the year, with peak numbers seen in June and September (NE Advice, 2010). Cormorants feed on small fish (less than 25cm length), often found in subtidal channels at low water which would be too small to be caught in the net mesh. Cormorants roost on intertidal flats at low water, with main aggregations at Gronant and in the inner estuary at Oakenholt (NE Advice, 2010; Cranswick et al. 2005; Bolas & Day, 1998).

These fisheries mostly occur between January and June, therefore there is only one month (June) where the fisheries are occurring at the same time as peak cormorant numbers. As the approximate static net fishing footprint is 0.005735% of the overall site (when all nets are set at the same time), and the overlap for interaction is only 4 hours (nets being set 2 hours before low water and retrieved 2 hours after) for 10 days a month during June and only 1 day per month thereafter during peak cormorant numbers it is highly unlikely there would be an impact from the gear on the feature. No cormorants are known to have ever been caught in this activity (Brownrigg and Capper pers. comms., 2016; IFCOs with 6 years' and 29 years' local experience).

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]
A048 *Tadorna tadorna*; Common shelduck (Non-breeding) A052 *Anas crecca*; Eurasian teal (Non-breeding) A054 *Anas acuta*; Northern pintail (Non-breeding)	Maintain or restore the population and distribution of each of the qualifying features within the site.	Static fixed nets: - Gill nets, Trammels, Entangling Risk of interaction (such as collision below water) between bird feature and fishing gear. Removal of non-target species (bird bycatch)	Potential risk to population and distribution of the qualifying bird features from injury or mortality caused by interaction between gear and feature.	**Dabbling Ducks** Birds forage on shore, wade in shallow water and dabble in the upper few centimetres of the water surface. Static nets may be very close to the water surface during tidal flood and ebb periods. There is a risk of interaction (such as collision below water) between bird feature and static fishing gear at this time.	N/A

[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.

Waterbird assemblage *Including- Wigeon, and Mallard not assessed in their own right*				There is a low exposure of risk due to medium to low level activity (average 10 days per month Jan-Jun and 1 day per month Jul-Dec) and the scale and intensity of the netting activity is low (0.005735% footprint across entire site) and the birds only potentially occupy the same area of the water column (top 50cm) during the low water ebb and flood times, resulting in very limited risk of collision. No dabbling ducks are known to have ever been caught in this activity (Brownrigg and Capper pers. comms., 2016; IFCOs with 6 years' and 29 years' local experience). This is unlikely to have a significant effect on the population or distribution of the qualifying features.	
A130 *Haematopus ostralegus*; Eurasian oystercatcher (Non-breeding) A141 *Pluvialis squatarola*; Grey plover (Non-breeding) A143 *Calidris canutus*; Red knot (Non-breeding)	Maintain or restore the population and distribution of each of the qualifying features within the site.	Static fixed nets: - Gill nets, Trammels, Entangling Risk of interaction (such as collision below water) between bird feature and fishing gear. Removal of non-target species (bird bycatch)	Potential risk to population and distribution of the qualifying bird features from injury or mortality caused by interaction between gear and feature.	**<u>Wading Birds</u>** Birds forage on shore, wade in shallow water and dabble in the upper few centimetres of the water surface. Static nets may be very close to the water surface during tidal flood and ebb periods. There is a risk of interaction (such as collision below water) between bird feature and static fishing gear at this time. There is a low exposure of risk due to medium to low level activity (average 10 days per month Jan-Jun and 1 day per	N/A

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) Waterbird assemblage *Including- sanderling and lapwing not assessed in their own right*				month Jul-Dec) and the scale and intensity of the netting activity is low (0.005735% footprint across entire site) and the birds only potentially occupy the same area of the water column (top 50cm) during the low water ebb and flood times, resulting in very limited risk of collision. No wading birds are known to have ever been caught in this activity (Brownrigg and Capper pers. comms., 2016; IFCOs with 6 years' and 29 years' local experience). This is unlikely to have a significant effect on the population or distribution of the qualifying features.	
A191 *Sterna sandvicensis;* Sandwich tern (Non-breeding) A193 *Sterna hirundo*; Common tern (breeding) A195 *Sterna albifrons*; Little tern (breeding)	Maintain or restore the population and distribution of each of the qualifying features within the site.	Static fixed nets: - Gill nets, Trammels, Entangling Risk of interaction (such as collision below water) between bird feature and fishing gear. Removal of non-target species (bird bycatch)	Potential risk to population and distribution of the qualifying bird features from injury or mortality caused by interaction between gear and feature.	**<u>Surface Feeding birds</u>** Surface feeding birds forage in the upper few centimetres of the water and do not go much below the water surface. Static nets may be very close to the water surface during tidal flood and ebb periods. There is a risk of interaction (such as collision below water) between bird feature and static fishing gear at this time.	N/A

				Significant numbers of tern species are present at the site during the following months; Common tern and Little tern May-Sep, Sandwich term Apr-Sep. There is a low exposure of risk during the first 2-3 months of significant tern numbers (Apr/May – Jun) with an average 10 days which decreases in Jul-Sep due to an average 1 day per month. The scale and intensity of the netting activity is low (0.005735% footprint across entire site) and the birds only potentially occupy the same area of the water column (top 50cm) during the low water ebb and flood times, resulting in very limited risk of collision. No surface feeding birds are known to have ever been caught in this activity (Brownrigg and Capper pers. comms., 2016; IFCOs with 6 years' and 29 years' local experience). This is unlikely to have a significant effect on the population or distribution of the qualifying features.	
Waterbird assemblage *Including -cormorant - not assessed in its own right*	Maintain or restore the population and distribution of each of the qualifying features within the site.	Static fixed nets: - Gill nets, Trammels, Entangling Risk of interaction (such as collision below water) between bird feature and fishing gear. Removal of non-target species	Potential risk to population and distribution of the qualifying bird features from injury or mortality caused by interaction between gear and feature.	**<u>Diving birds</u>** Cormorants dive deep into the water column. Risk of interaction (such as collision below water) with static nets during tidal flood and ebb period when nets may be very close to the water surface and when the static nets are	N/A

		(bird bycatch)		fully submerged as they are within the diving depth range of cormorants. Cormorant numbers peak Jun-Sep. There is a low exposure of risk during June with an average of 4 hrs per day for 10 days when fishing activity occurring. This decreases Jul-Sep to an average of 4 hours on 1 day per month. The scale and intensity of the netting activity is low (0.005735% footprint across entire site), resulting in very limited risk of collision. No cormorants are known to have ever been caught in this activity (Brownrigg and Capper pers. comms., 2016; IFCOs with 6 years' and 29 years' local experience). This is unlikely to have a significant effect on the population or distribution of the qualifying features.	

7. Conclusion[11]

Taking into account the information detailed in the Appropriate Assessment, it can be concluded that the current low level of fishing, using gill nets, trammels and entangling nets, and drift nets, has no adverse effect on the integrity of the Dee Estuary European Site interest features.

8. In-combination assessment[13]

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

9. Summary of consultation with Natural England

See attached advice from Natural England (Annex 2).

10. Integrity test

It can be concluded that fishing using static fixed nets has no adverse effect on the integrity of the Dee Estuary European Site interest features.

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

Annex 1: Reference list

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Annex 2: Natural England's consultation advice

Date: 16 November 2016
Our ref: 200758
Your ref: NWIFCA-DE-EMS-005

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T 0300 060 3900

North Western Inshore Fisheries and Conservation Authority (NWIFCA)
Preston Street
Carnforth
Lancashire
LA5 9BY

BY EMAIL ONLY

Dear

Formal Advice to NWIFCA. Fisheries in EMS Habitats Regulations Assessment for Amber and Green risk Categories in Dee Estuary European Marine Site, including gear types: Staked Gill Nets, Gill / Entangling nets, Trammel nets and Drift nets (demersal)

Thank you for your consultation on the above which was received by Natural England on 08 November 2016.

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

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

Natural England has considered the Habitat Regulations Assessment (HRA) prepared by North Western Inshore Fisheries and Conservation Authority (IFCA) for the purposes of making an assessment consistent with the provisions of Article 6(3). Please accept this letter as Natural England's formal advice on the assessment and the conclusions it makes. The assessment considers the effects of the following fishing activities on the Dee Estuary European Marine Site (SPA):

- Static fixed nets: Staked gill nets, gill / entangling nets, trammel nets
- Drift nets: demersal drift nets

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

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

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

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

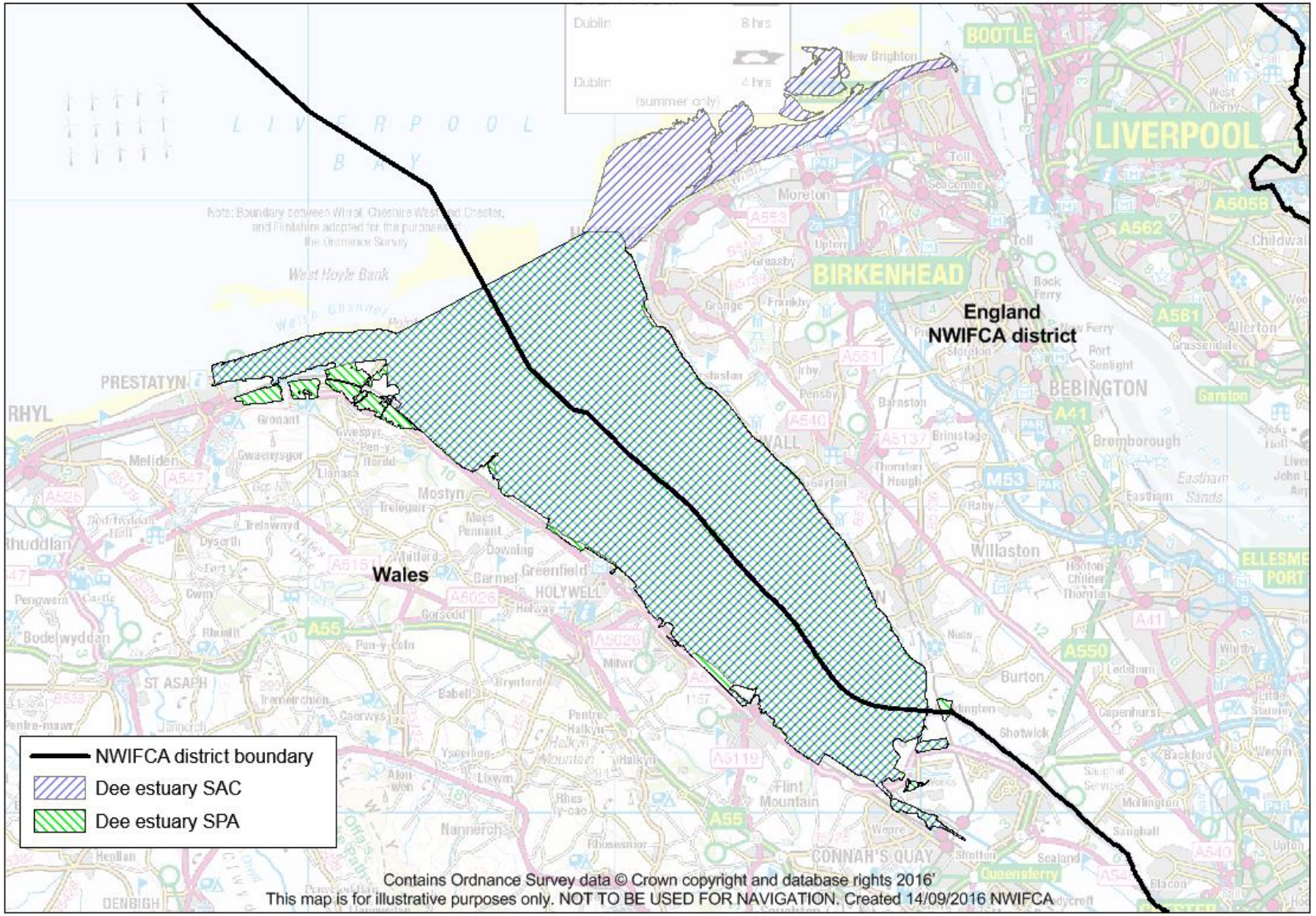
It is Natural England's view that any foreseeable risk, or harm to the site has been appropriately assessed; and a robust mechanism for re-assessing that risk is in place. This view is based on our current knowledge of the impacts of these fishing activities on the designated features.

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

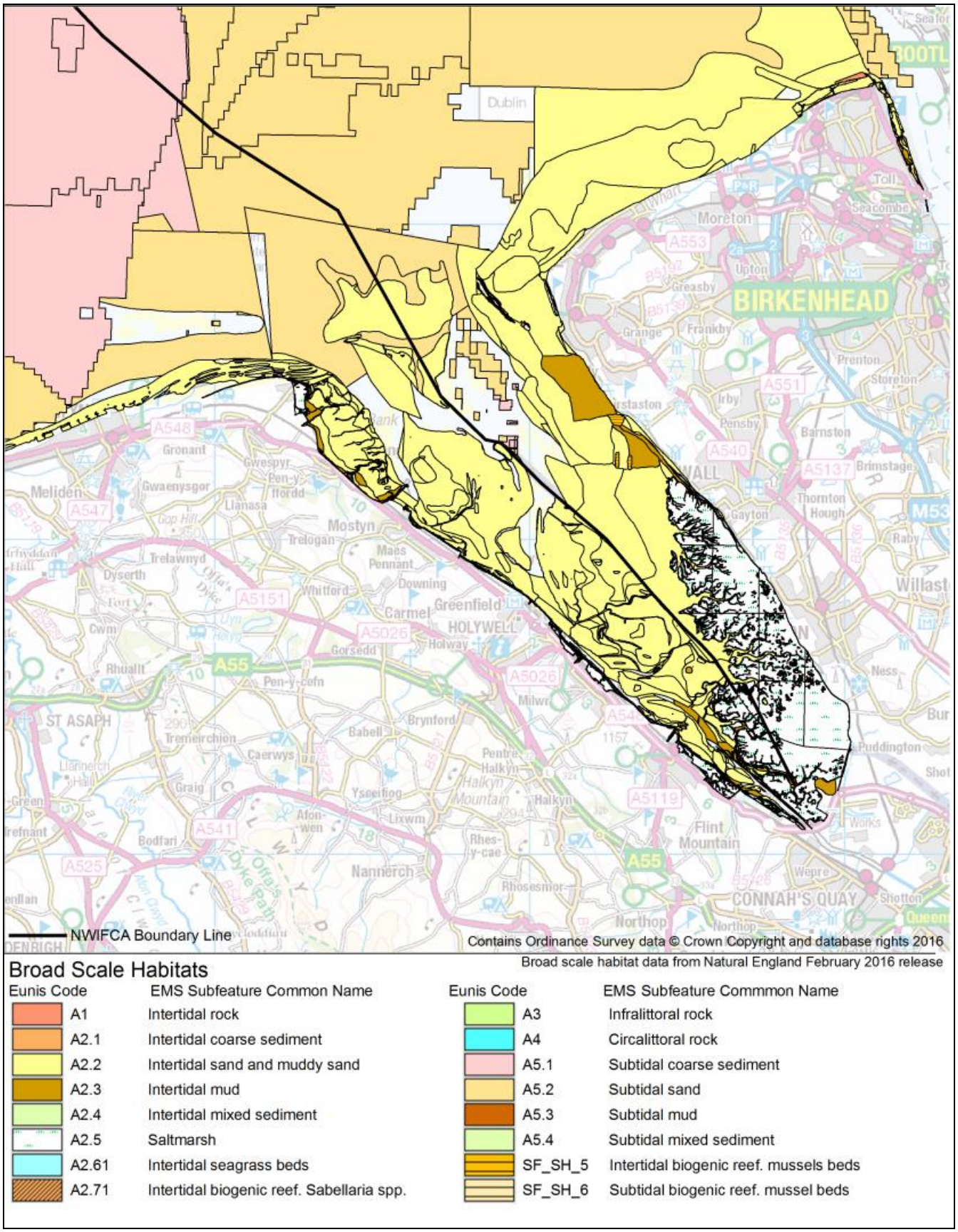
Yours sincerely

Cheshire, Greater Manchester, Merseyside and Lancashire Area Team
Email: Jerrard.nicholson@naturalengland.org.uk
Tel: 07771 980217

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